

Prediction and Risk Factor Analysis of Obesity-related Proteinuria among Individuals with Metabolic Syndrome

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Abstract

Objective: In the present modern era of time, poor and frantic lifestyle has led to an enumerate increase in the number of people with obesity and metabolic syndrome (MS). Epidemiological studies have shown the incidence of chronic kidney disease (CKD) risk factors in individuals with obesity and MS; despite the nonclear evidence on the existing potential risk factors, it became important to reassess existing potential risk factors that are involved in disease progression and its further complications. The strongest risk factor of CKD, albumin-to-creatinine ratio (ACR) recognized as a marker of MS and obesity. This study was carried out to identify the association of obesity (body mass index [BMI]) as a risk factor for albuminuria and to observe the dependence and association with albuminuria of each critical and basic factor of MS. **Design:** We conducted the potential risk factor analysis on 913 subjects, including 398 females and 515 males, from various diabetic hospitals of Vijayawada, Andhra Pradesh from early 2013 to June 2015. The medical records of the patients followed up; the anthropometric measurements and clinical parameters were retrospectively collected. The total subjects were categorized as subjects with and without MS as per National Cholesterol Education Program Adult Treatment Panel (NCEP-ATPIII) and the subjects with BMI more than 30 kg/m² were defined as obese according to WHO classification. **Results:** Student's *t* test analysis indicates a significant difference for ACR with mean values of 39.5 ± 44.8 and 18.4 ± 24.3 ($P < 0.0001$) in subjects with MS and without MS, 43.4 ± 48.3 and 36.7 ± 42.5 ($P < 0.02$) in obese and nonobese subjects, respectively. Chi-square analysis showed a significant association ($P < 0.05$) between MS and ACR and correlation analysis manifested significant association ($P < 0.01$) between ACR and FBS, TG, B.P, and Age in subjects with MS. The subjects with high prevalence of albuminuria exhibited significant association with an odds ratio (OR) of 1 (referent) 1.9 (95% CI, 1.34–2.58, $P = 0.0002$), 1.5 (95% CI, 1.11–1.96, $P = 0.0082$) for FBS >110 mg/dL, and TG > 150 mg/dL, respectively. Although the subjects with obesity showed no correlation with albuminuria, the risk for albuminuria was 1.5 times (95%CI 1.03–2.40, $P = 0.03$) higher among obese male subjects compared to obese female subjects. **Conclusion:** Our study strongly supports that albuminuria is highly prevalent among the subjects, with MS showing a significant positive association between obesity (BMI) with albuminuria in males only.

Keywords: ACR, BMI, chronic kidney disease, FBS, HDL, metabolic syndrome, TG

INTRODUCTION

Chronic kidney disease (CKD) has become a major global health problem with an estimated worldwide affected population of 2 million. In this context, early detection of CKD is crucial to prevent the progression of CKD to end-stage renal disease (ESRD). The presence of persistently elevated albuminuria is an early clinical marker of CKD and a predictor for cardiovascular diseases (CVD) and

mortality. The clinical manifestation of CKD includes albuminuria/proteinuria as an important diagnostic tool for primary treatment^[1-3] and also considered in the definition of the metabolic syndrome (MS) by the World Health Organization.^[4] The MS is defined as a

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constellation of risk factors including obesity, impaired fasting glucose (FBS >110 mg/dL), increased triglycerides (TG >150 mg/dL), associated with insulin resistance, hypertension (systolic >140 mm Hg), low levels of high-density lipoprotein cholesterol (HDL < 40 mg/dL)^[5] and chronic inflammation,^[6] leads to composite metabolic derangements that contribute to CKD and coronary artery disease. As per the prior investigations, the relationship between albuminuria, and MS risk factors percentage of prevalence being reported to be 10%-42% in persons with type II diabetes, 11%-40% in people with hypertension and 5%-10% in those without diabetes, hypertension or cardiovascular disease.^[7-9] Obesity has been pointed out as one of the critical factors of MS, and the body mass index (BMI) estimate of more than 30 kg/m² indicates obesity, and people with MS are at higher risk of many chronic diseases with reduced life expectancy. One of the molecular mechanisms underlying obesity-related CKD is the abnormal or excessive accumulation of fat, characterized by adipocytes hypertrophy. This phenomenon induces hypoxia,^[10] promoting inflammation and secretion of adipokines such as leptin, which specifically binds to the receptors on glomerulus and show a direct effect on kidney by promoting excessive production of pro-fibrotic transforming growth factor beta (TGF- β) which further enhance the production of extracellular matrix (ECM) components leading to fibrosis.^[11,12] In obesity, increased adipose storage or inflammation of adipocytes brings about insulin resistance conversely insulin sensitivity reduction by several intracellular mechanisms causing the onset of hyperglycemia facilitating renal fibrosis.^[13]

In the studies with obesity, the possible existence of a relationship between the roles of obesity executed as BMI in routine clinical practice with kidney dysfunction remains controversial. Weisinger *et al.*^[14] first reported that massive proteinuria is associated with obesity. Similarly, limited studies have systematically addressed the association between microalbuminuria with obesity or central obesity irrespective of gender and other predisposing conditions. Hoffmann *et al.*^[15] conversely found that there is no difference in albuminuria levels in lean and obese glucose-tolerant subject's studies.^[16] However, very fewer studies focused on microalbuminuria, especially in obese nondiabetic, no hypertensive subjects. Our study focused to predict the risk factors of CKD in obesity-associated albuminuria in the south Asian population having unique anthropometric body measurements and to substantiate the clinical practices in most of the hospitals where BMI usually considered as the only clinical parameter to determine obesity.

MATERIALS AND METHODS

Study area and population

This study is a cross-sectional analysis carried out in Vijayawada, Krishna District, Andhra Pradesh, India, among subjects aged between 20 and 84 years. The study

was conducted on 913 subjects including 398 females (43.6%) and 515 (56.4%) males during their hospital visit who underwent medical screening at various diabetic hospitals of Vijayawada from early 2013 to June 2015 and have undergone diagnosis. Majority of them had MS. The exclusion criteria of the study were pregnant women with MS and the patients who had other CKDs. The clinical diagnosis reports and anthropometric measurements regarding height and weight were collected with patient consent.

Sample size (n) was calculated as follows = $z^2 p (1-p)/d^2$. In this study, the sample size for obesity was calculated using prevalence $P = 6.5\%$ ^[17] and confidence level of 95% and the precision of 0.05, by adding 10% nonresponsive rate. The total sample size was $n = 103$. The sample size for obese was 258. Among them, 112 were males and 146 were females. For MS, the sample size was calculated using a 95% confidence level with the margin of error 0.05 and prevalence $P = 20\%$ ^[18] by adding 10% non-responsive rate, the total sample size should be $n = 270$, but a total number of 874 MS subjects included in the study.

Sampling technique and procedure

Laboratory findings

According to the "III Adult Treatment Panel" of the "National Cholesterol Education Program" (NCEP-ATPIII of 2001) principles, MS includes the evaluation of the following risk factors: (1) fasting serum glucose (FBS), (2) TG (triglycerides), and (3) HDL (high-density lipoproteins) with consideration of BMI >30 kg/m² and with systolic pressure > 130 mm Hg and diastolic pressure > 90 mm Hg. According to the National Kidney Foundation (NKF) guidelines (Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, 1997),^[19] the urinary albumin ($\mu\text{g/mL}$) to creatinine (mg/mL) ratios in an untimed urine specimen is a convenient way to assess albumin excretion. Albuminuria is classified based on severity as normal healthy category ACR <30 $\mu\text{g/mg}$ and unhealthy albuminuria category ACR >30 $\mu\text{g/mg}$. Among the 913 subjects, 402 (44%) are unhealthy albuminuria subjects and 511 (56%) are healthy albuminuria subjects.

Physical examination and clinical data

The anthropometric measurements were carried out as per the hospital standard operating procedures, the height was measured using calibrated height meters with subjects standing bare-footed in erect position placing the feet together and weight measured with the calibrated weighing machine. BMI was calculated as weight in kilograms divided by a square of height in meters. Blood pressure (BP) was measure by trained nurses employing a standard mercury sphygmomanometer, while the subject sit in a chair with feet on the floor and arm reinforced elbow is at around heart level. The average of two readings was used

for the analysis. All participants' clinical data related to routine laboratory findings were collected from medical records of the respective hospitals.

Statistical analysis

We performed statistical analysis using the SPSS software package. The results summarized as percentages and as the mean \pm standard deviation (SD). The Pearson chi-square test and Student's *t* test were used to compare the differences between categorical variables. An appropriate condition among each parameter tested using Spearman's correlation coefficient. A value of $P < 0.05$ was considered a statistically significant difference. We calculated odds ratios using a 2x2 table.

Ethical consideration

We conducted this study with the ethical consideration approval got from the institutional review board of

Guntur Medical College and Government General Hospital, Guntur, Andhra Pradesh, India and approved by the Helsinki Declaration. (Application number GMC/IEC/120/2018).

RESULTS

This cross-sectional study performed on 913 randomly selected individuals with the majority (874) participants having MS. Irrespective of their metabolic condition we categorized the total subjects into three different categories. Each time in this study, the total subjects were categorized individually following presence/absence of MS as with MS (95.7%) and without MS (4.3%), similarly with obesity (28%) and without obesity (72%) and with healthy albuminuria (56%) and unhealthy albuminuria (44%). The mean and SD values of the following risk factors such as anthropometric, BP, lipid profile, and blood

Table 1: Comparison of baseline characteristics in, without MS and with MS groups, without MA and with MA groups and without obesity and with obesity groups using Student's *t* test

Risk factor	Metabolic syndrome (MS)				
	Without MS (n = 39)		With MS (n = 874)		P Value
	Mean	SD	Mean	SD	
BMI	25.57	2.08	28.23	4.64	<0.0001*
FBS	91.00	5.69	147.73	50.79	<0.0001*
ACR	18.43	24.27	39.48	44.76	<0.0001*
TGs	112.72	29.74	174.70	89.91	<0.0001*
HDL	39.28	5.32	40.84	5.65	0.07
BP	125.00	16.37	128.26	17.77	0.22
Age	50.56	13.89	50.38	10.48	0.94
Risk factor	Microalbumin (MA)				
	Without MA (albumin < 30) (n = 402)		With MA (albumin > 30) (n = 511)		P Value
	Mean	SD	Mean	SD	
BMI	27.88	4.31	28.42	4.91	0.07
FBS	138.17	46.76	154.39	54.69	<0.0001*
ACR	12.21	7.86	72.09	48.67	<0.0001*
TGs	169.26	89.32	175.61	88.72	0.28
HDL	40.77	5.69	40.79	5.58	0.95
BP	126.75	16.36	129.87	19.18	<0.0001*
Age	50.17	10.25	50.66	11.12	0.48
Risk factor	Obesity				
	Without obesity BMI < 30) n = 655		With obesity (BMI > 30) n = 258		P Value
	Mean	SD	Mean	SD	
BMI	25.87	2.58	33.80	3.55	<0.0001*
FBS	145.62	52.21	144.52	47.95	0.76
ACR	36.68	42.47	43.38	38.58	0.02*
T. Gs	173.65	89.52	168.00	87.92	0.10
HDL	41.00	5.70	40.21	5.45	0.056
B. P	127.45	18.15	129.84	16.48	0.06
Age	50.33	10.92	50.55	9.90	0.77

SD = standard deviation, BMI = body mass index, FBS = fasting blood sugar, ACR= albumin creatinine ratio, HDL = high-density lipoproteins, BP = blood pressure

*P value significant at <0.05

glucose measures are compared and ascertained [Table 1], similarly correlated with each parameter [Table 2].

Among all baseline characteristics, a significant difference was observed between the mean values of BMI, FBS, ACR, and TG in subjects with the prevalence and absence of MS [Tables 1 and 2] and in subjects with MS, albuminuria (ACR) is highly correlated with the incidence of FBS, TG, BP, and age ($P < 0.01$) [Table 2]. However, the frequency albuminuria is high with the FBS, BP, and TG in the study population and seems to be less associated with obesity [Tables 1 and 2] suggesting the least association between albuminuria and overweight. But we found a significant correlation between ACR with obesity in males ($P < 0.05$) [Tables 3 and 4] emphasizing the sexual dimorphism in adipose tissue distribution and associated comorbidities.

DISCUSSION

The occurrence and severity of MS are followed by the association of the sum of critical risk factors that include obesity, hypertension, insulin resistance, dyslipidemia,

and albuminuria. According to CJKN studies and NCEP ATP III, the relationship between kidney damage and MS is complex. It is also in debate whether the collective existence of all the risk factors of MS improves CKD beyond that afforded by individual risk factors. However, very fewer studies have been undertaken to incorporate the coexistence of risk factors associated with MS and CKD. The present study results targeted to recognize and correlate the strong integrated relationship of fasting blood glucose, hyper-triglyceridemia, and high systolic BP the three of the five risk factors of MS in association with albuminuria than each independent risk factor.

In this cross-sectional study, we observed a significant difference in albuminuria in obese and nonobese subjects [Table 1], but we observed gender difference in the association of BMI with albuminuria; BMI had a greater association with ACR in males, whereas in females BMI is not associated with ACR [Tables 3 and 4]. Many studies show that there is a strong, linear relationship between obesity and hypertension. Chang *et al.*^[20] study reported that systolic BP is an independent risk factor of

Table 2: Correlation analysis of each parameter with baseline parameters in subjects with metabolic syndrome ($n = 874$), with unhealthy ACR ($n = 402$), and with obesity ($n = 258$)

With metabolic syndrome							
Risk factor	BMI	FBS	ACR	TGs	HDL	BP	Age
BMI	1.0	0.281	0.104	0.591	0.111	0.087	0.340
FBS	0.281	1.0	0.000*	0.001*	0.051	0.537	0.031*
ACR	0.104	0.000*	1.0	0.008*	0.939	0.001*	0.002*
T.Gs	0.591	0.001*	0.008*	1.00	0.000*	0.468	0.094
HDL	0.111	0.051	0.939	0.000*	1.00	0.150	0.037*
B.P	0.087	0.537	0.001*	0.468	0.150	1.00	0.000*
Age	0.340	0.031*	0.002*	0.094	0.037*	0.000*	1.00
With unhealthy ACR							
Risk factor	BMI	FBS	ACR	TGs	HDL	BP	Age
BMI	1.0	0.965	0.334	0.472	0.159	0.629	0.459
FBS	0.965	1.0	0.000*	0.010	0.658	0.267	0.189
ACR	0.334	0.000*	1.0	0.002*	0.936	0.020	0.000*
T.Gs	0.472	0.010*	0.002*	1.00	0.000*	0.430	0.080
HDL	0.159	0.658	0.936	0.001*	1.00	0.264	0.422
B.P	0.629	0.267	0.020*	0.430	0.264	1.00	0.000*
Age	0.459	0.189	0.000*	0.080	0.422	0.000*	1.00
With obesity							
Risk factor	BMI	FBS	ACR	TGs	HDL	BP	Age
BMI	1.0	0.501	0.232	0.600	0.854	0.130	0.230
FBS	0.501	1.0	0.018*	0.015*	0.767	0.308	0.043*
ACR	0.232	0.018*	1.0	0.003*	0.586	0.711	0.027*
TGs	0.600	0.015*	0.003*	1.00	0.197	0.759	0.820
HDL	0.854	0.767	0.586	0.197	1.00	0.333	0.193
BP	0.130	0.308	0.711	0.759	0.333	1.00	0.002*
Age	0.230	0.043*	0.027*	0.820	0.193	0.002*	1.00

*Correlation is significant at <0.05 level (two tailed)

microalbuminuria in euglycemic normotensive males. Our analysis also confirms this association between obesity and high BP. Yesmin *et al.*^[21] report shows that there is no microalbuminuria in obese women without diabetes and/or hypertension suggesting in obese women and lean women; urinary albumin excretion was similar. A recent study on Japanese hypertensive patients showed that there were sex-related differences in the associations of insulin resistance and obesity to left ventricular hypertrophy.^[22] Also Foster *et al.*^[23] showed that in comparative Framingham heart study microalbuminuria is associated with visceral adipose tissue in men but not in women.

This study reports elucidate that in subjects with MS and unhealthy albuminuria [Table 2], coexistence of three of the five risk factors is strongly associated with the total conditions of the study. Age also shows a positive correlation with albuminuria. With these findings, our data analysis suggests that a gender difference may exist in the association between BMI and albuminuria. The difference might be due to gender-related specifications, such as the role of sex hormones on the inflammatory mechanism that links albuminuria to central obesity or it can be also predicted that the muscle mass in males is more than in females, which can warrant the creatinine levels and gender difference in interpretation.

The gender difference can be partly because of the prevalence of smoking in males, and the absence of

smoking in females. In females, there is a highly significant relationship between anthropometric variables and albuminuria due to potential sex-based divergence in fat distribution pattern and renal outcomes for differential steroid hormone levels. The contradiction may be because of higher upper body adiposity and higher visceral fat for a given BMI in the Asian Indians. The study conducted by Wang *et al.*^[24] on aboriginal people by receiver operating characteristic (ROC) analysis suggested that measuring body size-related diabetes waist circumference is the best method comparing a few more methods of body size measurement.

CONCLUSION

This study shows the relationship between obesity and the risk for CKD by gender-specific examination, which was measured clinically in the form of micro/macroalbuminuria that leads to proteinuria. Our findings suggest that BMI has an association with albuminuria in men showing that obesity calculated as BMI is a risk factor for kidney damage in males with a high prevalence of FBS, BP, TG, and age. However the contradictory results with females demonstrate that obesity calculated as BMI is not a high-risk factor for kidney harm in females, due to an account of gender specific variation in distribution of fat indicating men having a relatively more central allocation of fat giving the fact that male obese with hyperglycemia,

Table 3: Pearson chi-square analysis between risk factors and albuminuria

	Status of microalbumin				X ² (df)	P	phi
	Healthy		Unhealthy				
	N	(%)	N	(%)			
Metabolic syndrome (MS)							
Yes	481	55.0	393	45.0	7.26	0.005*	+0.09
No	30	76.9	9	23.1			
Obesity							
Yes	135	52.3	123	47.6	1.92	0.165	+0.05
No	377	57.4	280	42.6			
Obesity in males							
Yes	54	48.2	58	51.7	4.04	0.04*	+0.09
No	232	58.9	162	41.1			

Computed only for a 2 x 2 table

*Significant at P < 0.05

Table 4: Risk factors of microalbuminuria in the study population

Sex	Risk factors	OR (95% CI)	P Value*
Males	BMI > 30 kg/m ²	1.51(1.033–2.397)	0.03*
Females	BMI > 30 kg/m ²	0.98(0.65–1.47)	0.93
Both genders	FBS > 110 mg/dL	1.865(1.34–2.58)	0.0002*
Both genders	Triglycerides > 150 mg/dL	1.47(1.105–1.957)	0.0082*
Both genders	HDL < 40 mg/dL	0.99(0.746–1.328)	0.976
Both genders	BP > 130 mm Hg	1.29(0.971–1.71)	0.078

OR = odds ratio

*Significant at P < 0.05

hypertension and hypertriglyceridemia are at high risk of developing CKD. The major limitation of this study is that it was conducted by not focusing on dietary patterns of the individuals that might influence the relationship between the severity of obesity and microalbuminuria and ignored alternative methods for the calculation of obesity.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. National Kidney Foundation. K/DOQI clinical practice guidelines for chronic kidney disease: Evaluation, classification, and stratification. *Am J Kidney Dis* 2002;39: S1-S266.
2. Sarnak MJ, Levey AS, Schoolwerth AC, Coresh J, Culleton B, Hamm LL, *et al.*; American Heart Association Councils on Kidney in Cardiovascular Disease, High Blood Pressure Research, Clinical Cardiology, and Epidemiology and Prevention. Kidney disease as a risk factor for development of cardiovascular disease: A statement from the American Heart Association councils on kidney in cardiovascular disease, high blood pressure research, clinical cardiology, and epidemiology and prevention. *Circulation* 2003;108:2154-69.
3. Diercks GF, van Boven AJ, Hillege JL, de Jong PE, Rouleau JL, van Gilst WH. The importance of microalbuminuria as a cardiovascular risk indicator: A review. *Can J Cardiol* 2002;18:525-35.
4. Alberti KG, Zimmet PZ. Definition, diagnosis and classification of diabetes mellitus and its complications. Part 1: Diagnosis and classification of diabetes mellitus provisional report of a WHO consultation. *Diabet Med* 1998;15:539-53.
5. Alberti KG, Eckel RH, Grundy SM, Zimmet PZ, Cleeman JJ, Donato KA, *et al.*; International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; International Association for the Study of Obesity. Harmonizing the metabolic syndrome: A joint interim statement of the international diabetes federation task force on epidemiology and prevention; national heart, lung, and blood institute; American Heart Association; world heart federation; international atherosclerosis society; and international association for the study of obesity. *Circulation* 2009;120:1640-5.
6. Ramkumar N, Cheung AK, Pappas LM, Roberts WL, Beddhu S. Association of obesity with inflammation in chronic kidney disease: A cross-sectional study. *J Ren Nutr* 2004;14:201-7.
7. Deferrari G, Repetto M, Calvi C, Ciabattini M, Rossi C, Robaudo C. Diabetic nephropathy: From micro- to macroalbuminuria. *Nephrol Dial Transplant* 1998;13:11-5.
8. Rosa TT, Palatini P. Clinical value of microalbuminuria in hypertension. *J Hypertens* 2000;18:645-54.
9. Jones CA, Francis ME, Eberhardt MS, Chavers B, Coresh J, Engelgau M, *et al.* Microalbuminuria in the US population: Third national health and nutrition examination survey. *Am J Kidney Dis* 2002;39:445-59.
10. Sun K, Kusminski CM, Scherer PE, Sun K, Kusminski CM, Scherer PE. Adipose tissue remodeling and obesity find the latest version: Review series Adipose tissue remodeling and obesity. *J Clin Invest* 2011;121:2094-101.
11. Tang J, Yan H, Zhuang S. Inflammation and oxidative stress in obesity-related glomerulopathy. *Int J Nephrol* 2012;2012:1-11.
12. Wolf G, Chen S, Han DC, Ziyadeh FN. Leptin and renal disease. *Am J Kidney Dis* 2002;39:1-11.
13. Anil Kumar P, Swathi Chitra P, Bhanuprakash Reddy G. Metabolic syndrome and associated chronic kidney diseases: Nutritional interventions. *Rev Endocr Metab Disord* 2013;14:273-86.
14. Weisinger JR, Kempson RL, Eldridge FL, Swenson RS. The nephrotic syndrome: A complication of massive obesity. *Ann Intern Med* 1974;81:440-7.
15. Hoffmann IS, Jimenez E, Cubeddu LX. Urinary albumin excretion in lean, overweight and obese glucose tolerant individuals: Its relationship with dyslipidaemia, hyperinsulinaemia and blood pressure. *J Hum Hypertens* 2001;15:407-12.
16. Nielsen S, Jensen MD. Relationship between urinary albumin excretion, body composition, and hyperinsulinemia in normotensive glucose-tolerant adults. *Diabetes Care* 1999;22:1728-33.
17. Schwartz GL, Sheps SG. A review of the sixth report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. *Curr Opin Cardiol* 1999;14:161-8.
18. Fouad M, Ismail MI, Gaballah A, Reyad E, ELdeeb S. Prevalence of obesity and risk of chronic kidney disease among young adults in Egypt. *Indian J Nephrol* 2016;26:413-8.
19. Singh AK, Kari JA. Metabolic syndrome and chronic kidney disease. *Curr Opin Nephrol Hypertens* 2013;22:198-203.
20. Chang Y, Yoo T, Ryu S, Huh BY, Cho BL, Sung E, *et al.* Abdominal obesity, systolic blood pressure, and microalbuminuria in normotensive and euglycemic Korean men. *Int J Obes (Lond)* 2006;30:800-4.
21. Yesim TE, Ugurlu S, Caglar E, Balci H, Ucgul A, Sarkis C, *et al.* Investigation of microalbuminuria in nondiabetic, normotensive obese women. *Intern Med* 2007;46:1963-5.
22. Shigematsu Y, Norimatsu S, Ogimoto A, Ohtsuka T, Okayama H, Higaki J. The influence of insulin resistance and obesity on left atrial size in Japanese hypertensive patients. *Hypertens Res* 2009;32:500-4.
23. Foster MC, Hwang SJ, Massaro JM, Hoffmann U, DeBoer IH, Robins SJ, *et al.* Association of subcutaneous and visceral adiposity with albuminuria: The Framingham heart study. *Obesity (Silver Spring)* 2011;19:1284-9.
24. Wang Z, Hoy WE. Body size measurements as predictors of type 2 diabetes in aboriginal people. *Int J Obes Relat Metab Disord* 2004;28:1580-4.

Synthesis and Spectral Characteristics of CoO mixed ZnO-Bi₂O₃-B₂O₃ Glasses

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ABSTRACT

The conventional melt-quench process synthesized bismuth borate glasses containing ZnO and CoO. CoO is introduced up to a maximum of 0.8 mol% by replacing boric acid. All the prepared samples were tested by x-ray diffraction and scanning electron microscopy techniques. Characterization methods confirm the non-crystalline behavior of samples. The density of the samples was found to increase while molar volume diminishes against the content of cobalt oxide. UV-visible spectra have shown the necessary bands of divalent and trivalent cobalt ions. Infrared spectra display all characteristic vibrational bands of different molecular groups. Increasing structural degree of disorder is evidenced from the analyses of results, and details are presented.

Keywords: Bismuth, Borate glasses, Cobalt, Infrared, UV-visible absorption.

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INTRODUCTION

Recently, a large amount of concentration has been paid to explore the spectral features of cobalt ions in different glass systems due to their significant visible and infrared emission that makes them potential materials for non-linear optical absorbers and fast switching devices.^[1-3] When cobalt ions are added with heavy metal oxide like bismuth oxide enables them as prominent candidates for non-linear optical devices. Bi₂O₃ has the characteristic electron pair arrangement that opens pathways for large susceptibility coefficients, in turn, suitability for optical switches solid-state ionic devices.^[4,5] Cobalt ions exhibit divalent and trivalent states, where divalent states give characteristic pink color to the glass samples. Based on the occupation symmetry of 'Co' ions in the fundamental borate structure would result in other colors. B₂O₃ is considered a very good network developer among various glass formers and could form glasses at low temperatures with high transparency.^[6] The borate glass network allows cobalt and zinc ions and causes structural changes by conversion of BO₃ to BO₄ along with non-bridging oxygens (NBOs). The structural degree of disorder is very much linked with oxygens and leads to changes in physical and spectroscopic properties of ZnO-Bi₂O₃-B₂O₃:CoO glasses. Limited numbers of studies are available on spectroscopic features of cobalt ions in zinc bismuth borate glass network. However, most of the investigations were focused on spectral

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features of 'Co' ions in borate glasses, silicate glasses without zinc oxide.^[4,7] Hence, the current investigation is focused at the preparation of ZnO-Bi₂O₃-B₂O₃ glasses doped with cobalt oxide and further characterization by XRD, SEM, absorption, and infrared studies to explore the usability of samples for optical switches applications because of their structural degree of disorder against replacement of zinc oxide by cobalt oxide. Attention is given to cobalt ions' oxidation conditions and their occupational symmetry in the borate glass system.

EXPERIMENTAL METHODS

A specific glass composition ZnO-Bi₂O₃-B₂O₃:CoO has been selected. Composition specifications of samples with their

nomenclature are presented below. The glasses exhibited transparency up to 0.8 mol% of CoO; thereafter, glass nature was present but opaque in nature.

ZC₂: 19.8 ZnO- 25Bi₂O₃-55 B₂O₃: 0.2 CoO

ZC₄: 19.6 ZnO- 25 Bi₂O₃-55 B₂O₃: 0.4 CoO

ZC₆: 19.4 ZnO- 25 Bi₂O₃-55 B₂O₃: 0.6 CoO

ZC₈: 19.2 ZnO- 25 Bi₂O₃-55 B₂O₃: 0.8 CoO

AR grade chemicals of Bi₂O₃, H₃BO₃, ZnO, and CoO powders in suitable amounts (all in mol%) had been very well jumbled using a mortar and liquefied in a platinum crucible withinside the temperature variety of 900 to 980°C in a PID temperature managed furnace for approximately 1 hour. The resultant bubble-free melt was then poured in a brass mold and subsequently annealed at 300°C. After the annealing process, the samples prepared were ground and optical polished to the dimensions of 1 cm × 1 cm × 0.2 cm. Samples' solid-state nature is tested using an X-ray diffractometer with CuK_α radiation. Scanning Electron Microscope is used to verify the morphology of glasses. With Archimedes' principle and using o-xylene (99.99% pure), densities of samples were measured. Infrared transmission spectra were recorded on a JASCO-FT/IR-5300 spectrophotometer up to a resolution of 0.1 cm⁻¹ in the spectral range 400–2000 cm⁻¹ using potassium bromide pellets (300 mg) containing pulverized sample (1.5 mg). These pellets were pressed in a vacuum die at ~680MPa. The absorption spectra spanning from 300 to 1800 nm were carried out with a spectral resolution of 0.1 with a UV-vis-NIR spectrophotometer.

RESULTS AND DISCUSSION

Before proceeding to spectroscopic properties, material features are calculated using experimental density values. Average molecular weight, density, cobalt ion concentration increase with the content of cobalt oxide. It could be due to the replacement of zinc oxide by cobalt oxide, whose molecular weight is higher than that of ZnO. The increase in density is associated explicitly with the cross-linkages with boron groups and other available transition metals along with interstitial positions/vacancies.^[7,8] In another way, the interionic distance and polaron radius exhibited decrement with the rising content of CoO (Table 1). XRD patterns of ZnO-Bi₂O₃-B₂O₃: CoO glasses are shown in Figure 1. All X-ray scans of ZnO-Bi₂O₃-B₂O₃: CoO glasses have exhibited similar patterns, including a significant wide band from 20° to 30° that assures the non-crystalline behavior of glasses. Scanning electron microscopic pictures show no voids.

Table 1: Experimental physical features of ZnO-Bi₂O₃-B₂O₃: CoO samples.

Glass	Avg. Mol. Wt.	Density (g/cm ³)	Conc. of 'Co' ions N _i (10 ²¹ /cm ³)	Inter ionic distance of 'Co' ions r _i (Å)	Polaron radius R _P (Å)
ZC ₂	171.37	4.701	3.31	0.67	0.27
ZC ₄	171.69	4.703	6.59	0.53	0.21
ZC ₆	172.01	4.704	9.88	0.46	0.18
ZC ₈	172.33	4.706	13.15	0.42	0.17

However, tiny crystal granules are presented that could be due to the process of gradual cooling from a molten state to normal condition. The SEM images of two samples are presented in Figures 2 and 3.

UV-Visible-NIR spectra of all glass samples in the range 350 to 1800 nm are carried out. An interesting observation is that the absorption edges of all samples exhibited redshift against CoO content. Every sample has shown relevant bands; one small band in the range 520 to 550 nm assigned to ⁴T_{1g}(F) → ²T_{1g}(H) Co²⁺ ions occupied octahedrally, second peak is in the range 590 to 605 nm attributed to ⁴A₂(⁴F) → ⁴T₁(⁴P) and third peak in the range 1400 to 1450 nm attributing to transition ⁴A₂(⁴F) → ⁴T₁(⁴F) of divalent cobalt ions.^[8] Another noteworthy observation is the very small absorption peak from 710 to 725 nm that could be due to transition ⁵T₂ → ²E corresponding octahedrally occupied trivalent cobalt ions.^[9]

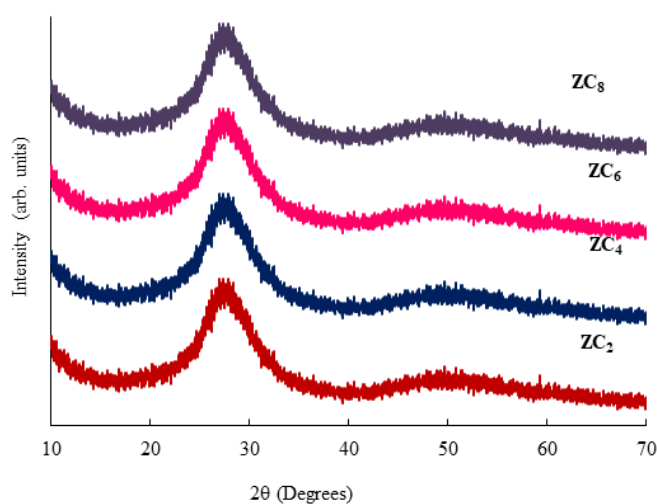


Figure 1: XRD patterns of ZnO-Bi₂O₃-B₂O₃: CoO glasses.

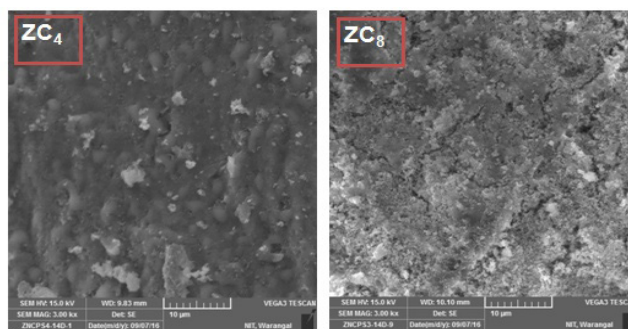
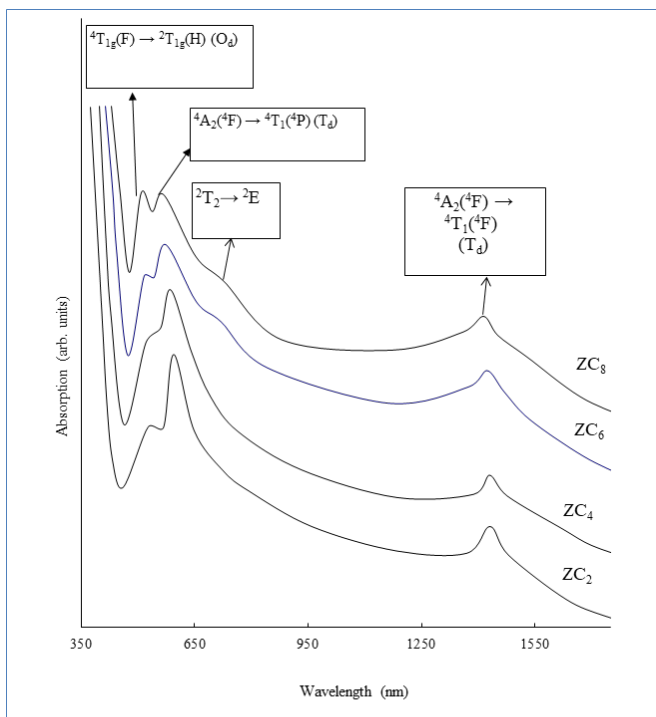


Figure 2: SEM images of ZC₄ and ZC₈ glasses.

Table 2: IR spectral positions of ZnO-Bi₂O₃-B₂O₃: CoO glasses.

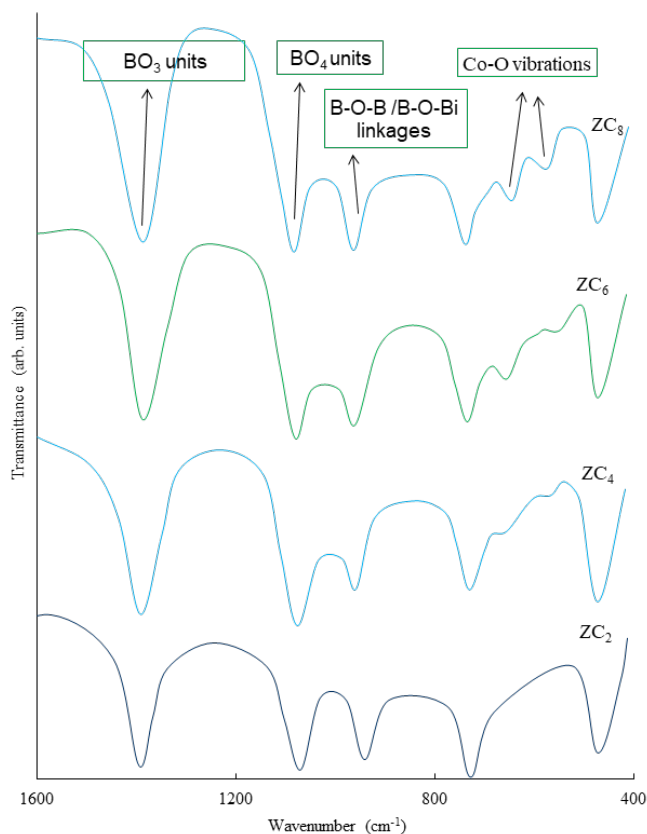
Glass	Borate groups (cm ⁻¹)			Co-O groups (cm ⁻¹)
	BO ₃	BO ₄	B-O-B/B-O-Bi	
ZC ₂	1398	1072	731	---
ZC ₄	1393	1079	733	659, 561
ZC ₆	1386	1084	736	651, 553
ZC ₈	1382	1087	739	640, 549


Figure 3: Optical absorption spectra of ZnO-Bi₂O₃-B₂O₃: CoO glasses recorded at room temperature.

The subsequent two bands were found to decrease at the expense of the first band.

An increasing dopant of CoO has resulted in a decrease in the half-width and the intensity of the bands in the range 590 to 1500 nm, whereas the 550 nm band has risen. These variations confirm the slow conversion of “Co” ions from the triangular pyramid to octahedral regularity. These ions, along with zinc ions, act as modifiers leading to NBOs, causing a blue shift in the bandgap.

Figure 4 depicts the infrared transmittance spectra of ZnO-Bi₂O₃-B₂O₃: CoO glasses. All the samples have evidenced the characteristic bands corresponding to all possible cross-connections among various structural clusters in the glass system. Pertaining to borate groups, BO₃ units in the range 1382 to 1398 cm⁻¹, BO₄ units in the range 1072 to 1087 cm⁻¹, and B-O-B bending vibrations & B-O-Bi in the range 731 to 739 cm⁻¹ are observed.^[10] Two tiny bands in the regions 549 to 561 cm⁻¹ and 640 to 659 cm⁻¹ are observed and attributed to Co-O linkages. The intensity of BO₃, B-O-B / B-O-Bi linkages, and Co-O bands is found to increase while the BO₄ band is found to decrease. The information on vibrational bands is


Figure 4: IR spectra of ZnO-Bi₂O₃-B₂O₃: CoO glass samples.

summarized in Table 2. When the content of CoO is low, i.e., 0.2 mol% (Sample ZC₂), no bands corresponding to Co^{III}-O bands are seen. Another band is located in the range 470 to 480 cm⁻¹ that could be due to impurities or zinc oxide-related vibrational bands.

CONCLUSION

Preparation of ZnO-Bi₂O₃-B₂O₃: CoO glasses were done using the melt quenching method. The XRD studies show the broad halo, which is a characteristic non-crystalline nature. The scanning electron microscopic images indicated irregular shaping of samples. The IR studies have evidenced the presence of different borate, cobalt and bismuth linkages. From the analyses of IR results, it is very clear that the symmetrical structural vibrational groups diminished with the increasing dopant of CoO. The optical absorption spectra confirm conversational occupational symmetry and the



presence of cobalt ions' oxidation states. All the studies were directed to the fact of cobalt ions changing from tetrahedral to octahedral surroundings that might be the reason for more structural degree of disorder.

REFERENCES

- [1] Abhiram. J., Rajaramakrishna. R., Rajashekara. KM, Jagannath. G., Vinayak. P., Venugopal Rao S., Eraiah B., Jagadeesha A.V., Jakrapong, K., and Suchart, K. 2020, Investigation on non-linear optical properties of gold nanoparticles doped fluoroborate Glasses for optical limiting applications, *J. Non-Crys. Solid.*, 538, 120010.
- [2] Johnson. B., Chand. N. R. K., Sudhakar. B. K., and Srinivasa Rao. G., 2016, Chemical durability, thermal stability and spectroscopic studies of the influence of Ni²⁺ ions in oxyfluorophosphate glasses, *J. Mat. Sc.: Mat. Ele.*, 27, pp 8833-8847.
- [3] Abdelghany. A.M., El-Damrawi. G., Oraby. AH, and Madshal. MA, 2018, Optical and FTIR Structural Studies on CoO-Doped Strontium Phosphate Glasses, *J. Non-Crys. Solid.*, 499, pp 153-158.
- [4] Vinaya Teja. P.M., Rajyasree. Ch., Srinivasa Rao. P., Ramesh Babu. A., Tirupataiah. Ch., And Krishna Rao. D, 2012, Structural and electrical properties of ZnF₂-Bi₂O₃-GeO₂ glasses doped with CoO, *J. Mol. Str.*, 1014, pp 119-125.
- [5] Arti Yadav, Dahiya. MS, Hooda. A., Agarwal. A. and Khasa., 2018, Nano-Crystalline phase evolution and structural modification in Co/V substituted Li₂O-Bi₂O₃-B₂O₃ glasses, *AIP Conf. Proc.*, 1953, 090008.
- [6] Satyanarayana. T., Gandhi. Y., Valente. A., Kityk. IV and Veeraiah. N., 2011, Influence of titanium ions on spectroscopic properties of TeO₂-Sb₂O₃-B₂O₃: TeO₂ glass ceramics, *Phys. Status Solidi C*-John Wiley & Sons, 11-12, pp 3082-3086.
- [7] Satyanarayana. T., Valente. M.A., Nagarjuna. G., and Veeraiah. N., 2013, Spectroscopic Features of manganese doped tellurite borate glass ceramics, *J. Phys. Chem. Solids*, 74, pp 229-235.
- [8] Sallum. O.I., Abdel Galil. A., Moussa. NL, 2021, Optimizing of optical and structure Characters of borate glasses by different concentration of CoO: Electron beam irradiation dosimetry, *Mater. Chem. Phys.*, 269, 124767.
- [9] Satyanarayana. T., Kityk. I.V., Piasecki. M., Brik. M. G., Gandhi. Y., and Veeraiah. N. 2009, Structural investigations on PbO-Sb₂O₃-B₂O₃: CoO glass-ceramics by means of spectroscopic and dielectric studies. *J. Phy. Cond. Mat. (IOP-London)*, 21, 245104.
- [10] Ravi Kumar. G., Srikumar. T., Rao. M. C., Venkat Reddy. P., and Srinivasa Rao. Ch., 2018, Influence of cobalt ions on spectroscopic and dielectric properties of Sb₂O₃ doped lithium fluoroboro phosphate glasses, *Mater. Res. Exp.*, 5, 035203.



HPLC Identification of active flavonoid and phenolic compounds from leaf extracts of *Diospyros chloroxylon* Roxb.

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Abstract

Diospyros is the most versatile genus belonging to family Ebenaceae. It comprises more than 500 species distributed in tropical and warm temperate regions of the world. These species have been used in the traditional medical systems of several countries. Therefore, the *Diospyros* species drawn the attention of research investigators to analyze their phytochemical profile and biological activities. The present study relates to phytochemical screening of *Diospyros chloroxylon* leaf extracts through HPLC technique. Twelve phenolic and flavonoid compounds (*viz.*, (1) Apigenin-6, 8-di-C-glucopyranoside (2) Kaempferol-3, 7-di-O-rhamnosid (3) Kaempferol-7-O-rhamnoside (4) Isorhamnetin (5) Isorhamnetin-3-O-dihexoside (6) Scutellarein-7-O-β-D-glucopyranoside (7) gallic acid (8) Quercetin (9) Kaempferol (10) Rutin (11) (-) epigallocatechine and (12) Epicatechin gallate) were identified in the aqueous and methanolic leaf extracts of *Diospyros chloroxylon*. The above compounds confirm the medicinal potential of *Diospyros chloroxylon* and emphasizes the need of further pharmacological studies in this species.

Keywords: phenolics, flavonoids, HPLC protocols, medicinal plants, pharmacological importance

Introduction

Plants contain the bioactive compounds useful in many biological activities (Rahman *et al* 2018) [16]. Flavonoids are an important antioxidant agents. Phenolic compounds are the most commonly occurring group of phytochemicals and play a potential protective role against various kinds of oxidative diseases *viz.*, antimutagenicity, anti-bacterial action, antiviral activity, anti-inflammatory and apoptotic actions (Glucin *et al* 2010 & 2011) [5, 6]. Natural flavonoids and phenols exhibited many protective therapeutic potential against dreadful diseases. Flavonoids present in fruits and leafy vegetables are responsible for useful health benefits through radical scavenging and chelating activity. Several studies have suggested that rutin, kaempferol, quercetin, apigenin etc., are well-known for their anti-inflammatory, anti-allergic, anti-thrombotic, hepatoprotective, anti-spasmodic and anticancer properties (Mahesh Kumar & Kerti 2012) [13]. The chromatographic techniques such as high performance liquid chromatography (HPLC), gas chromatography (GC), capillary electrophoresis (CE), nuclear magnetic resonance (NMR) and mass spectrometry have led to the identification of multitude of bioactive ingredients from many plant species (Sasidharan *et al* 2011, Katiyar *et al* 2012) [19, 8]. In recent times 'High performance liquid Chromatography (HPLC)' gained prominence for the analysis of plant extracts. This led to increasing interest in the isolation, identification and study of the biological activities of natural compounds. HPLC allows a high resolution rapid and reproducible determination of trace amounts of these compounds. The different naphthoquinones, anthroquinones, terpenoids, phenolic acids and flavonoids have been identified from *Diospyros* species (Rauf *et al* 2017) [17]. Because of the antioxidant, hepatoprotective, anti-inflammatory, analgesic, antipyretic, antihypertensive,

antidiabetic, neuroprotective, antimicrobial, antiprotozoal, fungicidal, antihelminthic, insecticidal, molluscidal, cytotoxicity, anti-tumor, multi drug resistance (MDR) reversal activities reported in *Diospyros* genus, the species have ever been considered as the most important medicinal species. Hence, the present study is aimed at the identification of some biological compounds (*i.e.*, phenolics and flavonoids) from methanolic and aqueous leaf extracts.

Material and methods

HPLC instrument

Agilent 1100 series HPLC with Quaternary G1311 A pump, COLCOM G1316A thermostat column temperature control, Thermostatic auto sampler G 1329A with sample volume of 0.1 – 1500 μL and variable programmable UV detector G 1314 A. The instrument was operated and integrated with Agilent chem. station LC software. High Performance Liquid Chromatographic (HPLC) protocols of Zang *et al* (2010) [23], Sait *et al* (2015) [18] and Hilal Bardakci *et al* (2018) [7] were used to identify different flavonoids in the aqueous leaf extracts of *Diospyros chloroxylon*. The HPLC protocols standardized by Adriana Skendi *et al* (2017) [2], Gini & Jothi (2018) [4] and Nadia Zeghad *et al* (2019) [14] were used for the identification of phenolic compounds in the methanolic leaf extracts of *Diospyros chloroxylon*.

Identification of flavonoid compounds through HPLC

Chemicals and Solvents

HPLC Grade Methanol is purchased from Thermo Fisher Scientific India private limited, Mumbai.

HPLC Grade Acetonitrile is purchased from Merck chemicals private limited, Mumbai.

HPLC Grade Water is purchased from Thermo Fisher Scientific India private limited, Mumbai other chemicals

used were of Laboratory reagent grade and were purchased from Merck chemicals, Mumbai.

Test method 1 (Zang *et al* 2010) [23].

Column: ZORBAX ODS C18 column (4.6 × 12.5 mm id, 5 μm).

Mobile phase: solvent A (0.1% formic acid aqueous, V/V, pH 2.6) and solvent B (acetonitrile).

Gradient program

0-10 min, linear gradient 10.0%-20.0% B; 10-20 min, isocratic 20.0% B 20-25 min, linear gradient 20.0%-30.0% B; 25-35 min, linear gradient 30.0%-33.0% B 35-40 min, linear gradient 33.0%-40.0% B; 40-60 min, linear gradient 40.0%-60.0% B

Mobile phase flow rate: 0.8 mL·min⁻¹;

Sample volume: 20 μL; **Column temperature:** 30°C;

Detector wavelength: 254 nm

Test method 2 (Sait *et al* 2015) [18].

Column: Ascentis C18 column (250 mm×4.6 mm I.D., 5 μm).

Mobile phase: (A) 0.1M HCOOH in H₂O and (B) ACN.

Gradient program

0-15 min from 10% to 20% B; 15-35 min from 20% to 30% B; 35-45 min from 30% to 50% B

Mobile phase flow rate: 1.0 mL·min⁻¹

Sample volume: 20 μL;

Column temperature: 30°C;

Detector wavelength: 352 nm

Test method 3 (Hilal Bardakci *et al* 2018) [7].

Column: zorbax C18column (4.6 × 150 mm, 3.5 μm).

Mobile phase: Phase A was H₂O, the mobile phase B was ACN both containing 0.02% acetic acid.

Gradient program

0 min 15% B; 10 min 20% B; 13 min 20% B; 15 min 25%B; 20 min 30% B; 25 min 30% B; 30 min 50% B.

Mobile phase flow rate: 1.0 mL·min⁻¹; **Sample volume:** 20 μL; **Column temperature:** 30°C

Detector wavelength: 340 nm

Identification of phenolic compounds through HPLC

Chemicals and Solvents

HPLC Grade Methanol is purchased from Thermo Fisher Scientific India private limited, Mumbai.

HPLC Grade Acetonitrile is purchased from Merck chemicals private limited, Mumbai.

HPLC Grade Water is purchased from Thermo Fisher Scientific India private limited, Mumbai.

Other chemicals used were of Laboratory reagent grade and were purchased from Merck chemicals, Mumbai.

Test method 1 (Gini and Jothi 2018) [4]

Column: ZORBAX ODS C18 column (4.6 × 12.5 mm id, 5 μm).

Mobile phase: Solvent A (acetonitrile) and solvent B (0.1% phosphoric acid in water).

Gradient program

92% of solvent B and was held at this concentration for 0–35 min, by 78% of solvent B for the next 35–50 min.

Mobile phase flow rate: 1.0 mL·min⁻¹;

Sample volume: 20 μL; **Column temperature:** 30°C

Detector wavelength: 280 nm,

Test method 2 (Adriana Skendi *et al* 2017) [2]

Column: Ascentis C18 column (250 mm×4.6 mm I.D., 5 μm); **Mobile phase:** (A)1% acetic acid in water, (B) acetonitrile and (C) methanol.

Gradient program

0 min, the A: B: C proportion was 90:0:0; 10 min, 80:4:16; at 25 min, 75:5:20; 30 min, 65:5:30; 31 min, 40:0:60;37 min, 35:20:45;50 min, 20:80:0.

Mobile phase flow rate: 1.5 mL·min⁻¹; **Sample volume:** 20 μL; **Column temperature:** 30°C

Detector wavelength: 260 nm

Test method 3 (Nadia Zeghad *et al* 2019) [14]

Column: ZORBAX ODS C18 column (4.6 × 12.5 mm id, 5 μm).

Mobile phase: Trifluoroacetic acid 0.05% (v/v) in water to which methanol was added in a linear gradient from 95:5 to 5:95 (v/v) within 70 min.

Mobile phase flow rate: 1.0 mL·min⁻¹; **Sample volume:** 20 μL; **Column temperature:** 30°C,

Detector wavelength: 280 nm.

Results

The aqueous leaf extracts of *Diospyros chloroxylon* when subjected to HPLC method of Zang *et al* (2010) [23] resulted in the identification of four compounds. Figure 1 shows the chromatogram of leaf extract with 10 peaks. These peaks along with their retention time were compared with the retention time of flavonoid compounds available in literature. Peak number 4, 6, 8 and 10 were corresponded to Apigenin-6, 8-di-C-glucopyranoside (RT: 13.233 min), Kaempferol- 3, 7-di-O-rhamnoside (RT: 20.65 min), Kaempferol-7-O-rhamnoside (RT: 34.583 min) and Isorhamnetin (RT: 44.167) (table 1).

The chromatogram of aqueous leaf extract of *Diospyros chloroxylon* as per the protocol of Sait *et al* (2015) [18] gave seven peaks of which peak number four tallied with Isorhamnetin-3-O-dihexoside (RT: 18.33 min) and peak number seven was tallied with 'Isorhamnetin' (RT: 44.23 min) in the literature (Fig 2 & Table 2).

The chromatogram obtained with the leaf aqueous extract as per the protocol of Hilal Bardakci *et al* (2018) [7] is presented in figure 3. In the chromatogram six peaks were observed, of which peak number three (RT 10.56 min) was tallied with 'Scutellarein 7-O-β-D-glucopyranoside' (table 3). Hence, by the application of three different HPLC protocols to the leaf aqueous extracts of *Diospyros chloroxylon*, a total of six flavonoid compounds were identified in the leaf of *Diospyros chloroxylon* that include (i) Apigenin-6, 8-di-C-glucopyranoside (ii) Kaempferol- 3, 7-di-O-rhamnoside (iii) Kaempferol-7-O-rhamnoside (iv) Isorhamnetin (v) Isorhamnetin-3-O-dihexoside and (vi) Scutellarein 7-O-β-D-glucopyranoside (Table 4).

Methanolic leaf extracts of *Diospyros chloroxylon* were also analysed as per the HPLC protocol of Adriana Skendi *et al* (2017) [2]. The chromatogram exhibited nine peaks (figure 4), out of which peak one (Gallic acid RT: 4.5 min), peak three ((-) epigallocatechine RT: 10.0667 min), peak six (Rutin RT: 33.5667 min), peak seven (Quercetin RT:

35.6667 min) and peak eight (Kaempferol RT: 37.90 min) were identified with the help of data available in literature (Table 5). Methanolic leaf extracts of *Diospyros chloroxyylon* were subjected to HPLC analysis through the protocol developed by Gini & Jothi (2018) [4]. Figure 5 shows the chromatogram with eight (8) peaks out of which peak number two (Gallic acid RT: 5.983 min) and four (Quercetin RT: 13.8 min) were confirmed from the literature data (Table 6). The protocol of Nadia Zeghad *et al* (2019) [14] when used to the methanolic leaf extracts of *Diospyros chloroxyylon* resulted in the identification of gallic acid and epicatechin gallate (Fig 6 & Tables 7). Hence, by the application of three different HPLC protocols to the aqueous leaf extracts of *Diospyros chloroxyylon*, a total of six phenolic compounds were identified in the leaf that include (i) Gallic acid (ii) quercetin (iii) (-) -epigallocatechine (iv) rutin (v) kaempferol and (vi) epicatechin gallate (Table 8).

The adaption of six different HPLC protocols for aqueous and methanolic leaf extracts of *Diospyros chloroxyylon* resulted in the identification of twelve different (phenolic and flavonoid) compounds in the leaf of *Diospyros chloroxyylon* Roxb, which include (1) Apigenin-6, 8-di-C-glucopyranoside (2) Kaempferol- 3, 7-di-O-rhamnosid (3) Kaempferol-7-O-rhamnoside (4) Isorhamnetin (5) Isorhamnetin-3-O-dihexoside (6) Scutellarein-7-O-β-D-glucopyranoside (7) gallicacid (8) Quercetin (9) Kaempferol (10) Rutin (11) (-) epigallocatechine and (12) Epicatechin gallate

Discussion

The phenolic and flavonoid compounds identified now from leaf of *Diospyros chloroxyylon* were earlier found in the other *Diospyros* species. These compounds were considered as more important since they control many biological activities. Madlener *et al* (2007) [12] reported the anticancer activity of gallic acid. Vaquero *et al* (2007) [21] reported

antimicrobial activity of quercetin, rutin and gallic acid isolated from different wine varieties. Li & Xu (2008) [10] also reported antimicrobial activity of quercetin. Zhang *et al* (2008) [24] studied the activities of kaempferol and quercetin isolated from straw berry. Kaempferol was found to inhibit the growth of ovarian cancer cell lines (Luo *et al* 2009) [11]. They noticed the inhibitory activity against human oral, colon and prostate cancer cell lines. The quercetin, kaempferol, rutin and gallic acid isolated from *Zingiber officinale* were shown to inhibit the growth of human breast cancer cell lines (Ghasemzadeh & Jaafar 2011) [3]. Polyphenolics *viz.*, epigallocatechine and catechins usually from wine extracts are with anti-cancer activity (Weisburg *et al* 2004) [22]. Catechins are bioactive molecules that provide protection from various ailments (Suzuki *et al* 2005) [20]. The epicatechin gallate, epigallocatechine and gallic acid were previously isolated from highly valued multi-purpose persimmon *i.e* *Diospyros kaki*. The above catechins were also reported by Achiwa *et al* (1997) [1] as possessed anticancer perspectives against various cancer cell lines. Park *et al* (2006) [15] reported that the catechins, kaempferol and quercetin from *Diospyros kaki* were with free radical scavenging and anti lipid peroxidation activity. Khaled Nabih Rashed *et al* (2013) [9] isolated kaempferol-3-O-α-rhamnoside, kaempferol, gallic acid and quercetin from *Diospyros lotus* and described it as a repertoire of phytochemicals beneficial to human health.

The important flavonoids and phenolic compounds identified now in *Diospyros chloroxyylon* underline that it is also highly valued species containing many valuable bioactive molecules. The leaf of *Diospyros chloroxyylon* might play a potential role for the preparation of herbal drugs to mitigate oxidative stress created health ailments. Further pharmacological investigations are required to understand the biological activities of the compounds now in *Diospyros chloroxyylon*.

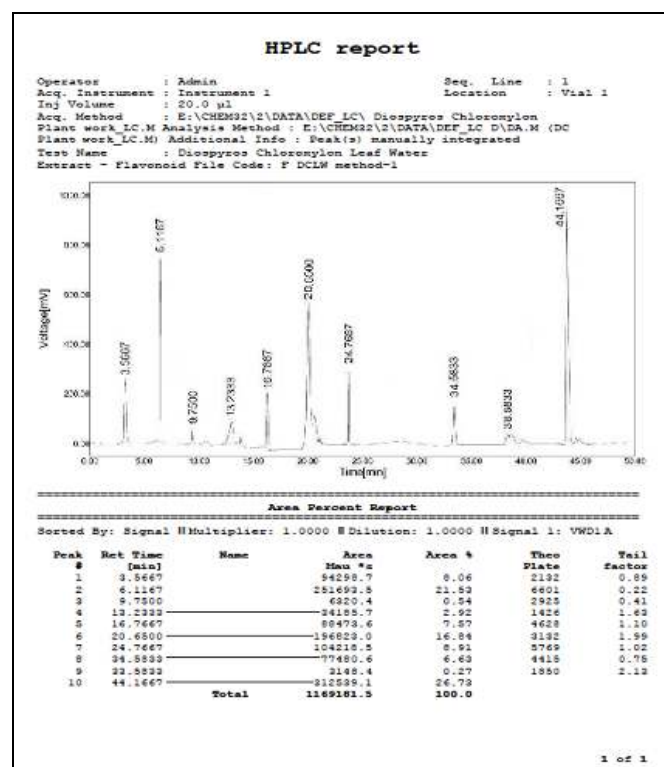


Fig 1: HPLC chromatogram of *Diospyros chloroxyylon* leaf aqueous extract showing peaks of flavonoid compounds (method-1: Zang *et al* 2010) [23].

Table 1: Flavonoids compounds identified from *Diospyros chloroxylon* Leaf aqueous extract (Method -1: Zang *et al* 2010) [23].

Peak. No	Ret Time [min]	Name identified
1	3.5667	-----
2	6.1167	-----
3	9.7500	-----
4	13.2333	Apigenin-6, 8-di-C glucopyranoside
5	16.7667	-----
6	20.6500	kaempferol- 3, 7-di-O-rhamnoside
7	24.7667	-----
8	34.5833	kaempferol-7-O-rhamnoside
9	33.5833	-----
10	44.1667	Isorhamnetin

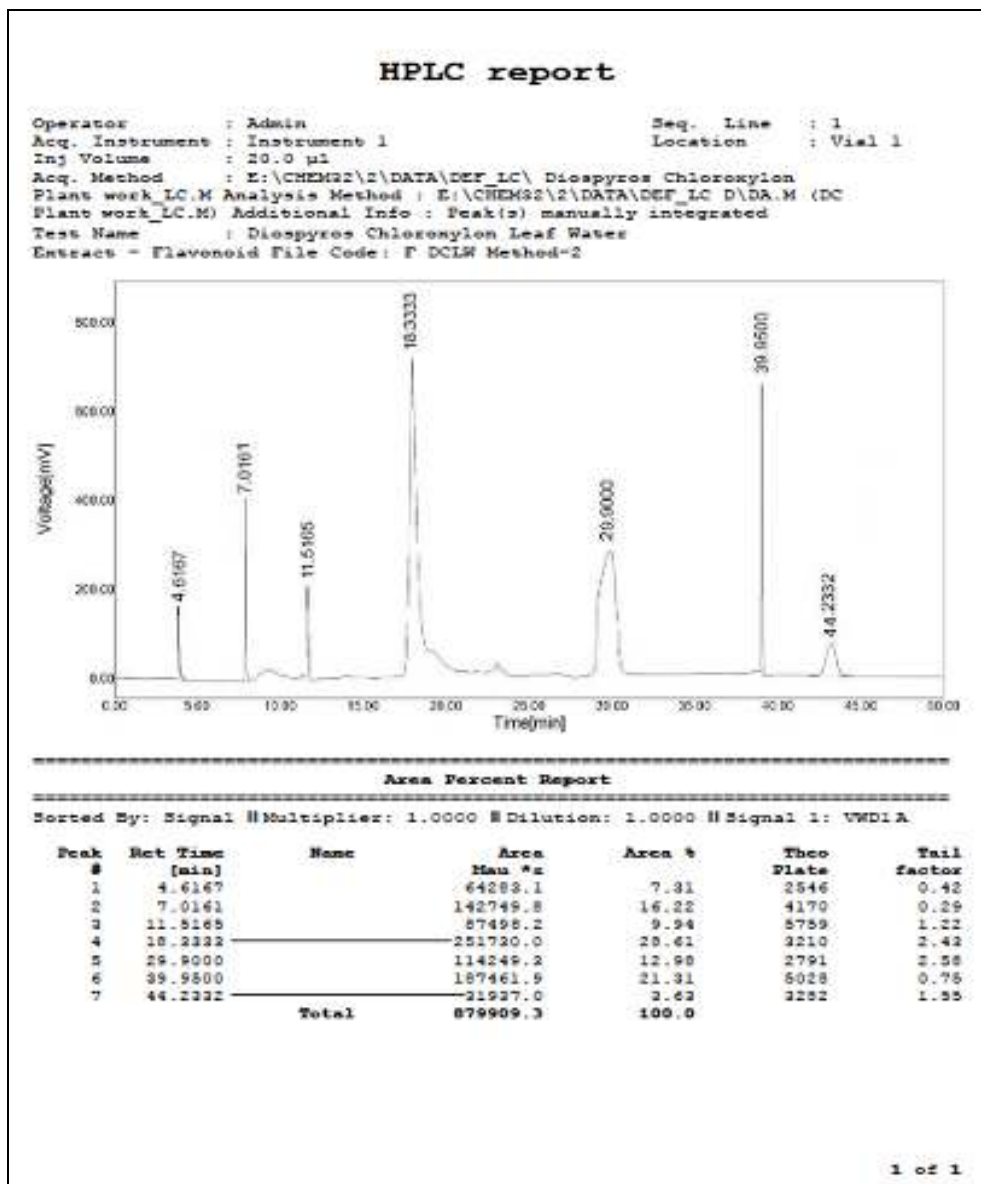


Fig 2: HPLC chromatogram of *Diospyros chloroxylon* leaf aqueous extract showing peaks of flavonoid compounds (method-2: Sait *et al* 2015) [18].

Table 2: Flavonoids compounds identified from *Diospyros chloroxylon* Leaf aqueous extract (Method-2: Sait *et al* 2015) [18]

Peak. No	Ret Time [min]	Name identified
1	4.6167	-----
2	7.0161	-----
3	11.5165	-----
4	18.3333	Isorhamnetin-3-O-dihexoside
5	29.9000	-----
6	39.9500	-----
7	44.2332	Isorhamnetin

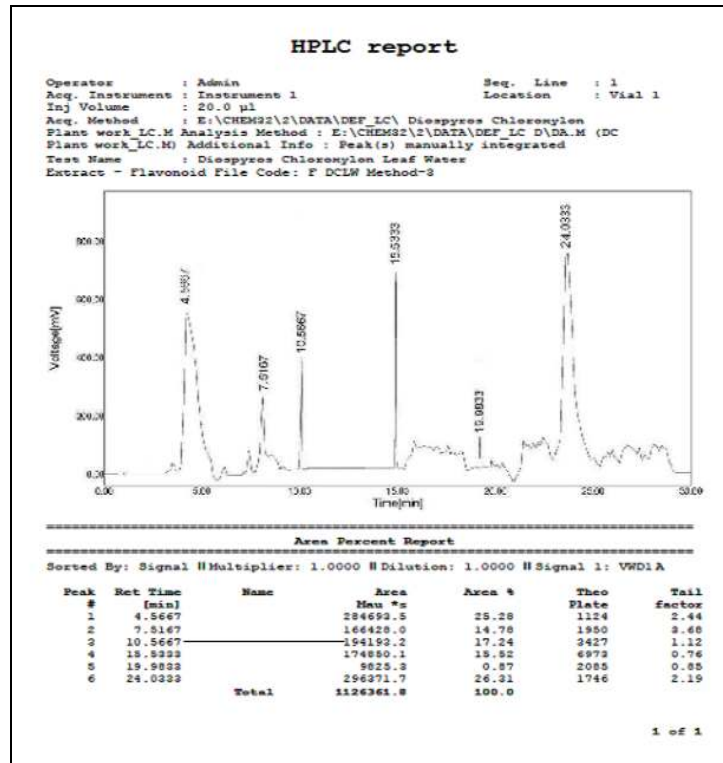


Fig 3: HPLC chromatogram of *Diospyros chloroxylon* leaf aqueous extract showing peaks of flavonoid compounds (method-3: Hilal Bardakci *et al* 2018) [7]

Table 3: Flavonoid compounds identified from *Diospyros chloroxylon* Leaf aqueous extract (Method-3: Hilal Bardakci *et al* 2018) [7]

Peak. No	Ret Time [min]	Name identified
1	4.5667	-----
2	7.5167	-----
3	10.5667	Scutellarein 7-O-β-D-glucopyranoside
4	15.5333	-----
5	19.9833	-----
6	24.0333	-----

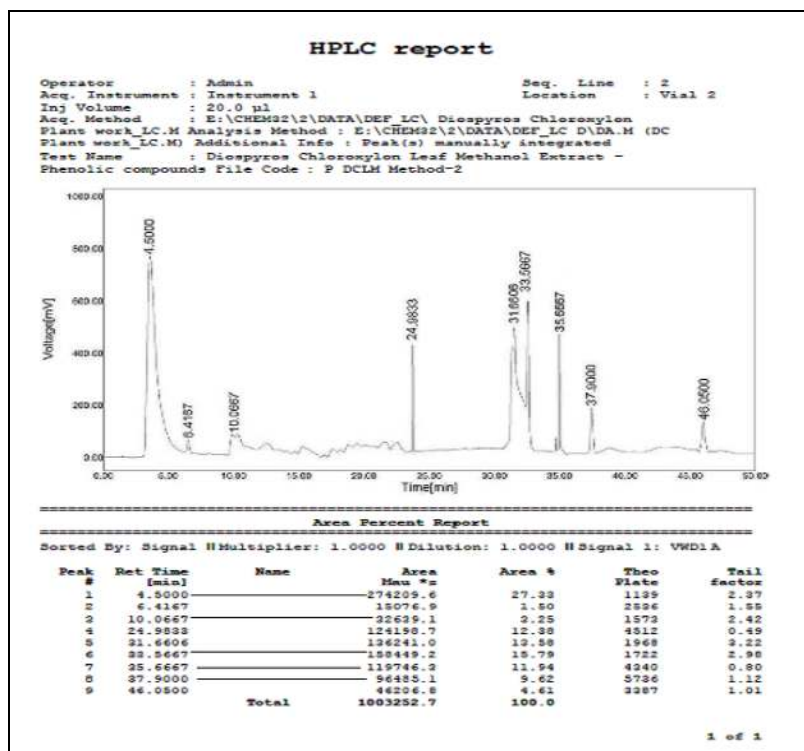


Fig 4: HPLC chromatogram of *Diospyros chloroxylon* leaf methanolic extract showing peaks of phenolic compounds (method-2: Adriana Skendi *et al* 2017) [2].

Table 4: Phenolic compounds identified from *Diospyros chloroxylyon* leaf methanol extract by the method of (Method -2) Adriana skendi *et al* 2017 [2].

Peak. No	Ret Time [min]	Name identified
1	4.5000	Gallic acid
2	6.4167	-----
3	10.0667	(-)-epigallocatechine
4	24.9833	-----
5	31.6606	-----
6	33.5667	Rutin
7	35.6667	Quercetin
8	37.9000	Kaempferol
9	46.0500	-----

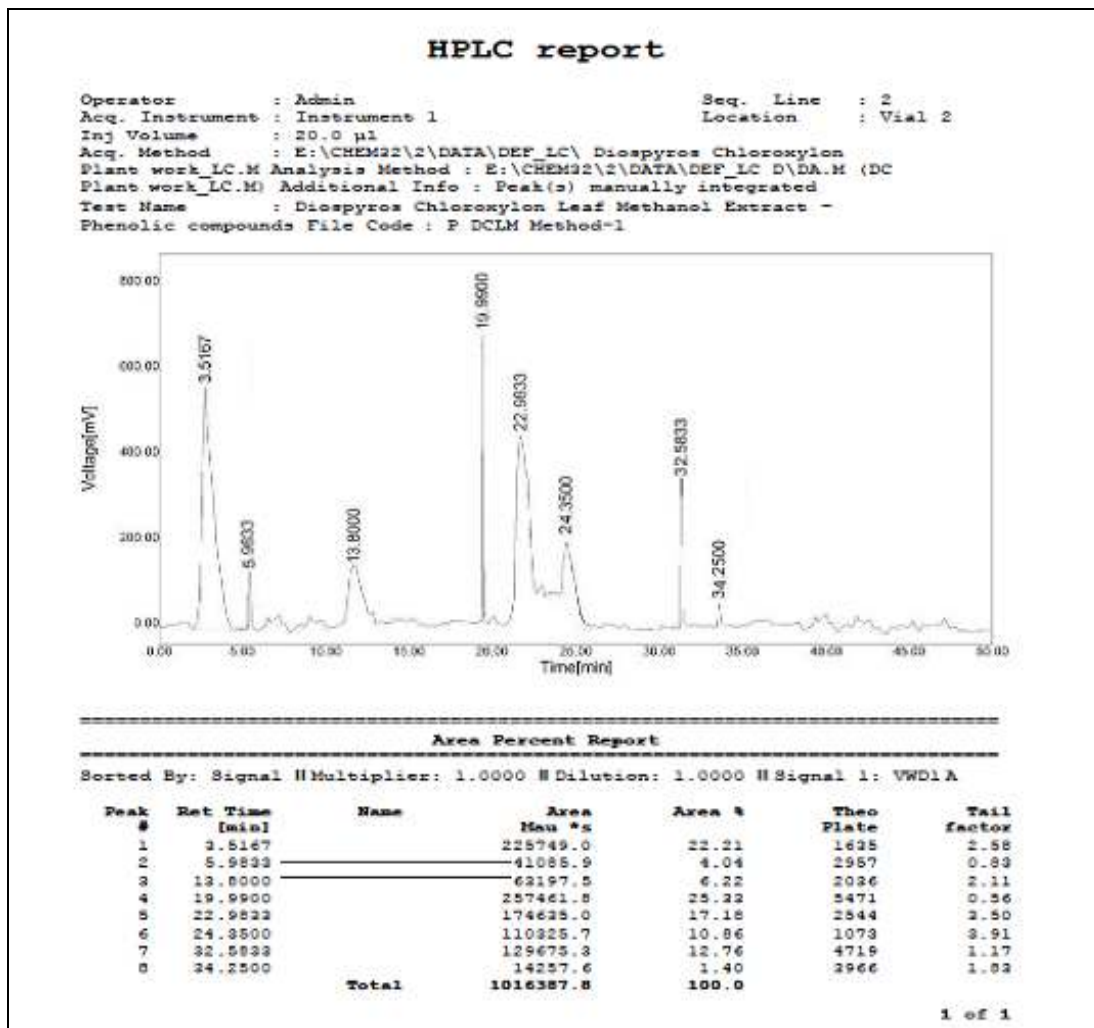


Fig 5: HPLC chromatogram of *Diospyros chloroxylyon* leaf methanolic extract showing peaks of phenolic compounds (method-1: Gini TG and Jeya Jothi G 2018) [4].

Table 5: Phenolic compounds identified from *Diospyros chloroxylyon* leaf methanol extract by the method of (Method-1) Gini and Jeya Jothi 2018 [4]

Peak. No	Ret Time [min]	Name identified
1	3.5167	-----
2	5.9833	Gallic acid
3	13.8000	Quercetin
4	19.9900	-----
5	22.9833	-----
6	24.3500	-----
7	32.5833	-----
8	34.2500	-----

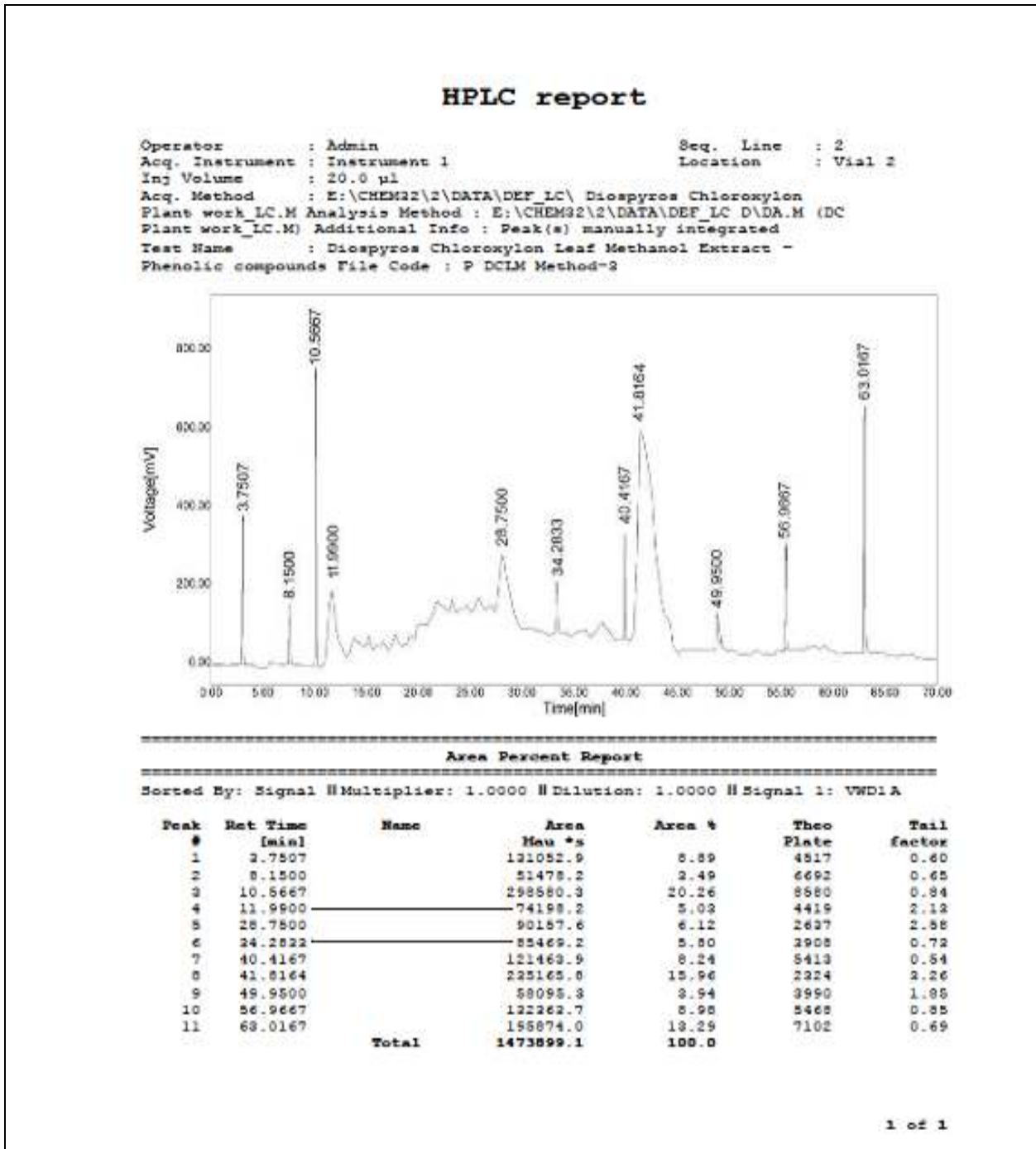


Fig 6: HPLC chromatogram of *Diospyros chloroxylyon* leaf methanolic extract showing peaks of phenolic compounds (method- 3: Nadia Zeghad et al 2019) [14]

Table 6: Phenolic compounds identified from *Diospyros chloroxylyon* leaf methanol extract by the method of (Method-3) Nadia Zeghad et al 2019 [14]

Peak. No	Ret Time [min]	Name identified
1	3.7507	-----
2	8.1500	-----
3	10.5667	-----
4	11.9900	Gallic acid
5	28.7500	-----
6	34.2833	Epicatechin gallate
7	40.4167	-----
8	41.8164	-----
9	49.9500	-----
10	56.9667	-----
11	63.0167	-----

Table 7: HPLC identification of different flavonoid compounds in *Dispyros chloroxylyon* Roxb leaf aqueous extract (consolidated from Zang et al 2010 [23]; Sait et al 2015 [18]; Hilal Bardakci et al 2018) [7].

Peak. No	Name of the flavonoid compound	RT in Min
Method-1 (Zang et al 2010) [23]		
4	Apigenin-6, 8-di-C-glucopyranoside	13.233
6	kaempferol- 3, 7-di-O-rhamnoside	20.6500
8	kaempferol-7-O-rhamnoside	34.5833
10	Isorhamnetin	44.1667
Method-2 (Sait et al 2015) [18]		
4	Isorhamnetin-3-O-dihexoside	18.333
7	Isorhamnetin	44.2332
Method-3 (Hilal Bardakci et al 2018) [7]		
3	Scutellarein 7-O-β-D-glucopyranoside	10.5667

Table 8: HPLC identification of different phenolic compounds in *Diospyros chloroxydon* Roxb. leaf methanolic extract (consolidated from Gini and Jeya Jothi 2018^[4]; Adriana skendi *et al* 2017^[2]; Nadia Zeghad *et al* 2019)^[14]

Peak. No	Name of the phenolic compound	RT in Min
Method-1 (Gini TG and Jeya Jothi G 2018) ^[4]		
2	Gallic acid	5.9833
3	Quercetin	13.8000
Method-2 (Adriana Skendi <i>et al</i> 2017) ^[2]		
1	Galic acid	4.5000
3	(-)-epigallocatechine	10.0667
6	Rutin	33.5667
7	Quercetin	35.6667
8	Kaempferol	37.9000
Method-3 (Nadia Zeghad <i>et al</i> 2019) ^[14]		
4	Gallic acid	11.9900
6	Epicatechin gallate	34.2833

References

- Achiwa Y, Hibasami H, Katsuzaki H, Imai K, Komiya T. Inhibitory effects of persimmon (*Diospyros kaki*) extract and related polyphenol compounds on growth of human lymphoid leukemia cells. *J. Biosci. Biotechnol. Biochem*,1997;61:1099-1101.
- Adriana Skendi, Maria Irakli, Paschalina Chatzopoulo. Analysis of phenolic compounds in Greek plants of Lamiaceae family by HPLC. *J. Appli. Rese. on Medi. and Aromatic Plants*,2017;6:62-69
- Ghasemzadeh A, Jaafar HZE. Anticancer and antioxidant activities of Malaysian young ginger (*Zingiber officinale* Roscoe) varieties grown under different CO₂ concentration. *J. Med. Plant Res*,2011;5(14):3247-3255
- Gini TG, Jeya Jothi G. Column chromatography and HPLC analysis of phenolic compounds in the fractions of *Salvinia molesta* Mitchell, Egypton. *J. Basic and Applied Sci*,2018;5(3):197-203
- Gulcin I, Bursal E, Sehitoglu MH, Bilsel M, Goren A. Polyphenol contents and antioxidant activity of lyophilized aqueous extract of propolis from Erzurum, Turkey, *Food Chem. Toxicol*,2010;48:2227-2238.
- Gulcin I, Topal F, Cakmakci R, Bilsel M, Goren AC, Erdogan U. Pomological features, nutritional quality, polyphenol content analysis and antioxidant properties of domesticated and three wild ecotype forms of raspberries (*Rubus idaeus* L.), *J. Food Sci*,2011;76:C585-C593.
- Hilal Bardakci, Ebru Turkoz Acar, Hasan Kırmızıbekmez. Simultaneous quantification of six flavonoids in four *Scutellaria* taxaby HPLC-DAD method. *J. Revista Brasileira de Farmacognosia*,2018;29:17-23
- Katiyar C, Gupta A, Kanjilal S, Katiyar S. Drug discovery from plants sources an integrated approach. *J. Ayu*,2012;33:10-19
- Khaled Nabih Rashed, Randy Chi Fai Cheung, Tzi Bun Ng. Bio-active phytoconstituents from non-polar extracts of *Diospyros lotus* stems and demonstration of antifungal activity in the extracts. *World. J. Pharmaceuti. Sci*,2013;1(4):99-108
- Li M, Xu Z. Quercetin in a lotus leaves extract may be responsible for antibacterial activity. *J. Arch. Pharm. Res*,2008;31:640-644
- Luo H, Rankin GO, Liu L, Daddysman MK, Jiang BH, Chen YC. Kaempferol inhibits angiogenesis and VEGF expression through both HIF dependent and independent pathways in human ovarian cancer cells. *J. Nutr. Cancer*,2009;61:554-563
- Madlener G, Bennett R, Bisignano G, Trombetta D, Saija A, Faulds C, et al. Antimicrobial activity of flavonoids extracted from bergamot (*Citrus bergamia* Risso) peel, a byproduct of the essential oil industry. *J. Appl. Microbiol*,2007;103:2056-2064
- Mahesh kumar SK, Kirti SL. Determination of total flavonoids content and quantification of rutin in *Momordica tuberosa* (Roxb) Cogn. fruits by RP-HPLC. *Asian Journal of Traditional Medicines*,2012;7:220-25.
- Nadia Zeghad, Ejaz Ahmed, Abdelmalik Belkhiri, Yvan Vander Heyden, Kristiaan Demeye. Antioxidant activity of *Vitis vinifera*, *Punica granatum*, *Citrus aurantium* and *Opuntia ficusindica* fruits cultivated in Algeria. *J. Heliyon*,2019;5:e01575. <https://doi.org/10.1016/j.heliyon.2019.e01575>
- Park YS, Jung ST, Kang SG, Delgado-Licon E, Ayala ALM, Tapia MS. Drying of persimmons (*Diospyros kaki* L.) and the following changes in the studied bioactive compounds and the total radical scavenging activities. *J. LWT-Food Sci. Technol*,2006;039:748-755
- Rahman TU, Zeb MA, Liaqat W, Sajid M, Hussain S, Choudhary MI. Phytochemistry and pharmacology of genus *Indigofera*: a review, *Rec. Nat. Prod*,2018;12:1-13.
- Rauf A, Uddin G, Patel S, Khan A, Halim SA, Bawazeer S. *Diospyros*, an under-utilized, multi-purpose plant genus: A review. *J. Biomed. Pharmacoth*,2017;91:714-730
- Sait S, Hamri-Zeghichi L, Boulekbache-Makhlouf K, Madani P, Rigou V, Brighenti F, et al. HPLC-UV/DAD and ESI-MSn analysis of flavonoids and antioxidant activity of an Algerian medicinal plant: *Paronychia argentea* Lam. *J. Pharmacet. and Biomedical Analysis*, (<http://dx.doi.org/doi:10.1016/j.jpba.2015.03.027>)
- Sasidharan S, Chen Y, Saravanan D, Sundram KM, and Latha LY. Extraction, isolation and characterization of bioactive compounds from plants' extracts, *Afr. J. Tradit. Complement. Altern. Med*,2011;8:1-10
- Suzuki T, Someya S, Hu F, Tanokura M. Comparative study of catechin compositions in five Japanese persimmons (*Diospyros kaki*) *J. food Chem*,2005;093:149-52
- Vaquero-Rodríguez MJ, Alberto MR, Manca de Nadra MC. Antibacterial effect of phenolic compounds from different wines. *J. Food Control*,2007;18:93-101
- Weisburg JH, Weissman DB, Sedaghat T, Babich H. *In vitro* cytotoxicity of epigallocatechin gallate and tea extracts to cancerous and normal cells from the human oral cavity. *J. of. Basic Clin. Pharmacol. Toxicol*,2004;95:191-200
- Zang Ting-Ting, Zhou Jin-Song, Wang Qiang. HPLC Analysis of Flavonoids from the Aerial Parts of *Bupleurum* Species, *Chinese J. Natu. Medici*,2010;8(2):0107-0113
- Zhang Y, Seeram NP, Lee R, Feng L, Hebe D. Isolation and identification of strawberry phenolics with antioxidant and human cancer cell antiproliferative properties. *J. Agric. Food Chem*,2008;56:670- 675

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New synonymy in the genus *Crotalaria* L. (Fabaceae)

Ravi Kiran Arigela¹ & Ch. Srinivasa Reddy²✉

ABSTRACT

Crotalaria lamelliformis P. Sivaramakrishna *et al.* and *C. gengmaensis* Z. Wei & C.Y. Yang are shown to be conspecific with *C. albida* B. Heyne ex Roth and are synonymised here. Similarly, *C. kanchiana* Gholave *et al.* found to be conspecific with *C. juncea* L. and reduced to synonym. Apart, the lectotype was designated here for the name *C. lamelliformis*.

Key words: *Crotalaria*, India, new species, new synonym and varieties.

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1. INTRODUCTION

The genus *Crotalaria* L. consists more than 700 species and widespread in Old and New World countries (POWO, 2021) including India with 116 taxa (Nandikar, 2018; Rokade *et al.*, 2019, 2020; Dhatchanamoorthy *et al.*, 2021). Unfortunately, some of newly described taxa were considered conspecific and synonymized with the older validated names (Arigela & Singh, 2018). We present below two another erroneously described species, *Crotalaria lamelliformis* P. Sivaramakrishna *et al.* and *C. kanchiana* Gholave *et al.*, which are turned out to be conspecific with previously known taxa.

Taxonomic treatment

Crotalaria albida B. Heyne ex Roth, Nov. Pl. Sp.: 333. 1821.

Type: — Without locality, *s.d.*, B. Heyne, *s.n.* (L barcode L0649895 [image!]
lectotype designated by Turner, 2021)

Crotalaria lamelliformis P. Sivaramakrishna, P. Yugandhar & L.J. Singh in Phytotaxa 490 (1): 72. 2021, *syn. nov.*

Type: — (Lectotype, designated here) *Crotalaria lamelliformis* P. Sivaramakrishna *et al.*, in Phytotaxa 490 (1): 77. fig. 4, 2021.

Crotalaria albida B. Heyne ex Roth var. *kangrensis* A.A. Ansari, *Crotalaria* India: 157. 2008. (Singh & Garg, 2020)

Type: — India, Himachal Pradesh, Sihunta, Kangra, 16.10.1874, C.B. Clarke, 23655B (holotype CAL0000024597! Isotype CAL0000024572!)

Crotalaria gengmaensis Z. Wei & C.Y. Yang in Acta Phytotax. Sin. 20: 479. 1982. *syn. nov.*

Type: — Yunnan. Gengmam Xian, alt. 1670 m, Apr. 1936, C.W. Wang 72861 (holotype PE - 2301193 - 01432515, isotype PE - 2301194 - 01432516)





Figure 1. *Crotalaria albida*; A–E: habit variations at different habitats.

Note: During botanical explorations at Deccan Plateau, Eastern Ghats, Indian Himalayan Range, Western Ghats, Aravalli Hills and the Thar Desert under various projects, *C. albida* has been observed and collected. Several morphological variations in the habit like, highly tufted decumbent habit to less branched erect (Fig. 1), leaf variations such as shape, size and indumentum, streaks colour on the standard petals from brownish to dark brown is observed (Fig. 2). Between 2012 and 2020, *C. albida* morphological variations were observed in the Kodaikanal Wildlife Sanctuary at elevations ranges 400–1900 m and collected specimens (Kabeer & Ravi Kiran

133181, 140914) deposited at MH, Coimbatore. We observed that, size of the plant depends on the aridity, moisture levels in the soil, altitude and temperature of habitat (Fig. 1).



Figure 2. *Crotalaria albida*; A–B: Leaf variations; C–F: Streaks variations on standard petal of flower.



Figure 3. *Crotalaria juncea*; A–D: Leaf variations; E–H: Close up of flower with streaks variations on standard petal; I–K: Ventral view of standard petal with colour variation; L–M: variations in pods.

Sivaramakrishna *et al.* (2021) described a new species *C. lamelliformis* and they were not submitted the type specimens to the Botanical Survey of India as stated in the protologue. Communication with the authors of *C. lamelliformis* revealed that, all the type specimens were spoiled and no original material available with them. It attracts the ICN (Turland *et al.*, 2018) article 9.3 to designate nomenclatural type, thus we have designated the illustration from the protologue of the *C. lamelliformis* as lectotype. Furthermore, we have examined the live plants from the type locality and no plant is having the stipules, and authors of *C. lamelliformis*

considered the indumentum on petiole base as stipules. No petiole is visible in the figures given in the protologue of the *C. lamelliformis*. The diagnosis of the *C. lamelliformis* was erroneous and it is treated here as a synonym of *C. albida*.

Ansari (2008) described *C. albida* var. *kangrensis* and stated it differs from *C. albida* by having shorter leaves, less number of flowered inflorescence and less hairy calyx. We observed these characters are driven by edaphic factors in the varied habitats and correctly synonymized by Singh & Garg (2020). Chun-Yu (1982) described *C. gengmaensis* and stated the new species is differing from *C. albida* by having elliptic leaf blade, adaxial calyx lobes acuminate at apex and 6–8-seeded legume. These characters exactly match with *C. albida* which grows in the Eastern Ghats and Western Ghats of India. After the study of protologue and type specimens of *C. gengmaensis* and *C. albida* var. *kangrensis* it is concluded that, they are ecotypes of *C. albida*. Therefore, *C. gengmaensis* is treated here as a synonym of *C. albida*.

***Crotalaria juncea* L., Sp. Pl. 2: 714. 1753.**

Type: — India, without locality, *s.d.*, C. Linnaeus, *s.n.* (Herb. Linn. No. 895.11 [Image!], lectotype designated by Fawcett & Rendle in *Fl. Jamaica* 4: 8. 1920)

Crotalaria kanchiana Gholave, Mane, Gore, Kambale & S.P. Gaikwad in *Phytotaxa* 409 (4): 234. 2019. *syn. nov.*

Type:—India, Maharashtra, Osmanabad district, Barshi-Osmanabad road, near Hatlai Devi Temple, 530 m, 18°10'50"N, 76°0'45"E, 22 November 2018, A. R. Gholave, R. N. Mane & S. P. Gaikwad 700 (holotype CAL; isotype BSI, SUK)

Notes: *Crotalaria juncea* is native to India and commonly known as Sunn hemp, Indian hemp, Madras hemp and brown hemp (Bhandari *et al.*, 2016). A good number of varieties of Sunn hemp have been developed and cultivated in many tropical and subtropical regions of world. Few cultivated variants of Sunn hemp escaped from cultivation and formed the colonies around the agriculture fields and the open forest in India and it is also considered as noxious weed in the USA (Sheahan, 2012). Nannajkar *et al.* (2016) explained the effect of different varieties and spacing on the yield attributes *viz.*, number of pods per plant, pod length, diameter of pod, number of seeds pod and seed weight of *C. juncea*.

Gholave *et al.* (2019) stated “*C. kanchiana* morphologically resembles with *C. juncea* but differs in having 2–6 flowered inflorescence and 2–4 seeds in a pod”. They have considered few characters like length of inflorescence, size of flower bud, size of flower and seed number in the pod which are regulated by edaphic factors. After 2 years field trials, Meagher *et al.* (2017) concluded of seasonality affected the numbers of racemes, flowers, numbers of plants with seed pods and number of seed pods per plant. During plant explorations in India, We have observed several morphological variations, colour variations in standard petals in the flowers of *C. juncea* (Fig. 3) and referred the several herbarium sheets of *C. juncea* ecotypes which are extant at Botanical Survey of India herbaria. After the study of protologue, type specimens and live specimens, *C. kanchiana* is reduced as synonym of *C. juncea*.

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Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Ansari, A.A. (2008). *Crotalaria* L. in India. Dehra Dun: Bishen Singh Mahendra Pal Singh.
2. Arigela R.K. & Singh R.K. (2018). On the identity of *Crotalaria nallamalayana* Rasingam & J. Swamy (Fabaceae). *Phytotaxa* 374 (2): 177–177.

3. Bhandari H.R., Tripathi M.K., Chaudhary B. & Sarkar S.K. (2016). Sunnhemp breeding: Challenges and prospects. *Indian Journal of Agricultural Sciences* 86 (11): 1391–8.
4. Dhatchanamoorthy N, Noorunnisa Begum S, Patturaj R, Mahendra Nath Mitta. *Crotalaria leschenaultii* DC. (Fabaceae): A poorly known species rare and endemic Legumes from the Eastern Ghats, Southern India. *Species*, 2021, 22(70), 222-225
5. Gholave, A.R., Mane, R.N., Gore, R.D., Kambale, S.S. & Gaikwad, S.P. (2019). *Crotalaria kanchiana* (Fabaceae), a new species from Balaghat Ranges of Maharashtra, India. *Phytotaxa* 409 (4): 233–238. <https://doi.org/10.11646/phytotaxa.409.4.6>
6. Meagher Jr., R.L., Nagoshi, R. N., Brown, J.T., Fleischer, S.J., Westbrook, J.K. & Chase C.A. (2017). Flowering of the Cover Crop Sunn Hemp, *Crotalaria juncea* L. *Hort Science* 52 (7): 986–990. <https://doi.org/10.21273/HORTSCI11981-17>
7. Nandikar, M.D., Kishor, K.C. & Malpure, N.V. (2018). On the occurrence of *Crotalaria uncinella* subsp. *elliptica* (Fabaceae) in Andaman and Nicobar Islands, India. *Phytotaxa* 379 (1): 073–077. <https://doi.org/10.11646/phytotaxa.379.1.7>
8. Nannajkar, R.R., Sinare, B.T. & Ughade, S.R. (2016). Effect of different varieties and spacing on growth, yield and quality of sunnhemp (*Crotalaria juncea* L.). *Trends in Biosciences* 9(4): 231–235.
9. Rokade, K., Dalavi J.V., Gaikwad, S., Gaikwad, N. & Yadav, S. (2019). A new variety of *Crotalaria prostrata* Roxb. (Fabaceae) from the Northern Western Ghats, India. *Phytotaxa* 14 (1): 035–040. <https://doi.org/10.11646/phytotaxa.414.1.4>
10. Rokade, K., Dalavi, J.V., Gaikwad, S. & Gaikwad, N. (2020). *Crotalaria shrirangiana* (Fabaceae): A new rattlepod from the Western Ghats of India. *Phytotaxa* 449 (2): 188–194. DOI: <https://doi.org/10.11646/phytotaxa.449.2.7>
11. Sheahan, C.M. (2012). Plant guide for sunn hemp (*Crotalaria juncea*). USDA-Natural Resources Conservation Service, Cape May Plant Materials Center. Cape May, New Jersey. pp 1–4.
12. Singh, R.K., Garg, A. (2020) *Floristic diversity of Valmiki Tiger Reserve, West Champaran district, Bihar*. Today & Tomorrow's Printers and Publishers, New Delhi.
13. Sivaramakrishna, P. Yugandhar, P., Singh, L.J. (2021). *Crotalaria lamelliformis* (Fabaceae: Crotalariaeae), a new species from Eastern Ghats of Andhra Pradesh, Peninsular India. *Phytotaxa* 490 (1): 071–081. <https://doi.org/10.11646/phytotaxa.490.1.6>
14. Turland, N.J., Wiersema, J.H., Barrie, F.R., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Kusber, W.-H., Li, D.-Z., Marhold, K., May, T.W., McNeill, J., Monro, A.M., Prado, J., Price, M.J. & Smith, G.F. (2018). *International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code)*. Regnum Vegetabile 159. Koeltz Botanical Books, Glashütten.
15. Turner, I.M. (2021). Heyne, Roth, Roemer and Schultes, and the plant names published in *Novae plantarum species praesertim Indiae orientalis*. *Taxon* 70 (2): 365–428. <https://doi.org/10.1002/tax.12449>.



REVIEW

A Comprehensive Review on Green Synthetic Approaches and Applications of 3d-Series Metal Oxide Nanoparticles

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Transition metal oxides have been studied by many workers of fields who want to find new ways to use them in medical devices and other fields. Researchers have done a lot of research on solid-state synthesis methods, which require high temperatures and make molecules that are thermodynamically stable. Transition metal oxides have been used for a wide range of things, from nanoparticles that deliver drugs to systems that store information in more than one state. In materials science and technology research and development, a new era of "green synthesis" methods is getting a great attention. Basically, green synthesis of materials and nanomaterials, which is done through a process of regulation, control, cleaning and remediation, will directly help make them more friendly to the environment. In this review, various green approaches for 3d-series metal oxide nanoparticles and their applications are discussed.

Keywords: Metal oxide, Green synthesis, Nanoparticles.

INTRODUCTION

Nanoscience is one of the most relevant and effective fields of study in modern science. In last few years, nanotechnology has become an advanced technology, with interdisciplinary research taking place between various fields of study. Nanoparticles (NPs) are more interesting than bulk materials because of the enhanced surface Rayleigh scattering, plasmon resonance and enhanced surface Raman scattering of fine metals and their related metal oxides nanoparticles. Because of this, nanoparticle technology has a significant impact on the development of various chemical and biological sensors [1-7]. Nanoparticle materials made from metal and metal oxides with substantial surface modification are being studied for a wide range of applications, including medical, biological and electronic ones. Nanoparticle production can only be accomplished using a small number of harmful chemicals and solvents. The development of new green, non-toxic and safe technologies for synthe-

sizing nanoparticle materials is accelerating [8]. The intrinsic qualities of inorganic materials are mostly governed by their composition, structure, crystallinity, size and shape. Developing new ways to make nanomaterials, which are safe for people to use is very important because of the problems that have been talked about [9]. Literature shows that there has been a rise in the use of biosynthesis or green synthesis of metal oxide nanoparticles [10,11].

Metal oxide nanoparticles: Microelectronic circuits, sensors, piezoelectric devices, fuel cells and corrosion catalysts are only few of the applications of metal oxides in materials science. Environmental pollutants can be absorbed by metal oxides, too. Due to their small size, oxide nanoparticles in nanotechnology may exhibit unusual chemical characteristics. A wide range of fields have been studied transition metal oxides in the hopes of finding new uses for them in medical devices and other fields. Solid-state synthesis methods, which demand high temperatures and produce thermodynamically stable

molecules, have been studied extensively. From drug delivery nanoparticles to multiple-state memory storage systems, transition metal oxides have also been used in a wide variety of applications [12,13].

Sc₂O₃ nanoparticles: Scandium(III) oxide adopts a cubic crystal structure (tetrahedral containing six-coordinated metal centres. Powder diffraction analysis shows Sc–O bond distances of 2.159–2.071 Å. Scandium oxide is an insulator with a band gap of 6.0 eV. Scandium sol-gel chemistry has had a significant impact on the development of scandium oxide as a dopant in garnet lasers [14] or as a stabilizer for zirconia [15,16]. Mixed nickel-copper oxides can also form materials that are sensitive to NO₂ [17]. The breakdown of propan-2-ol and the oxidation of CO on the surfaces of porous Sc₂O₃ bulk materials synthesized by precipitation in an aqueous solution have been explored as catalytic applications [18,19]. Materials with high refractive index, high transparency to emitted radiation and strong thermal stability are now being studied and developed in response to the possibility for UV lasers to be used in inertial confinement fusion (ICF). Among the high index materials coated using physical methods, scandia coatings generated by chemical vapour deposition demonstrate the best reflecting characteristics and laser damage resistance for multilayer UV-mirrors [20].

TiO₂ nanoparticles: Rutile is a mineral that is mostly made up of titanium dioxide (TiO₂) and it is the most common natural form of TiO₂. Anatase, akaogiite and brookite are some of the other rare polymorphs of TiO₂. Today, biosynthesis of nanoparticles has been used in a lot of different ways by making them with plants. The green method to make titanium oxide nanoparticles is better because it doesn't use a lot of chemicals [21,22]. TiO₂ is one of the metal oxide antimicrobial agents, which is both inert and durable. It can be used in a wide range of areas viz. optical, sensors, electronics, solar cells, gas sensing, magnetic, antibacterial and antifungal agents. TiO₂ contains high surface area, good surface morphology and is not harmful in nature. It has good activity on a wide range of bacteria [23-27].

V₂O₅ nanoparticles: Among the various vanadium oxide compositions that can be obtained, vanadium pentoxide (V₂O₅) possesses a unique set of properties as one of the most widely studied of the more stable phases of vanadium oxides. The vanadium pentoxide powders have been prepared mostly by dry processes such as vacuum evaporation [28,29] and sputtering [30], although wet processes such as electrodeposition and sol-gel method [31,32] seem to be more advantageous in producing large scale films. Recently, microbial cells have been proposed as inexpensive and environmentally friendly bio-templates to direct the deposition, assembly and patterning of inorganic nanoparticles and microstructures [33]. Both living and dead microorganism's cells are capable of directing the synthesis and assembly of crystalline inorganic materials due to their cell wall's active biomolecules. The synthesis of nanoparticles of metal oxides using yeasts as biological templates are reported [34-36].

The transition metal vanadium is highly sought after in a wide range of industrial applications. Potential applications include solar cells, sensors, batteries and catalysis [37-42] due to its oxides form. The valence electron state of vanadium can

affect the structure of vanadium oxides form. In various VO, V₂O₃, VO₂ and V₂O₅ phases [43], the valence state of the metal fluctuates between the V²⁺ and V⁵⁺ range. The V₂O₅ is the most stable orthorhombic vanadium oxide and has the best electrical and optical characteristics of all vanadium oxides [44].

Cr₂O₃ nanoparticles: Because of their relevance in both science and technology, chromium oxides have recently gained a great deal of media interest. Chromium may create a variety of oxides due to its various stable oxidation states. When it comes to specific applications like high temperature resistance materials [45], corrosion resistance materials [46], liquid crystal displays [47,48], green pigments [49], catalysts [50,51], etc., researchers have paid close attention to the formation and properties of chromium oxide (Cr₂O₃). Many studies have been done on the synthesis of diverse Cr₂O₃ materials [52-54]. It is well-known that inorganic materials' intrinsic qualities are mostly governed by their composition, structure, crystallinity, size and morphology. The medical applications of nanoparticles for therapy and antibacterial action have been the focus of nanobiotechnology investigations. There are numerous uses for chromia (Cr₂O₃), such as high-temperature and corrosion-resistant materials; liquid crystal displays; green pigment; heterogeneous catalysts; coating materials, etc. [55-65].

MnO₂ nanoparticles: MnO₂ is one of the most promising transition metal oxides for catalytic applications due to its distinctive physical and chemical properties [66,67]. MnO₂ has the stable isomorph called pyrolusite, β-MnO₂. MnO₂ nanoparticles have been investigated through numerous applications in several fields like immobilization of proteins [68], sensitive biosensors [69], electrochemical capacitors [70], removal of dyes [71,72], lithium ion batteries [73], synthesis bioactive compound [74], analysis of neuro-behaviour of rats [75], biomimetic catalyst [76] and metal adsorption [77].

Fe₃O₄ nanoparticles: The separation and purification of dye, pharmaceutical and heavy metal contamination, as well as labelling and medication delivery systems, have all been made possible with iron oxide-based magnetic nanoparticles in recent years. Among iron oxide nanostructures, magnetite (Fe₃O₄) has drawn the most interest due to its exceptional magnetic and electrical properties [78]. Super-paramagnetism is one of the Fe₃O₄ nanoparticles' most noteworthy characteristics and supports that Fe₃O₄ nanoparticles behave like atomic paramagnets above the blocking temperature and act as a single magnetic domain. High saturation magnetization and high field irreversibility are the result of this sort of magnetism in Fe₃O₄ nanoparticles, making this iron oxide nanostructure more easily separable in external magnetic fields than other metal oxide nanoparticles.

The majority of iron oxide nanoparticle synthesis has utilized dangerous, costly and environmentally harmful laboratory compounds as reducing agents. Wet chemical, dry procedures and microbiological techniques can all be used to make iron oxide magnetic nanoparticles [79-84]. Many scientists have proposed an alternate and environmentally acceptable method for synthesizing nanoparticles: biogreen synthesis. Different magnetic nanocomposites can be made by putting high adsorption coatings on their surfaces [85-92]. Plant extracts,

particularly ferrous magnetic oxides, have been used in green nanoparticle manufacturing.

When compared to chemically produced Fe_3O_4 nanoparticles, green biosynthesized Fe_3O_4 nanoparticles can have better properties with improved biocompatibility and biodegradability. They can therefore be used in biomedical applications because of the distinctive surface coating of green materials, which is not only non-toxic and biocompatible but also allows targeted medication administration with Fe_3O_4 nanoparticles localization in a specific area. Because the green materials used to synthesize Fe_3O_4 nanoparticles are safe to consume, the toxicity to humans can be decreased, which is advantageous in biomedical applications [93]. Fe_3O_4 nanoparticles could be used in a variety of medical applications, including antimicrobial, tissue engineering and hyperthermia [94,95]. Fe_3O_4 nanoparticles can be employed in the fields of catalysts, water remediation and lithium-ion batteries [96-99]. Numerous studies have been done in order to maximise the potential use of Fe_3O_4 nanoparticles in various domains of application because of their intriguing properties, such as superparamagnetic. In addition, they serve as MRI contrast agents, photothermal therapy of malignancies, magnetofection agents, magnetic storage media, magnetic bio-separation and DNA molecule identification *via* targeted drug delivery systems. Due to their remarkable magnetic characteristics, Fe_3O_4 nanoparticles are becoming increasingly popular as a drug delivery system component [100-105].

Co_3O_4 nanoparticles: As a result of their wide range of applications in lithium ion batteries, cobalt oxide (Co_3O_4) nanoparticles with normal spinel structure have been extensively studied as promising types of multifunctional materials among the many transition metal oxides that have been extensively investigated because of their intriguing electronic and electrical properties as well as their catalytic and magnetic properties.

These nanoparticles have been synthesized using a variety of processes, including co-precipitation, sol-gel, sonochemical approach, chemical vapour deposition and thermal breakdown of cobalt precursors [106-112]. Co_3O_4 nanoparticles of various morphologies can be synthesized *via* hydrothermal techniques, chemical spray pyrolysis, combustion, mechanochemical processing, microwave irradiation and microemulsion methods [113-118]. However, the utilization of expensive equipments, complex synthesis stages, high temperatures, protracted reaction times and a high cost of synthesis have been associated with many of these synthesis approaches. These approaches are also not environmentally friendly. Toxic and hazardous chemicals used in the nanoparticle-synthesis technique have been reduced using green chemistry during the past two decades in both research and industry. Friendly environment materials can be used in a variety of contexts. It is therefore possible to reduce the use and environmental impact of some chemicals (capping agents, reducing agents and solvents) used in the production of various nanoparticles [119-129]. Biosynthesis utilizing plants is regarded the safest, most economically viable and environmentally benign strategy for synthesising nanoparticles. It also produces more stable nanoparticles more quickly. Co_3O_4 nanoparticles can be made using various plant extracts, such as *Calotropis gigantea* and *Aspalathus linearis* leaves

[130,131], *Punica granatum* peel extract [132,133] and so on.

NiO nanoparticles: Recently, a lot of attention has been paid to nickel oxide nanomaterials, which have a large band gap (3.6-4.0 eV), p-type conductivity and can be used in a lot of different ways. There are a lot of different technologies that can be used to make smart windows, which include photocatalysis, antimicrobial, anti-ferromagnetic, electrochemical, photoelectronic, gas sensors, *etc.* Nanostructured NiO, on the other hand, has better properties than micro and macro-sized NiO particles in terms of volume, surface and quantum size [134]. A nanomaterial of NiO has been called a cheap semiconductor because of its long-term stability, availability and nontoxicity [134]. In addition, nickel nanoparticles have been found to have a superior antimicrobial impact to that of other metal nanoparticles. Jeyaraj *et al.* [135] reported that NiO nanostructures are better act as a antibacterial agent than silver nanostructures however, number of factors also depends upon the process and quantity.

A variety of methods may be used to produce NiO nanoparticles, including solvothermal process [136], chemical precipitation, thermal breakdown, sol-gel combustion [137], *etc.* These procedures, on the other hand, require special equipment, high temperatures and a long process. Plant extracts are used to make nanomaterials as a reducing agent and a capping agent instead of chemical and photochemical methods [138]. Moreover porous parts of plants also work as biotemplates to reduce metal ions to get the right shape [139].

CuO nanoparticles: Copper oxide nanoparticles have better biological and photocatalytic abilities than metal nanoparticles. It has been shown that copper oxide nanoparticles could be used in gas sensors, catalysis and batteries, as well as in agriculture [140-143]. They could also be used to remove dyes, remove field emission emitters and convert solar energy. CuO nanoparticles also have unique anticancer, antimicrobial and antioxidant properties, which makes them a good tool for biomedical applications [144,145].

Microwave irradiation, thermal decomposition, sol gel, colloidal thermal synthesis, sonochemical, hydrothermal and quick precipitation have all been used to make CuO nanoparticles that have the right morphologies and properties [146-152]. Phytosynthesis of CuO nanoparticles has been getting more attention recently because of its long-term sustainability, low cost and ease of use [153]. It has also been reported that different techniques can change their shape and its toxicity [154-157]. Using green methods, CuO nanoparticles act as both a reducing agent and a stabilizing agent, moreover, presence of biomolecules like flavonoids, saponins, tannins, starches and polypeptides help CuO nanoparticles less acidic and more stable [158].

Despite the fact that synthesizing nanoparticles from the microorganisms is beneficial for the environment, however, they too have some drawbacks, for example, the toxicity of some bacteria, the difficulties in separating them and the time it takes to grow them [159]. Nevertheless, plants are still the best source of metal and metal oxide nanoparticles, since they consists a fast reaction rate, contains a number of biomolecules, low-cost, stable and are easy to use [160].

ZnO nanoparticles: ZnO can be used in biosensors, cosmetics, drug carriers and antibacterial agents, because it has a wide band gap of 3.1-3.3 eV [161]. Synthesizing ZnO can be done in a number of different ways, which include sol-gel processing, homogeneous precipitation, mechanical milling and organometallic synthesis [162,163]. These kinds of methods usually use organic solvents and toxic reducing agents, most of which are highly reactive and corrosive. For the extraction of plant metabolites, mild solvents like water, alcohol and methanol were used [164-167] during the synthesis of zinc oxide nanoparticles using zinc salt solution.

Table-1 shows the summary of the several metal oxide nanoparticles prepared using various plant extracts.

Conclusion

In conclusion, the recent findings show that 3d-metal oxide nanoparticles are of substantial interest because of the prospective technological and therapeutic uses. The synthesis of 3d-metal oxides nanoparticles using traditional as well as greener, milder synthetic procedures that make use of plants, organisms and other natural products was also discussed. There are still many unanswered concerns regarding the operation of plant extracts, particularly plant leaf extracts, and how they produce even greener nanoparticles. Additionally, the molecular mechanism of plant nanoparticle interaction is still necessary for the bioreduction mechanism, the synthesis, growth,

TABLE-1
VARIOUS GREEN APPROACHES FOR SYNTHESIS OF 3d SERIES METAL OXIDE NANOPARTICLES AND THEIR APPLICATIONS

Plant	Size	Shape	Application	Ref
TiO ₂ nanoparticles				
Leaf extract <i>Aloe barbadensis</i> (aloevera)	~ 20 nm	Poly-dispersed, spherical	Antibiofilm potential against <i>Pseudomonas aeruginosa</i>	[168]
Flower aqueous extract of <i>Calotropis gigantea</i> (<i>C. gigantea</i>)	10.52 nm (XRD) 160-220 nm (SEM)	Aggregated and spherical	Acaricidal activity <i>Rhipicephalus microplus</i> and <i>Haemaphysalis bispinosa</i>	[169]
Leaf (KL), pod (KP), seed (KS) and seed shell (KSS) extracts of kola nut tree	25.00-191.41 nm	Spherical	Antimicrobial, dye degradation, antioxidant and anticoagulant activities	[170]
<i>Echinacea purpurea</i> herba extract	120 nm	Spherical agglomerated	Bio reductant	[171]
Aqueous leaf extract of <i>Psidium guajava</i>	32.58 nm	Spherical	Antibacterial and antioxidant activities	[172]
Leaf aqueous extract of <i>Mangifera indica</i> L	30 ± 5 nm	Spherical	Larvicidal activity, blood-feeding parasites	[173]
The root extract of with <i>Ania somnifera</i>	50-90 nm	Spherical and square	Broad-spectrum attenuation of biofilm and cytotoxic properties against HepG2 cell lines	[174]
Leaf aqueous extract of <i>Solanum trilobatum</i>	70 nm		To assess the antiparasitic efficacies	[175]
Aqueous leaf extracts of <i>Parthenium hysterophorus</i>	20-50 nm	Spherical	Larvicidal, antibacterial and photocatalytic efficacy	[176]
Leaf extract of <i>Morinda citrifolia</i>	15-19 nm	Quasi-spherical	Antimicrobial properties	[177]
V ₂ O ₅ nanoparticles				
Cotton fibres	19.21 nm	Orthorhombic	Catalytic activity for the degradation of 4-nitrophenol	[178]
<i>Tinospora cordifolia</i>	10-40 nm	Orthorhombic nano rods	DNA cleaving and anti angiogenic agent	[179]
Phytomolecule isolated from <i>Phyllanthus amarus</i>	10-60 nm	Nano rods	High degree of cell viability with relatively less cytotoxicity for against breast cancer cell line MDA MB	[180]
Tannic acid is a type of green material which is extracted from natural tree bark and leaves	20-40 nm	Nanobelts	High electrochromic contrast	[181]
<i>Daphne alpine</i> (<i>D. alpine</i>) leaves extract	34-50 nm	Spherical	The degradation of methyl orange and picloram	[182]
Yeast <i>Saccharomyces cerevisiae</i> active dry yeast cells	40-50 nm	Nano disks	Comparison with different methods obtained different morphology	[183]
Cr ₂ O ₃ nanoparticles				
<i>Tridax procumbens</i> leaf extract	80-100 nm	Strips with rough surfaces	Antibacterial activity on <i>Escherichia coli</i>	[184]
<i>Callistemon viminalis</i> ' red flower extract	~ 92.2 nm	A cubic-like platelet shape with sharp edge		[185]
<i>Klebsiella pneumoniae</i>	24 nm		Antibacterial activity pathogenic bacteria	[186]
Fungal extract of <i>Aspergillus niger</i>	36 nm	Hexagonal crystals		[187]
Leaf extract of <i>Rhamnus virgata</i> (RV)	~ 28 nm	Cubic	Anticancer, antileishmanial, antibacterial, antifungal, antioxidants, bio- compatibility,	[188]
<i>Mukia maderaspatana</i> or mulberry leaves	54 nm	Orthorhombic	Catalyst, pigment and antibacterial effect.	[189]

MnO ₂ nanoparticles				
<i>Euphorbia heterophylla</i> L. leaf extract	56.68 nm	Irregular		[190]
Orange peel and the extract of orange juice	12 nm	Fine interconnected nanowires	Storage electrode materials for supercapacitor	[191]
<i>Yucca gloriosa</i> leaf extract	32 nm	Spherical	Optimization	[192]
<i>Gardenia resinifera</i> leaves	17-35 nm	Spherical	Antimicrobial activity	[193]
<i>Yucca gloriosa</i> leaf extract	80 nm	Spherical	Photocatalytic activities for the dye degradation in the visible light region	[194]
Fe ₃ O ₄ nanoparticles				
Aqueous leaf extract of <i>Ficus hispida</i> L.	10.96 nm	Spherical	Adsorption of organic dye	[195]
<i>Azadirachta indica</i> leaf extract	3-8 nm			[196]
Seaweed <i>Kappaphycus alvarezii</i> (K. alvarezii)	14.7 nm	Spherical		[197]
Using natural rubber latex (NRL) extracted from <i>Hevea brasiliensis</i>				[198]
<i>Rhus coriaria</i>	53 nm	Spherical	Reusable catalyst for efficient synthesis of some new 2-naphthol <i>bis</i> -Betti bases	[199]
Clover leaf aqueous extract	14 nm	Spherical	Green synthesis of 1,3-benzoxazole derivatives	[200]
<i>Couroupita guianensis</i> Aubl. fruit extract for	17 ± 10 nm	Spherical	Antibacterial and cytotoxicity activities	[201]
Grape seed Proanthocyanidin	30 nm	Irregular		[202]
<i>Perilla frutescens</i> leaf extract	50 nm	Spherical	Synthesis of biologically interesting benzoxazinone and benzthioxazinone	[203]
Leaf extract of <i>Artemisia annua</i> (A. <i>annua</i>)	6 nm	Spherical	Biologically interesting benzoxazinone and benzthioxazinone derivatives	[204]
Co ₃ O ₄ nanoparticles				
Latex of <i>Calotropis procera</i>	10 nm	Spherical	Antibacterial activity for assessing eco-toxic effects	[205]
Ethanollic extract of <i>Trigonella foenumgraceum</i> (Fenugreek) leaves	13.2 nm	Spherical		[206]
Microbial induced precipitation (MIP) process using <i>Bacillus pasteurii</i>	10-31 nm	Non specific	Supercapacitor as applicable to energy sector.	[207]
<i>Litchi chinensis</i>		Elongated rod like morphology		[208]
Maltose	25 nm	emi-hexagonal nanoparticles	Potential hydrogen storage material	[209]
<i>Punica granatum</i> peel extract	40-80 nm	Spherical	Photo-catalytic activity	[210]
Four fungi were isolated from plant <i>Nothapodytes foetida</i> , <i>Aspergillus nidulans</i> (endophytic fungus <i>Aspergillus nidulans</i>)	20.29 nm	Spherical		[211]
<i>Taraxacum officinale</i> plant extract	50-100 nm	Spherical	Catalytic reduction of direct yellow-142 and methyl orange dyes	[212]
NiO nanoparticles				
<i>Solanum trilobatum</i> extract	25-30 nm	Cylindrical and rod	Cytotoxicity, antibacterial and photocatalytic studies	[213]
<i>Vicennia marina</i> leaf extract in an aqueous medium	30-100 nm	Flacks like structure nano rods like structure		[214]
Leaves extract of a wild plant " <i>Calotropis gigantea</i> "	< 60 nm		Catalytic and antimicrobial potentials	[215]
Maize (<i>Zea mays</i> L.) dry silk extract	10-20 nm	Spherical and quasi spherical	Positive electrode material for electrochemical energy storage devices.	[216]
<i>Terminalia chebula</i> dried fruit extract	20-25 nm	FCC cubical structure	<i>In vitro</i> cytotoxicity, MMP and ROS activity against MCF-7 Cells	[217]
<i>Phoenix dactylifera</i> (Dates) extract	32 nm	Nanorod like morphology	Cytotoxic activity against A549 cell lines, antibacterial activity and photocatalytic degradation of 4-chlorophenol (4-CP)	[218]
<i>E. heterophylla</i> (L.) leaves extract	12-15 nm	Rhomboheda	Cytotoxicity against human lung cancer cell line (A549) and human hepatocarcinoma (HepG2) cell lines and anti bacterial activity	[219]
Fresh egg white (EW)		Cubic morphology	Cytotoxicity and photocatalytic activity	[220]

CuO nanoparticles				
Leaf extract of <i>Encostemma axillare</i> (Lam.)	30 nm			[221]
Leaves extract of <i>Citrofortunella microcarpa</i> (Calamondin)	54-68 nm	Spherical	Rhodamin B (RhB) dye was degraded by photocatalytic activity	[222]
Peel extracts of <i>Banana musa acuminata</i>	50-60 nm	Rectangular	Toxicological profiling and sensing applications	[223]
<i>Punica granatum</i> peels extract	10-100 nm	Spherical	Mortality of Aphid 1st, 2nd, 3rd and 4th nymphal instars by 86% compared with control.	[224]
<i>Rosa canina</i> fruit extract	15-25 nm	Spherical	A recyclable and heterogeneous nanocatalyst for C-N Ullmann coupling reactions	[225]
ZnO nanoparticles				
<i>Averrhoë carrambola</i> (star) fruit extract	20 nm	The flake-like structure with sharp edges	Photocatalytic activity on Congo red dye	[226]
<i>Hydnocarpus alpina</i> aqueous alcoholic extract	38.84 nm	Spherical morphology	Screening of its antimicrobial, free radical scavenging and photocatalytic activity	[227]
<i>Prunus dulcis</i> (Almond gum)	25 nm	Spherical	Antimicrobial and supercapacitor applications	[228]
<i>Tecoma castanifolia</i> leaf extract	70-75 nm	Spherical	Antioxidant, bactericidal and anticancer activities	[229]
<i>Cassia fistula</i> plant extract	5-15 nm	Hexagonal wurtzite structure	Photodegradative, antioxidant and antibacterial activities	[230]
<i>Aspalathus linearis</i> 's natural extract	1 to 8.5 nm	Non-agglomerated quasi-spherical		[231]
<i>Agathosma betulina</i> natural extract	15.8 nm	Quasi-spherical		[232]
Euphorbia <i>Jatropha</i> latex	15 nm	Hexagonal		[233]
<i>Solanum nigrum</i> leaf extract	29.79 nm	Quasi-spherical	Antibacterial activity	[234]
Banana peel crude extract, peels of medium ripe banana (<i>Musa sapientum</i>)	39-69 nm	Rod-like or sheet-like	Antibacterial activity and anticancer activity	[235]

and stabilization of metal oxide nanoparticles utilizing plant extracts.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interests regarding the publication of this article.

REFERENCES

- T.S. Wong and U. Schwaneberg, *Curr. Opin. Biotechnol.*, **14**, 590 (2003); <https://doi.org/10.1016/j.copbio.2003.09.008>
- A. Ramanavicius, A. Kausaite and A. Ramanaviciene, *Biosens. Bioelectron.*, **20**, 1962 (2005); <https://doi.org/10.1016/j.bios.2004.08.032>
- M.A.E. Aleem Ali El-Remaily, A.M. Abu-Dief and R.M. El-Khatib, *Appl. Organomet. Chem.*, **30**, 1022 (2016); <https://doi.org/10.1002/aoc.3536>
- L.H. Abdel-Rahman, A.M. Abu-Dief, R.M. El-Khatib and S.M. Abdel-Fatah, *Bioorg. Chem.*, **69**, 140 (2016); <https://doi.org/10.1016/j.bioorg.2016.10.009>
- A.M. Abu-Dief and W.S. Mohamed, *Mater. Res. Express*, **4**, 035039 (2017); <https://doi.org/10.1088/2053-1591/aa6712>
- E.M.M. Ibrahim, L.H. Abdel-Rahman, A.M. Abu-Dief, A. Elshafaie, S.K. Hamdan and A.M. Ahmed, *Mater. Res. Bull.*, **99**, 103 (2018); <https://doi.org/10.1016/j.materresbull.2017.11.002>
- A.A. Marzouk, A.M. Abu-Dief and A.A. Abdelhamid, *Appl. Organomet. Chem.*, **32**, 3794 (2018); <https://doi.org/10.1002/aoc.3794>
- F. Buazar, M. Bavi, F. Kroushawi, M. Halvani, A. Khaledi-Nasab and S.A. Hossieni, *J. Exp. Nanosci.*, **11**, 175 (2016); <https://doi.org/10.1080/17458080.2015.1039610>
- A.M. Awwad, B.A. Albiss and N.M. Salem, *SMU Med. J.*, **2**, 91 (2015).
- M. Nasrollahzadeh, F. Ghorbannezhad, Z. Issaabadi and S.M. Sajadi, *Chem. Rec.*, **19**, 601 (2019); <https://doi.org/10.1002/tcr.201800069>
- M. Nasrollahzadeh, S. Mahmoudi-Gom Yek, N. Motahharifar and M. Ghafari Gorab, *Chem. Rec.*, **19**, 2436 (2019); <https://doi.org/10.1002/tcr.201800202>
- M. Ahangari, Z. Salouti, A.R. Heidari, A.A. Kazemizadeh and A.A. Safari, *Drug Deliv.*, **20**, 34 (2013); <https://doi.org/10.3109/10717544.2012.746402>
- S.A. Wolf, D.D. Awschalom, R.A.A. Buhrman, J.M. Daughton, S. Von Molnar, M.L. Roukes, A.Y. Chitchekanova and D.M. Treger, *Science*, **294**, 1488 (2001); <https://doi.org/10.1126/science.1065389>
- J.B. Gruber, M.E. Hills, M.D. Seltzer, S.B. Stevens and C.A. Morrison, *J. Appl. Phys.*, **72**, 5253 (1992); <https://doi.org/10.1063/1.352008>
- S.D. Birmingham, *Am. Ceram. Soc. Bull.*, **73**, 121 (1994).
- D.-S. Cheong and W.A. Sanders, *J. Am. Ceram. Soc.*, **75**, 3331 (1992); <https://doi.org/10.1111/j.1151-2916.1992.tb04429.x>
- N. Imanaka, S. Banno and G. Adachi, *Chem. Lett.*, **23**, 319 (1994); <https://doi.org/10.1246/cl.1994.319>
- K. Wojtera, *Pol. J. Chem.*, **57**, 947 (1983).
- J. Fierro, S. Mendioroz and J. Sanz, *Colloid Surf. Sci.*, **93**, 487 (1983); [https://doi.org/10.1016/0021-9797\(83\)90432-0](https://doi.org/10.1016/0021-9797(83)90432-0)
- I. Ladany, P.J. Zanzucchi, J.T. Andrews, J. Kane and E. DePiano, *Appl. Opt.*, **25**, 472 (1986); <https://doi.org/10.1364/AO.25.000472>
- M. Nasrollahzadeh and S. Mohammad Sajadi, *J. Colloid Interface Sci.*, **465**, 121 (2016); <https://doi.org/10.1016/j.jcis.2015.11.038>
- D. Baskar and G. Nallathambi, *Mater. Lett.*, **209**, 303 (2017); <https://doi.org/10.1016/j.matlet.2017.08.038>
- I.-M. Chung, I. Park, K. Seung-Hyun, M. Thiruvengadam and G. Rajakumar, *Nanoscale Res. Lett.*, **11**, 40 (2016); <https://doi.org/10.1186/s11671-016-1257-4>
- A.K.T. Bui, A. Bacic and F. Pettolino, *Phytochemistry*, **67**, 1271 (2006); <https://doi.org/10.1016/j.phytochem.2006.04.023>
- M. Skocaj, M. Filipic, J. Petkovic and S. Novak, *Radiol. Oncol.*, **45**, 227 (2011); <https://doi.org/10.2478/v10019-011-0037-0>
- P. Ravikumar and S. Sathish Kumar, *Int. J. Technol. Res. Appl.*, **2**, 108 (2014).

27. L. Inbathamizh, T.M. Ponnu and E.J. Mary, *J. Pharm. Res.*, **6**, 32 (2013); <https://doi.org/10.1016/j.jopr.2012.11.010>
28. M.A. Zoubi, H.K. Farag and F. Endres, *J. Mater. Sci.*, **44**, 1363 (2009); <https://doi.org/10.1007/s10853-008-3004-4>
29. N. Asim, S. Radiman, M.A. Yarmo and M.S. Banaye Golriz, *Micropor. Mesopor. Mater.*, **120**, 397 (2009); <https://doi.org/10.1016/j.micromeso.2008.12.013>
30. S. Kobayashi, T. Takemura and F. Kaneko, *Jpn. J. Appl. Phys.*, **26**, L1274 (1987); <https://doi.org/10.1143/JJAP.26.L1274>
31. Y. Fujita, K. Miyazaki and C. Tatsuyama, *Jpn. J. Appl. Phys.*, **24**, 1082 (1985); <https://doi.org/10.1143/JJAP.24.1082>
32. D. Wruck, S. Ramamurthi and M. Rubin, *Thin Solid Films*, **182**, 79 (1989); [https://doi.org/10.1016/0040-6090\(89\)90245-9](https://doi.org/10.1016/0040-6090(89)90245-9)
33. B.B. Lakshmi, C.J. Patrissi and C.R. Martin, *Chem. Mater.*, **9**, 2544 (1997); <https://doi.org/10.1021/cm970268y>
34. B. Alonso and J. Livage, *J. Solid State Chem.*, **148**, 16 (1999); <https://doi.org/10.1006/jssc.1999.8283>
35. A.B. Sifontes, G. González, L.M. Tovar, F.J. Méndez, M.E. Gomes, E. Cañizales, G. Niño-Vega, H. Villalobos and J.L. Brito, *Mater. Res. Bull.*, **48**, 730 (2013); <https://doi.org/10.1016/j.materresbull.2012.11.016>
36. W. He, Z. Li, Y. Wang, X. Chen, X. Zhang, H. Zhao, S. Yan and W. Zhou, *J. Mater. Sci. Mater. Med.*, **21**, 155 (2010); <https://doi.org/10.1007/s10856-009-3865-3>
37. D. Li, C. Tong, W. Ji, Z. Fu, Z. Wan, Q. Huang, Y. Ming, A. Mei, Y. Hu, Y. Rong and H. Han, *ACS Sustain. Chem. & Eng.*, **7**, 2619 (2019); <https://doi.org/10.1021/acssuschemeng.8b05653>
38. A.K. Prasad, S. Dhara and S. Dash, *Sens. Lett.*, **15**, 552 (2017); <https://doi.org/10.1166/sl.2017.3847>
38. C. Niu, M. Huang, P. Wang, J. Meng, X. Liu, X. Wang, K. Zhao, Y. Yu, Y. Wu, C. Lin and L. Mai, *Nano Res.*, **9**, 128 (2016); <https://doi.org/10.1007/s12274-015-0896-6>
40. R. Berenguer, M.O. Guerrero-Pérez, I. Guzmán, J. Rodríguez-Mirasol and T. Cordero, *ACS Omega*, **2**, 7739 (2017); <https://doi.org/10.1021/acsomega.7b01061>
41. Á. Cunha, J. Martins, N. Rodrigues and F. Brito, *Int. J. Energy Res.*, **39**, 889 (2015); <https://doi.org/10.1002/er.3260>
42. R.R. Langeslay, D.M. Kaphan, C.L. Marshall, A.P. Sattelberger, P.C. Stair and M. Delferro, *Chem. Rev.*, **119**, 2128 (2019); <https://doi.org/10.1021/acs.chemrev.8b00245>
43. Y. Zhang, J. Zheng, Y. Zhao, T. Hu, Z. Gao and C. Meng, *Appl. Surf. Sci.*, **377**, 385 (2016); <https://doi.org/10.1016/j.apsusc.2016.03.180>
44. W. Jin, B. Dong, W. Chen, C. Zhao, L. Mai and Y. Dai, *Sens. Actuators B Chem.*, **145**, 211 (2010); <https://doi.org/10.1016/j.snb.2009.11.059>
45. X. Yang, X. Peng, C. Xu and F. Wang, *J. Electrochem. Soc.*, **156**, C167 (2009); <https://doi.org/10.1149/1.3082378>
46. M. Ludwig, E. Sniezek, I. Jastrzebska, R. Prorok, Y. Li, N. Liao, M. Nath, J. Vlcek and J. Szczerba, *Materials*, **15**, 725 (2022); <https://doi.org/10.3390/ma15030725>
47. J.-Y. Hwang and D.-S. Seo, *J. Electrochem. Soc.*, **157**, J351 (2010); <https://doi.org/10.1149/1.3473785>
48. M. Freemantle, *Chemical Eng News Archive*, **76**, 8 (1998); <https://doi.org/10.1021/cen-v076n006.p008>
49. J.I. Fasicck, N. Lee and D.D. Oprian, *Biochemistry*, **38**, 11593 (1999); <https://doi.org/10.1021/bi991600h>
50. H. Rotter, M.V. Landau, M. Carrera, D. Goldfarb and M. Herskowitz, *Appl. Catal. B*, **47**, 111 (2004); <https://doi.org/10.1016/j.apcatb.2003.08.006>
51. H. Rotter, M.V. Landau and M. Herskowitz, *Environ. Sci. Technol.*, **39**, 6845 (2005); <https://doi.org/10.1021/es0500052>
52. L. Chen, Z. Song, X. Wang, S.V. Prikhodko, J. Hu, S. Kodambaka and R. Richards, *Appl. Mater. Interf.*, **1**, 1931 (2009); <https://doi.org/10.1021/am900334q>
53. Y.-L. Bai, H.-B. Xu, Y. Zhang and Z.-H. Li, *J. Phys. Chem. Solids*, **67**, 2589 (2006); <https://doi.org/10.1016/j.jpcs.2006.07.018>
54. A.C. Santulli, M. Feygenon, F.E. Camino, M.C. Aronson and S.S. Wong, *Chem. Mater.*, **23**, 1000 (2011); <https://doi.org/10.1021/cm102930z>
55. D.-W. Kim, S.-I. Shin, J.-D. Lee and S.-G. Oh, *Mater. Lett.*, **58**, 189 (2004); <https://doi.org/10.1016/j.matlet.2003.11.023>
56. A.A. Ali, M. Madkour, F. Al Sagheer, M.I. Zaki and A.A. Nazeer, *Catalysts*, **10**, 105 (2020); <https://doi.org/10.3390/catal10010105>
57. T.M. Al-Saadi and N.A. Hameed, *Adv. Phys. Theor. Appl.*, **44**, 139 (2015).
58. P. Li, H.B. Xu, Y. Zhang, Z.H. Li, S.L. Zheng and Y.L. Bai, *Dyes Pigm.*, **80**, 287 (2009); <https://doi.org/10.1016/j.dyepig.2008.07.016>
59. T.V. Rao, Y. Yang and A. Sayari, *J. Mol. Catal. Chem.*, **301**, 152 (2009); <https://doi.org/10.1016/j.molcata.2008.12.026>
60. G. Wang, L. Zhang, J. Deng, H. Dai, H. He and C.T. Au, *Appl. Catal. A*, **355**, 192 (2009); <https://doi.org/10.1016/j.apcata.2008.12.020>
61. X. Pang, K. Gao, F. Luo, Y. Emirov, A.A. Levin and A.A. Volinsky, *Thin Solid Films*, **517**, 1922 (2009); <https://doi.org/10.1016/j.tsf.2008.10.026>
62. X. Hou and K.L. Choy, *Thin Solid Films*, **516**, 8620 (2008); <https://doi.org/10.1016/j.tsf.2008.06.045>
63. M. Abecassis-Wolfovich, H. Rotter, M.V. Landau, E. Korin, A.I. Erenburg, D. Mogilyansky and E. Garshtein, *Stud. Surf. Sci. Catal.*, **146**, 247 (2003); [https://doi.org/10.1016/S0167-2991\(03\)80373-7](https://doi.org/10.1016/S0167-2991(03)80373-7)
64. C.L. Li, H.X. Zhao, T. Takahashi and M. Matsumura, *Mater. Sci. Eng. A*, **308**, 268 (2001); [https://doi.org/10.1016/S0921-5093\(00\)01976-6](https://doi.org/10.1016/S0921-5093(00)01976-6)
65. M.V. Landau, G.E. Shter, L. Titelman, V. Gelman, H. Rotter, G.S. Grader and M. Herskowitz, *Ind. Eng. Chem. Res.*, **45**, 7462 (2006); <https://doi.org/10.1021/ie0606744>
66. Y. Meng, W. Song, H. Huang, Z. Ren, S.-Y. Chen and S.L. Suib, *J. Am. Chem. Soc.*, **136**, 11452 (2014); <https://doi.org/10.1021/ja505186m>
66. C. Wei, L. Yu, C. Cui, J. Lin, C. Wei, N. Mathews, F. Huo, T. Sritharan and Z. Xu, *Chem. Commun.*, **50**, 7885 (2014); <https://doi.org/10.1039/c4cc02781g>
68. Y. Lvov, B. Munge, O. Giraldo, I. Ichinose, S.L. Suib and J.F. Rusling, *Langmuir*, **16**, 8850 (2000); <https://doi.org/10.1021/la000110j>
69. X.-L. Luo, J.-J. Xu, W. Zhao and H.-Y. Chen, *Biosens. Bioelectron.*, **19**, 1295 (2004); <https://doi.org/10.1016/j.bios.2003.11.019>
70. M. Wayu, *Solids*, **2**, 232 (2021); <https://doi.org/10.3390/solids2020015>
71. A. Asfaram, M. Ghaedi, S. Hajati and A. Goudarzi, *RSC Adv.*, **5**, 72300 (2015); <https://doi.org/10.1039/C5RA10815B>
72. T.A. Abdullah, R.T. Rasheed, T. Juzsakova, N. Al-Jammal, M.A. Mallah, L.P. Cuong, A.D. Salman, E. Domokos, Z. Ali and I. Cretescu, *Int. J. Environ. Sci. Technol.*, **18**, 1499 (2021); <https://doi.org/10.1007/s13762-020-02956-x>
73. E. Moazzen, K. Kucuk, S. Aryal, E.V. Timofeeva and C.U. Segre, *J. Power Sources*, **448**, 227374 (2020); <https://doi.org/10.1016/j.jpowsour.2019.227374>
74. S. Nazir, H. Jan, G. Zaman, T. Khan, H. Ashraf, B. Meer, M. Zia, S. Drouet, C. Hano and B.H. Abbasi, *Artif. Cells, Nanomed. Biotechnol.*, **49**, 625 (2021); <https://doi.org/10.1080/21691401.2021.1984935>
75. T. Li, T. Shi, X. Li, S. Zeng, L. Yin and Y. Pu, *Int. J. Environ. Res. Public Health*, **11**, 7918 (2014); <https://doi.org/10.3390/ijerph110807918>
76. M.M. Najafpour, F. Rahimi, E.-M. Aro, S.I. Allakhverdiev and C.-H. Lee, *J. R. Soc. Interface*, **9**, 2383 (2012); <https://doi.org/10.1098/rsif.2012.0412>

77. D. Van-Phuc, L. Ngoc-Chung and N. Ngoc-Tuan, Removal of Copper(II) From Aqueous Solution by Adsorption onto MnO₂ Nanostructure: Equilibrium and Kinetic Studies, The 4th Academic Conference on Natural Science for Young Scientists, Master & Phd Students from Asean Countries, pp. 57-64 (2015).
78. A. Bahadur, S. Iqbal, A. Saeed, M.I. Bashir, M. Shoaib, M. Waqas, G. Shabir and A. Jabbar, *Chem. Pap.*, **71**, 1445 (2017); <https://doi.org/10.1007/s11696-017-0138-3>
79. D.L. Huber, *Small*, **1**, 482 (2005); <https://doi.org/10.1002/sml.200500006>
80. R.M. Cornell and U. Schwertmann, The Iron Oxides: Structure, Properties, Reactions, Occurrences and Uses, John Wiley & Sons, Ed.: 2 (2006).
81. S. Laurent, D. Forge, M. Port, A. Roch, C. Robic, L. Vander Elst and R.N. Muller, *Chem. Rev.*, **108**, 2064 (2008); <https://doi.org/10.1021/cr068445e>
82. A.S. Teja and P.-Y. Koh, *Prog. Cryst. Growth Charact. Mater.*, **55**, 22 (2009); <https://doi.org/10.1016/j.pcrysgrow.2008.08.003>
83. M. De Cuyper and M. Joniau, *Eur. Biophys. J.*, **15**, 311 (1988); <https://doi.org/10.1007/BF00256482>
84. S. Hasany, I. Ahmed, J. Rajan and A. Rehman, *Nanosci. Nanotechnol.*, **2**, 148 (2012); <https://doi.org/10.5923/j.nn.20120206.01>
85. Y. Cai, Y. Shen, A. Xie, S. Li and X. Wang, *J. Magn. Magn. Mater.*, **322**, 2938 (2010); <https://doi.org/10.1016/j.jmmm.2010.05.009>
86. N. Latha and M. Gowri, *Int. J. Scient. Res.*, **3**, 1551 (2014).
87. V.V. Makarov, S.S. Makarova, A.J. Love, O.V. Sinityna, A.O. Dudnik, I.V. Yaminsky, M.E. Taliansky and N.O. Kalinina, *Langmuir*, **30**, 5982 (2014); <https://doi.org/10.1021/la5011924>
88. S. Venkateswarlu, B.N. Kumar, B. Prathima, K. Anitha and N.V.V. Jyothi, *Phys B.*, **457**, 30 (2015); <https://doi.org/10.1016/j.physb.2014.09.007>
89. C. Prasad, S. Gangadhara and P. Venkateswarlu, *Appl. Nanosci.*, **6**, 797 (2016); <https://doi.org/10.1007/s13204-015-0485-8>
90. V. Niraimathee, V. Subha, R.E. Ravindran and S. Renganathan, *Int. J. Environ. Sustain. Dev.*, **15**, 227 (2016); <https://doi.org/10.1504/IJESD.2016.077370>
91. M. Martínez-Cabanas, M. López-García, J.L. Barriada, R. Herrero and M.E. Sastre de Vicente, *Chem. Eng. J.*, **301**, 83 (2016); <https://doi.org/10.1016/j.cej.2016.04.149>
92. W.H. Li and N. Yang, *Mater. Lett.*, **162**, 157 (2016); <https://doi.org/10.1016/j.matlet.2015.09.064>
93. M. Mahdavi, M.B. Ahmad, M.J. Haron, F. Namvar, B. Nadi, M.Z.A. Rahman and J. Amin, *Molecules*, **18**, 7533 (2013); <https://doi.org/10.3390/molecules18077533>
94. J.K. Patra, M.S. Ali, I.G. Oh and K.H. Baek, *Artif. Cells Nanomed. Biotechnol.*, **45**, 349 (2017); <https://doi.org/10.3109/21691401.2016.1153484>
95. S. Gil, C.R. Correia and J.F. Mano, *Adv. Healthc. Mater.*, **4**, 883 (2015); <https://doi.org/10.1002/adhm.201400611>
96. M.F. Horst, D.F. Coral, M.B. Fernández van Raap, M. Alvarez and V. Lassalle, *Mater. Sci. Eng.*, **74**, 443 (2017); <https://doi.org/10.1016/j.msec.2016.12.035>
97. D. Azarifar, O. Badalkhani and Y. Abbasi, *J. Sulfur Chem.*, **37**, 656 (2016); <https://doi.org/10.1080/17415993.2016.1177055>
98. K. Hardani, F. Buazar, K. Ghanemi and M. Kashisaz, *Am. Assoc. Sci. Technol. J. Nanosci.*, **1**, 11 (2015).
99. D. He, L. Li, F. Bai, C. Zha, L. Shen, H.H. Kung and N. Bao, *Chem. Eur. J.*, **22**, 4454 (2016); <https://doi.org/10.1002/chem.201504429>
100. W. Sun, S. Mignani, M. Shen and X. Shi, *Drug Discov. Today*, **21**, 1873 (2016); <https://doi.org/10.1016/j.drudis.2016.06.028>
101. J. Li, Y. Hu, J. Yang, P. Wei, W. Sun, M. Shen, G. Zhang and X. Shi, *Biomaterials*, **38**, 10 (2015); <https://doi.org/10.1016/j.biomaterials.2014.10.065>
102. W.M. Liu, Y.N. Xue, N. Peng, W.-T. He, R.-X. Zhuo and S.-W. Huang, *J. Mater. Chem.*, **21**, 13306 (2011); <https://doi.org/10.1039/c1jm11460c>
103. H. El Ghandoor, *Int. J. Electrochem. Sci.*, **7**, 5734 (2012).
104. Y. Sun, J. Li, Y. Wang, C. Ding, Y. Lin, W. Sun and C. Luo, *Spectrochim. Acta A Mol. Biomol. Spectrosc.*, **178**, 1 (2017); <https://doi.org/10.1016/j.saa.2017.01.057>
105. W. Lu, M. Ling, M. Jia, P. Huang, C. Li and B. Yan, *Mol. Med. Rep.*, **9**, 1080 (2014); <https://doi.org/10.3892/mmr.2014.1906>
106. T. Lai, Y. Lai, C. Lee, Y. Shu and C. Wang, *Catal. Today*, **131**, 105 (2008); <https://doi.org/10.1016/j.cattod.2007.10.039>
107. M. El Baydi, G. Poillierat, J.-L. Rehspringer, J.L. Gautier, J.-F. Koenig and P. Chartier, *J. Solid State Chem.*, **109**, 281 (1994); <https://doi.org/10.1006/jssc.1994.1105>
108. S.W. Oh, H.J. Bang, Y.C. Bae and Y.K. Sun, *J. Power Sources*, **173**, 502 (2007); <https://doi.org/10.1016/j.jpowsour.2007.04.087>
109. A.U. Mane, K. Shalini, A. Wohlfart, A. Devi and S.A. Shivashankar, *J. Cryst. Growth*, **240**, 157 (2002); [https://doi.org/10.1016/S0022-0248\(02\)00860-6](https://doi.org/10.1016/S0022-0248(02)00860-6)
110. A. Rumpelcker, F. Kleitz, E.L. Salabas and F. Schüth, *Chem. Mater.*, **19**, 485 (2007); <https://doi.org/10.1021/cm0610635>
111. F. Mohandes, F. Davar and M. Salavati-Niasari, *J. Magn. Magn. Mater.*, **322**, 872 (2010); <https://doi.org/10.1016/j.jmmm.2009.11.019>
112. L. Ren, P. Wang, Y. Han, C. Hu and B. Wei, *Mater. Phys. Lett.*, **476**, 78 (2009); <https://doi.org/10.1016/j.cplett.2009.06.015>
113. L. Li, Y. Chu, Y. Liu, J.L. Song, D. Wang and X.W. Du, *Mater. Lett.*, **62**, 1507 (2008); <https://doi.org/10.1016/j.matlet.2007.09.012>
114. D.Y. Kim, S.H. Ju, H.Y. Koo, S.K. Hong and Y.C. Kang, *J. Alloys Compd.*, **417**, 254 (2006); <https://doi.org/10.1016/j.jallcom.2005.09.013>
115. F. Gu, C. Li, Y. Hu and L. Zhang, *J. Cryst. Growth*, **304**, 369 (2007); <https://doi.org/10.1016/j.jcrysgro.2007.03.040>
116. X. Wang, X.Y. Chen, L.S. Gao, H.G. Zheng, Z. Zhang and Y.T. Qian, *J. Phys. Chem. B*, **108**, 16401 (2004); <https://doi.org/10.1021/jp048016p>
117. A.S. Bhatt, D.K. Bhat, C.W. Tai and M.S. Santosh, *Mater. Chem. Phys.*, **125**, 347 (2011); <https://doi.org/10.1016/j.matchemphys.2010.11.003>
118. R.M. Wang, C.M. Liu, H.Z. Zhang, C.P. Chen, L. Guo, H.B. Xu and S.H. Yang, *Appl. Phys. Lett.*, **85**, 2080 (2004); <https://doi.org/10.1063/1.1789577>
119. H. Duan, D. Wang and Y. Li, *Chem. Soc. Rev.*, **44**, 5778 (2015); <https://doi.org/10.1039/C4CS00363B>
120. K. Elumalai, S. Velmurugan, S. Ravi, V. Kathiravan and G. Adaikala Raj, *Adv. Powder Technol.*, **26**, 1639 (2015); <https://doi.org/10.1016/j.apt.2015.09.008>
121. S.J. Hoseini, M. Darroudi, R. Kazemi Oskuee, L. Gholami and A. Khorsand Zak, *Adv. Powder Technol.*, **26**, 991 (2015); <https://doi.org/10.1016/j.apt.2015.04.003>
122. S. Irvani, *Green Chem.*, **13**, 2638 (2011); <https://doi.org/10.1039/c1gc15386b>
123. S.K. Kannan and M. Sundrarajan, *Adv. Powder Technol.*, **26**, 1505 (2015); <https://doi.org/10.1016/j.apt.2015.08.009>
124. A.K. Mittal, Y. Chisti and U.C. Banerjee, *Biotechnol. Adv.*, **31**, 346 (2013); <https://doi.org/10.1016/j.biotechadv.2013.01.003>
125. A.B. Samui, D.S. Patil, C.D. Prasad and N.M. Gokhale, *Adv. Powder Technol.*, **27**, 1879 (2016); <https://doi.org/10.1016/j.apt.2016.06.010>
126. B. Siripireddy and B.K. Mandal, *Adv. Powder Technol.*, **28**, 785 (2017); <https://doi.org/10.1016/j.apt.2016.11.026>
127. M. Sundrarajan, S. Ambika and K. Bharathi, *Adv. Powder Technol.*, **26**, 1294 (2015); <https://doi.org/10.1016/j.apt.2015.07.001>
128. M. Fazlzadeh, K. Rahmani, A. Zarei, H. Abdoallahzadeh, F. Nasiri and R. Khosravi, *Adv. Powder Technol.*, **28**, 122 (2017); <https://doi.org/10.1016/j.apt.2016.09.003>

129. J.K. Patra, Y. Kwon and K.-H. Baek, *Adv. Powder Technol.*, **27**, 2204 (2016);
<https://doi.org/10.1016/j.apt.2016.08.005>
130. J.K. Sharma, P. Srivastava, G. Singh, M.S. Akhtar and S. Ameen, *Mater. Sci. Eng. B*, **193**, 181 (2015);
<https://doi.org/10.1016/j.mseb.2014.12.012>
131. A. Diallo, A.C. Beye, T.B. Doyle, E. Park and M. Maaza, *Green Chem. Lett. Rev.*, **8**, 30 (2015);
<https://doi.org/10.1080/17518253.2015.1082646>
132. I. Bibi, N. Nazar, M. Iqbal, S. Kamal, H. Nawaz, S. Nouren, Y. Safa, K. Jilani, M. Sultan, S. Ata, F. Rehman and M. Abbas, *Adv. Powder Technol.*, **28**, 2035 (2017);
<https://doi.org/10.1016/j.apt.2017.05.008>
133. B. Sasi and K.G. Gopchandran, *Nanotechnology*, **18**, 115613 (2007);
<https://doi.org/10.1088/0957-4484/18/11/115613>
134. K. Anandan and V. Rajendran, *Mater. Sci. Eng. B*, **199**, 48 (2015);
<https://doi.org/10.1016/j.mseb.2015.04.015>
135. M. Jeyaraj, S. Gurunathan, M. Qasim, M.-H. Kang and J.-H. Kim, *Nanomaterials*, **9**, 1719 (2019);
<https://doi.org/10.3390/nano9121719>
136. R. Hada, *Int. Res. J. Pure Appl. Chem.*, **3**, 111 (2013);
<https://doi.org/10.9734/IRJPAC/2013/2937>
137. Y. Gangarajula and B. Gopal, *Appl. Catal A*, **475**, 211 (2014);
<https://doi.org/10.1016/j.apcata.2014.01.036>
138. R. Veerasamy, T.Z. Xin, S. Gunasagaran, T.F.W. Xiang, E.F.C. Yang, N. Jeyakumar and S.A. Dhanaraj, *J. Saudi Chem. Soc.*, **15**, 113 (2011);
<https://doi.org/10.1016/j.jscs.2010.06.004>
139. A. Kar and A.K. Ray, *Am. J. Nanosci. Nanotechnol.*, **2**, 17 (2014);
<https://doi.org/10.11648/j.nano.20140202.11>
140. T. Jiang, Y. Wang, D. Meng and M. Yu, *Superlatt. Microstruct.*, **85**, 1 (2015);
<https://doi.org/10.1016/j.spmi.2015.05.014>
141. A.F. Mohd Abd Fatah and N. A. Hamid, *Fund. Appl. Sci.*, **14**, 391 (2018);
<https://doi.org/10.11113/mjfas.v14n3.1220>
142. S. Sundar, G. Venkatachalam and S.J. Kwon, *Nanomaterials*, **8**, E823 (2018);
<https://doi.org/10.3390/nano8100823>
143. B.T. Sone, A. Diallo, X.G. Fuku, A. Gurib-Fakim and M. Maaza, *Arab. J. Chem.*, **13**, 160 (2020);
<https://doi.org/10.1016/j.arabjc.2017.03.004>
144. Q. Maqbool, S. Iftikhar, M. Nazar, F. Abbas, A. Saleem, T. Hussain, R. Kausar, S. Anwaar and N. Jabeen, *IET Nanobiotechnol.*, **11**, 463 (2017);
<https://doi.org/10.1049/iet-nbt.2016.0125>
145. W.M. Mohammed, T.H. Mubark and R.M.S. Al-Haddad, *Int. J. Appl. Eng. Res. Dev.*, **13**, 10559 (2018).
146. J. Emima Jeronsia, L. Allwin Joseph, P. Annie Vinosha, A. Jerline Mary and S. Jerome Das, *Mater. Today Proc.*, **8**, 214 (2019);
<https://doi.org/10.1016/j.matpr.2019.02.103>
147. M.H. Koupaei, B. Shareghi, A.A. Saboury, F. Davar, A. Semnani and M. Evini, *RSC Adv.*, **6**, 42313 (2016);
<https://doi.org/10.1039/C5RA24862K>
148. J. Sackey, A.C. Nwanya, A.K.H. Bashir, N. Matinise, J.B. Ngilirabanga, A.E. Ameh, E. Coetsee and M. Maaza, *Mater. Chem. Phys.*, **244**, 122714 (2020);
<https://doi.org/10.1016/j.matchemphys.2020.122714>
149. K. Vishveshvar, M.A. Krishnan, K. Haribabu and S. Vishnuprasad, *BioNanoSci.*, **8**, 554 (2018);
<https://doi.org/10.1007/s12668-018-0508-5>
150. S. Pourbeyram, J. Abdollahpour and M. Soltanpour, *Mater. Sci. Eng. C*, **94**, 850 (2019);
<https://doi.org/10.1016/j.msec.2018.10.034>
151. M. Rafique, A.J. Shaikh, R. Rasheed, M.B. Tahir, S.S.A. Gillani, A. Usman, M. Imran, A. Zakir, Z.U.H. Khan and F. Rabbani, *J. Inorg. Organomet. Polym. Mater.*, **28**, 2455 (2018);
<https://doi.org/10.1007/s10904-018-0921-9>
152. A. Azam, A.S. Ahmed, M. Oves, M. Khan and A. Memic, *Int. J. Nanomed.*, **7**, 3527 (2012);
<https://doi.org/10.2147/IJN.S29020>
153. S.A. Akindelu and A.S. Folorunso, *J. Nanotechnol. Nanomed. Nanobiotechnol.*, **6**, 22 (2019);
<https://doi.org/10.24966/NTMB-2044/100022>
154. K.D. Sirdeshpande, A. Sridhar, K.M. Cholkar and R. Selvaraj, *Appl. Nanosci.*, **8**, 675 (2018);
<https://doi.org/10.1007/s13204-018-0698-8>
155. M. Saravanan, S.K. Barik, D.M. Ali, P. Prakash and A. Pugazhendhi, *Microb. Pathog.*, **116**, 221 (2018);
<https://doi.org/10.1016/j.micpath.2018.01.038>
156. M.S. Samuel, S. Jose, E. Selvarajan, T. Mathimani and A. Pugazhendhi, *J. Photochem. Photobiol. B*, **202**, 111642 (2020);
<https://doi.org/10.1016/j.jphotobiol.2019.111642>
157. M. Hosseini-Koupaei, B. Shareghi, A.A. Saboury, F. Davar, V.A. Sirotkin, M.H. Hosseini-Koupaei and Z. Enteshari, *Int. J. Biol. Macromol.*, **122**, 732 (2019);
<https://doi.org/10.1016/j.ijbiomac.2018.11.001>
158. A.B. Rezaie, M. Montazer and M.M. Rad, *J. Photochem. Photobiol. B*, **176**, 100 (2017);
<https://doi.org/10.1016/j.jphotobiol.2017.09.021>
159. S. Chand Mali, S. Raj and R. Trivedi, *Biochem. Biophys. Rep.*, **20**, 100699 (2019);
<https://doi.org/10.1016/j.bbrep.2019.100699>
160. F. Duman, I. Ocsyoy and F.O. Kup, *Mater. Sci. Eng. C*, **60**, 333 (2016);
<https://doi.org/10.1016/j.msec.2015.11.052>
161. V. Srikant and D.R. Clarke, *J. Appl. Phys.*, **83**, 5447 (1998);
<https://doi.org/10.1063/1.367375>
162. P.K. Stoimenov, R.L. Klinger, G.L. Marchin and K.J. Klabunde, *Langmuir*, **18**, 6679 (2002);
<https://doi.org/10.1021/la0202374>
163. M. Roselli, A. Finamore, I. Garaguso, M.S. Britti and E. Mengheri, *J. Nutr.*, **133**, 4077 (2003);
<https://doi.org/10.1093/jn/133.12.4077>
164. N.A.N. Mohamad, N.A. Arham, J. Jai and A. Hadi, *Adv. Mater. Res.*, **832**, 350 (2014);
<https://doi.org/10.4028/www.scientific.net/AMR.832.350>
165. V.V. Makarov, A.J. Love, O.V. Sinititsyna, S.S. Makarova, I.V. Yaminsky, M.E. Taliyansky and N.O. Kalimina, *Acta Naturae*, **6**, 35 (2014);
<https://doi.org/10.32607/20758251-2014-6-1-35-44>
166. A.G. Ingale and A.N. Chaudhari, *J. Nanomed. Nanotechnol.*, **4**, 1 (2013);
<https://doi.org/10.4172/2157-7439.1000165>
167. S.M. Roopan, V.D. Rajeswari, V.N. Kalpana and G. Elango, *Appl. Microbiol. Biotechnol.*, **100**, 1153 (2016);
<https://doi.org/10.1007/s00253-015-7190-0>
168. J. Rajkumari, C.M. Magdalane, B. Siddhardha, M.V. Arasu, N.A. Al-Dhabi, J. Madhavan, G. Ramalingam, A.K.M. Ghilan, V. Duraipandiayan and K. Kaviyarasu, *J. Photochem. Photobiol. B*, **201**, 111667 (2019);
<https://doi.org/10.1016/j.jphotobiol.2019.111667>
169. S. Marimuthu, A.A. Rahuman, C. Jayaseelan, T. Santhoshkumar, A.V. Kirthi, K. Velayutham, A. Bagavan, C. Kamaraj, G. Elango, M. Iyappan, C. Siva, L. Karthik and K.V. Rao, *Asian Pac. J. Trop. Med.*, **6**, 682 (2013);
[https://doi.org/10.1016/S1995-7645\(13\)60118-2](https://doi.org/10.1016/S1995-7645(13)60118-2)
170. P.O. Akinola, A. Lateef, T.B. Asafa, L.S. Beukes, A.S. Hakeem and H.M. Irshad, *Heliyon*, **6**, e04610 (2020);
<https://doi.org/10.1016/j.heliyon.2020.e04610>
171. R. Dobrucka, *Iran. J. Pharm. Res.*, **16**, 756 (2017).
172. T. Santhoshkumar, A.A. Rahuman, C. Jayaseelan, G. Rajakumar, S. Marimuthu, A.V. Kirthi, K. Velayutham, J. Thomas, J. Venkatesan and S.-K. Kim, *Asian Pac. J. Trop. Med.*, **7**, 968 (2014);
[https://doi.org/10.1016/S1995-7645\(14\)60171-1](https://doi.org/10.1016/S1995-7645(14)60171-1)
173. G. Rajakumar, A.A. Rahuman, S.M. Roopan, I.M. Chung, K. Anbarasan and V. Karthikeyan, *Parasitol. Res.*, **114**, 571 (2015);
<https://doi.org/10.1007/s00436-014-4219-8>
174. N.A. Al-Shabib, F.M. Husain, F.A. Qais, N. Ahmad, A. Khan, A.A. Alyousef, M. Arshad, S. Noor, J.M. Khan, P. Alam, T.H. Albalawi and S.A. Shahzad, *Front. Microbiol.*, **11**, 1680 (2020);
<https://doi.org/10.3389/fmicb.2020.01680>
175. G. Rajakumar, A.A. Rahuman, C. Jayaseelan, T. Santhoshkumar, S. Marimuthu, C. Kamaraj, A. Bagavan, A.A. Zahir, A.V. Kirthi, G. Elango, P. Arora, R. Karthikeyan, S. Manikandan and S. Jose, *Parasitol. Res.*, **113**, 469 (2014);
<https://doi.org/10.1007/s00436-013-3676-9>
176. K. Thandapani, M. Kathiravan, E. Namasivayam, I.A. Padiksan, G. Natesan, M. Tiwari, B. Giovanni and V. Perumal, *Environ. Sci. Pollut. Res. Int.*, **25**, 10328 (2018);
<https://doi.org/10.1007/s11356-017-9177-0>

177. M. Sundrarajan, K. Bama, M. Bhavani, S. Jegatheeswaran, S. Ambika, A. Sangili, P. Nithya and R. Sumathi, *J. Photochem. Photobiol. B*, **171**, 117 (2017); <https://doi.org/10.1016/j.jphotobiol.2017.05.003>
178. S. Alghool, H.F. Abd El-Halim and A.M. Mostafa, *J. Inorg. Organomet. Polym. Mater.*, **29**, 1324 (2019); <https://doi.org/10.1007/s10904-019-01096-1>
179. P. Deepika, H.M. Vinusha, B. Muneera, N.D. Rekha and K. Shiva Prasad, *Curr. Res. Green Sustainable Chem.*, **1-2**, 14 (2020); <https://doi.org/10.1016/j.crgsc.2020.04.001>
180. K.S. Prasad, C. Shivamallu, G. Shruthi and M. Prasad, *Chemistry Select*, **3**, 3860 (2018); <https://doi.org/10.1002/slct.201800653>
181. W. Kang, C. Yan, X. Wang, C.Y. Foo, A.W.M. Tan, K.J.Z. Chee and P.S. Lee, *J. Mater. Chem. C*, **2**, 4727 (2014); <https://doi.org/10.1039/C4TC00158C>
182. P. Rasheed, S. Haq, M. Waseem, S. Rehman, W. Rehman, N. Bibi and S.A.A. Shah, *Mater. Res. Expr.*, **7**, 2053 (2020); <https://doi.org/10.1088/2053-1591/ab6fa2>
183. N. Talavera, M. Navarro, A. Sifontes, Y. Díaz, H. Villalobos, G. Nino-Vega, A. Boada-Sucre and I. Gonzalez, Ed.: S.G. Padalari, Green Synthesis of Nanosized Vanadium Pentoxide using *Saccharomyces Cervisiae* as Biotemplate, In: Recent Research Developments in Materials Science, Kerala: Research Signpost, vol. 10, Chap. 5, pp. 89-102 (2013).
184. C. Ramesh, K.T. Mohan Kumar, N. Latha and V. Ragunathan, *Curr. Nanosci.*, **8**, 603 (2012); <https://doi.org/10.2174/157341312801784366>
185. B.T. Sone, E. Manikandan, A. Gurib-Fakim and M. Maaza, *Green Chem. Lett. Rev.*, **9**, 85 (2016); <https://doi.org/10.1080/17518253.2016.1151083>
186. P. Sangwan and H. Kumar, *Asian J. Pharm. Clin. Res.*, **10**, 206 (2017); <https://doi.org/10.22159/ajpcr.2017.v10i2.15189>
187. Z. Ahmad, A. Shamim, S. Mahmood, T. Mahmood and F. Khan, *Eng. Appl. Sci. Letts.*, **1**, 23 (2018); <https://doi.org/10.30538/psrp-easi2018.0008>
188. J. Iqbal, B.A. Abbasi, A. Munir, S. Uddin, S. Kanwal and T. Mahmood, *Microsc. Res. Technol.*, **83**, 706 (2020); <https://doi.org/10.1002/jemt.23460>
189. N. Gupta and S.P. Resmi, *Imp. J. Interdisciplin. Res.*, **2**, 532 (2016).
190. N.O.M. Dewi and Y. Yulizar, *Mater. Today: Proc.*, **22**, 199 (2020); <https://doi.org/10.1016/j.matpr.2019.08.088>
191. H.M. Abuzeid, S.A. Elsherif, N.A. Abdel Ghany and A.M. Hashem, *J. Energy Storage*, **21**, 156 (2019); <https://doi.org/10.1016/j.est.2018.11.021>
192. M. Soury, V. Hoseinpour, N. Ghaemi and A. Shakeri, *Int. Nano Lett.*, **9**, 73 (2019); <https://doi.org/10.1007/s40089-018-0257-z>
193. V. Kumar, K. Singh, S. Panwar and S.K. Mehta, *Int. Nano Lett.*, **7**, 123 (2017); <https://doi.org/10.1007/s40089-017-0205-3>
194. S.A. Khan, S. Shahid, B. Shahid, U. Fatima and S.A. Abbasi, *Biomolecules*, **10**, 785 (2020); <https://doi.org/10.3390/biom10050785>
195. A.V. Ramesh, B. Lavakusa, B.S. Mohan, Y.P. Kumar, D.R. Devi and K. Basavaiah, *IOSR J. Appl. Chem.*, **10**, 35 (2017); <https://doi.org/10.9790/5736-1007013543>
196. A.V. Samrot, P. Senthilkumar, S. Rashmitha, P. Veera and C.S. Sahithya, *J. Nanostruct. Chem.*, **8**, 343 (2018); <https://doi.org/10.1007/s40097-018-0279-0>
197. Y.P. Yew, K. Shameli, M. Miyake, N. Kuwano, N.B. Bt Ahmad Khairudin, S.E. Bt Mohamad and K.X. Lee, *Nanoscale Res. Lett.*, **11**, 276 (2016); <https://doi.org/10.1186/s11671-016-1498-2>
198. A. Azizi, *J. Inorg. Organomet. Polym.*, **30**, 3552 (2020); <https://doi.org/10.1007/s10904-020-01500-1>
199. A.A. Barzinjy, D.A. Abdul, F.H.S. Hussain and S.M. Hamad, *Inorg. Nano-Metal Chem.*, **50**, 620 (2020); <https://doi.org/10.1080/24701556.2020.1723027>
200. A. Azizi, *J. Inorg. Organomet. Polym. Mater.*, **30**, 3552 (2020); <https://doi.org/10.1007/s10904-020-01500-1>
201. G. Sathishkumar, V. Logeshwaran, S. Sarathbabu, P.K. Jha, M. Jeyaraj, C. Rajkuberan, N. Senthilkumar and S. Sivaramakrishnan, *Artif. Cells Nanomed. Biotechnol.*, **46**, 589 (2018); <https://doi.org/10.1080/21691401.2017.1332635>
202. S. Narayanan, B.N. Sathy, U. Mony, M. Koyakutty, S.V. Nair and D. Menon, *ACS Appl. Mater. Interfaces*, **4**, 251 (2012); <https://doi.org/10.1021/am201311c>
203. N. Basavegowda, K. Mishra and Y. Lee, *RSC Adv.*, **4**, 61660 (2014); <https://doi.org/10.1039/C4RA11623B>
204. N. Basavegowda, K.B. Somai Magar, K. Mishra and Y.R. Lee, *New J. Chem.*, **38**, 5415 (2014); <https://doi.org/10.1039/C4NJ01155D>
205. S. Dubey, J. Kumar, A. Kumar and Y.C. Sharma, *Adv. Powder Technol.*, **29**, 2583 (2018); <https://doi.org/10.1016/j.apt.2018.03.009>
206. N. Akhlaghi, G. Najafpour-Darzi and H. Younesi, *Adv. Powder Technol.*, **31**, 3562 (2020); <https://doi.org/10.1016/j.apt.2020.07.004>
207. C.-M. Hsu, Y.-H. Huang, H.-J. Chen, W.-C. Lee, H.-W. Chiu, J.P. Maity, C.-C. Chen, Y.-H. Kuo and C.-Y. Chen, *Mater. Today Commun.*, **14**, 302 (2018); <https://doi.org/10.1016/j.mtcomm.2018.02.005>
208. D.C. Onwudiwe, M.P. Ravele and E.E. Elemike, *Nano-Structures & Nano-Objects*, **23**, 100470 (2020); <https://doi.org/10.1016/j.nanoso.2020.100470>
209. F.S. Razavi, A. Sobhani, O. Amiri, M. Ghiyasiyan-Arani and M. Salavati-Niasari, *Int. J. Hydrogen Energy*, **45**, 17662 (2020); <https://doi.org/10.1016/j.ijhydene.2020.04.273>
210. I. Bibi, N. Nazar, M. Iqbal, S. Kamal, H. Nawaz, S. Nouren, Y. Safa, K. Jilani, M. Sultan, S. Ata, F. Rehman and M. Abbas, *Adv. Powder Technol.*, **28**, (2017); <https://doi.org/10.1016/j.apt.2017.05.008>
211. A.S. Vijayanandan and R.M. Balakrishnan, *J. Environ. Manage.*, **218**, 442 (2018); <https://doi.org/10.1016/j.jenvman.2018.04.032>
212. T. Rasheed, F. Nabeel, M. Bilal and H.M.N. Iqbal, *Biocatal. Agric. Biotechnol.*, **19**, 101154 (2019); <https://doi.org/10.1016/j.bcab.2019.101154>
213. A.A. Ezhilarasi, J.J. Vijaya, K. Kaviyarasu, X. Zhang and L.J. Kennedy, *Surf. Interfaces*, **20**, 100553 (2020); <https://doi.org/10.1016/j.surf.2020.100553>
214. P. Karpagavinayagam, A. Emi Princess Prasanna and C. Vedhi, *Mater. Today Proc.*, **48**, 136 (2022); <https://doi.org/10.1016/j.matpr.2020.04.183>
215. M.I. Din, A.G. Nabi, A. Rani, A. Aihetasham and M. Mukhtar, *Environ. Nanotechnol. Monit. Manage.*, **9**, 29 (2018); <https://doi.org/10.1016/j.enmm.2017.11.005>
216. A.C. Nwanya, M.M. Ndipingwi, C.O. Ikpo, R.M. Obodo, S.C. Nwanya, S. Botha, F.I. Ezema, E.I. Iwuoha and M. Maaza, *J. Alloys Compd.*, **822**, 153581 (2020); <https://doi.org/10.1016/j.jallcom.2019.153581>
217. F. Ibraheem, M.H. Aziz, M. Fatima, F. Shaheen, S.M. Ali and Q. Huang, *Mater. Lett.*, **234**, 129 (2018); <https://doi.org/10.1016/j.matlet.2018.09.075>
218. A.A. Ezhilarasi, J.J. Vijaya, L.J. Kennedy and K. Kaviyarasu, *Mater. Chem. Phys.*, **241**, 122419 (2020); <https://doi.org/10.1016/j.matchemphys.2019.122419>
219. K. Lingaraju, H. Raja Naika, H. Nagabhushana, K. Jayanna, S. Devaraja and G. Nagaraju, *Arab. J. Chem.*, **13**, 4712 (2019); <https://doi.org/10.1016/j.arabjc.2019.11.003>
220. Z. Sabouri, A. Akbari, H.A. Hosseini, M. Khatami and M. Darroudi, *Polyhedron*, **178**, 114351 (2020); <https://doi.org/10.1016/j.poly.2020.114351>
221. S.C. Mali, S. Raj and R. Trivedi, *Biochem. Biophys. Rep.*, **20**, 100699 (2019); <https://doi.org/10.1016/j.bbrep.2019.100699>
222. M. Rafique, F. Shafiq, S.S. Ali Gillani, M. Shakil, M.B. Tahir and I. Sadaf, *Optik*, **208**, 164053 (2020); <https://doi.org/10.1016/j.ijleo.2019.164053>
223. S. Chaudhary, D. Rohilla, A. Umar, N. Kaur and A. Shanavas, *Ceram. Int.*, **45**, 15025 (2019); <https://doi.org/10.1016/j.ceramint.2019.04.239>

224. A.Y. Ghidan, T.M. Al-Antary and A.M. Awwad, *Environ. Nanotechnol. Monitor. Manage.*, **6**, 95 (2016); <https://doi.org/10.1016/j.enmm.2016.08.002>
225. S. Hemmati, L. Mehrazin, M. Hekmati, M. Izadi and H. Veisi, *Mater. Chem. Phys.*, **214**, 527 (2018); <https://doi.org/10.1016/j.matchemphys.2018.04.114>
226. S. Chakraborty, J.J. Farida, R. Simon, S. Kasthuri and N.L. Mary, *Surf. Interfaces*, **19**, 100488 (2020). <https://doi.org/10.1016/j.surfin.2020.100488>
227. M. Ganesh, S.G. Lee, J. Jayaprakash, M. Mohankumar and H.T. Jang, *Biocatal. Agric. Biotechnol.*, **19**, 101129 (2019); <https://doi.org/10.1016/j.bcab.2019.101129>
228. G.T. Anand, D. Renuka, R. Ramesh, L. Anandaraj, S.J. Sundaram, G. Ramalingam, C.M. Magdalane, A.K.H. Bashir, M. Maaza and K. Kaviyarasu, *Surf. Interfaces*, **17**, 100376 (2019); <https://doi.org/10.1016/j.surfin.2019.100376>
229. G. Sharmila, M. Thirumarimurugan and C. Muthukumar, *Microchem. J.*, **145**, 578 (2019); <https://doi.org/10.1016/j.microc.2018.11.022>
230. D. Suresh, P.C. Nethravathi, H. Udayabhanu, H. Nagabhushana, H. Rajanaika and S.C. Sharma, *Mater. Sci. Semicond. Process.*, **31**, 446 (2015); <https://doi.org/10.1016/j.mssp.2014.12.023>
231. A. Diallo, B.D. Ngom, E. Park and M. Maaza, *J. Alloys Compd.*, **646**, 425 (2015); <https://doi.org/10.1016/j.jallcom.2015.05.242>
232. F.T. Thema, E. Manikandan, M.S. Dhlamini and M. Maaza, *Mater. Lett.*, **161**, 124 (2015); <https://doi.org/10.1016/j.matlet.2015.08.052>
233. M.S. Geetha, H. Nagabhushana and H.N. Shivananjaiah, *J. Sci.: Adv. Mater. Devices*, **1**, 301 (2016); <https://doi.org/10.1016/j.jsamd.2016.06.015>
234. M. Ramesh, M. Anbuvaran and G. Viruthagiri, *Spectrochim. Acta A Mol. Biomol. Spectrosc.*, **136**, 864 (2015); <https://doi.org/10.1016/j.saa.2014.09.105>
235. J. Ruangtong, J. T-Thienprasert and N.P. T-Thienprasert, *Mater. Today Commun.*, **24**, 101224 (2020); <https://doi.org/10.1016/j.mtcomm.2020.101224>



SRR & CVR Government Degree College (A) Vijayawada

Department of Mathematics

&

Department of Statistics

Report on

***“Skill Enhancement Activity - Students Participation in 3-day
Workshop on MATLAB at KBN College(A)”***

(An Experiential & Peer Learning – Hands on Experience)

Dt: 28th to 30th April 2022

The Departments of Mathematics & Statistics encouraged the students of II & III year mathematics groups to participate in the 3-day workshop on MATLAB organised by the department of Mathematics & Statistics, KBN College(A), Vijayawada from 28-04-2022 to 30-04-2022. With the permission of the Principal Dr. K. Bhagya Lakshmi garu, HOD of the department of mathematics Smt. K.V Naga Lakshmi guided the students to attend the workshop. With the company of faculty members of the departments Sri M.Lakshmana Dasu, K.Ashok, P.Ramesh, Dr. K. Rajinikanth, Dr. K.V Rama Rao, a total of 25 students attended the workshop. The other faculty members are also involved in this activity.

The students learnt the basics of MATLAB and various topics (listed below) with hands on experience in the lab from the resource person of the workshop Dr. E. Vargil Kumar, Associate Professor, Gudlavalleru Engineering College,

Topics learnt in the workshop:

1. About MATLAB
2. MATLAB Tools
3. Some Math functions
4. Operations on vectors and matrices
5. Solution of equations using functions
6. MATLAB Built-in functions
7. Plotting graphs
8. About Unacademy APP

Learning Out Comes:

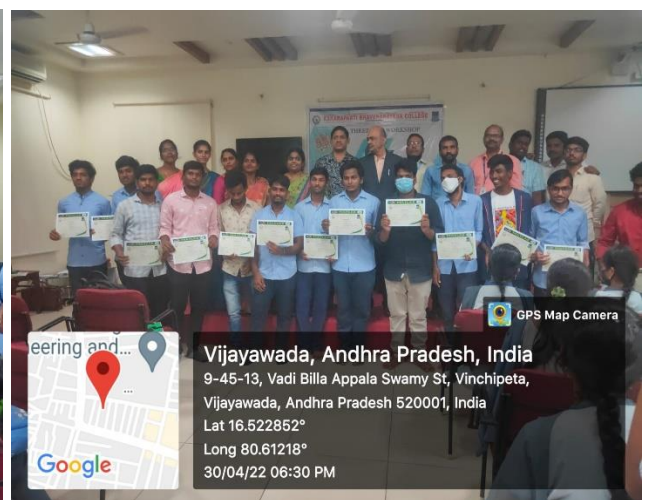
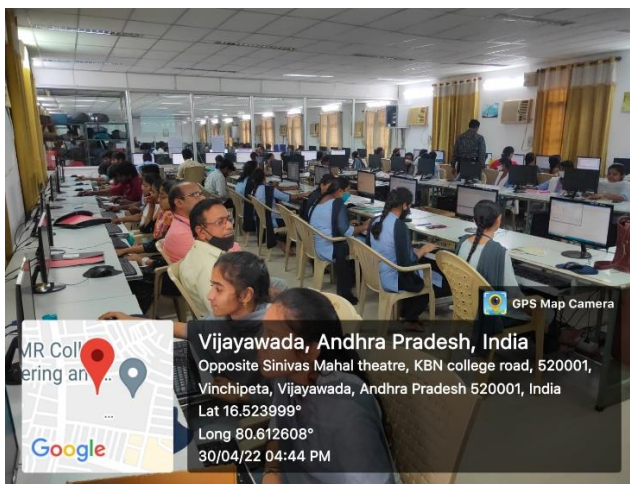
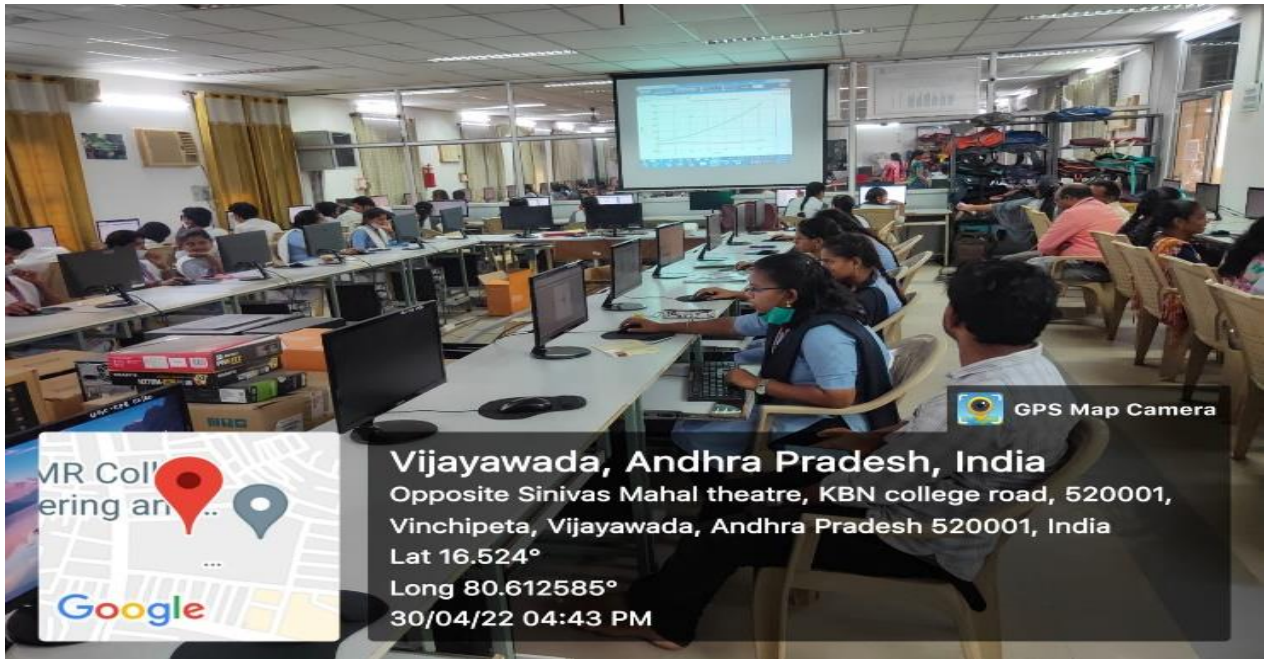
1. Students got awareness about MATLAB and its applications
2. Enriched on the usage of MATLAB to solve various mathematical problems with hands on experience.

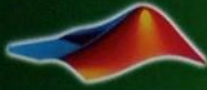
List of Students participated:

1. Ch. Sai Babu, III B.Sc MSCs
2. S. Jyothi, III B.Sc MSCs
3. G. Renuka Vyshnavi, III B.Sc MSCs
4. G. Venu, III B.Sc MSCs
5. M. Vaneswari, III B.Sc MSCs
6. P. Karishma, III B.Sc MSCs
7. G. Lakshmi, II B.Sc MSCs
8. P. Kiranmai, II B.Sc MSCs
9. T. Satya Kameswari, II B.Sc MSCs
10. N. Pratap Kumar, II B.Sc MSCs
11. P. Jishnu Suseela, II B.Sc MSCs
12. N. Priyanka, II B.Sc MSCs
13. PDVNR Shivani, II B.Sc MSCs
14. S. Ajay Kumar, II B.Sc MSCs
15. S. Uma Mahesh, II B.Sc MSCs

16. S. Abraham Lincoln, II B.Sc MSCs
17. B.Vivek, II B.Sc MSCs
18. D.Eswar Teja, II B.Sc MSCs
19. MD. Yasin Ali, II B.Sc MSCs
20. D. Karunakar, II B.Sc MSCs
21. M.Kusuma, II B.Sc MSCs
22. G. Jyothi, II B.Sc MSCs
23. B. Ravi Kiran, III B.Sc MPC
24. B. Yaswanth, III B.Sc MPC
25. M. Anil, III B.Sc MPC







MATLAB



ISO 9001: 2015 Certified

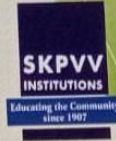
Accredited by NAAC with 'A' (3rd Cycle)



ESTD : 1965

K.B.N. COLLEGE (AUTONOMOUS)

Sponsored by S.K.P.V.V. Hindu High Schools Committee Kothapeta, VIJAYAWADA - 520 001.
A College with Potential for Excellence (CPE) All India 92nd Rank in NIRF by MHRD (2017)
Recognized as Band Performer in ARIIA by Ministry of Education, Govt. of India



Three-Day Workshop on

Matlab

Organized by
Department of Mathematics & Statistics

Certificate

This is to certify that Mr / Miss CH: SAI BABU
SRR & CVR GOVT DEGREE of
COLLEGE Vijayawada, Andhra Pradesh, has participated in the
Three-Day Workshop on 'Matlab' Organised at K.B.N. College, Vijayawada, Andhra Pradesh,
during 28th - 30th April, 2022.

Department of Mathematics and Statistics of K.B.N.

MUBa
Convener

Kea
Principal

[Certificates of all students](#)

Vijayawada,
Date: 27-04-2022

To

The Principal,
S.R.R & C.V.R GOVT Degree College (A),
Vijayawada.

Respected Principal Madam,

Sub:- Departments of Mathematics and Statistics - **Permission to send II B.Sc. & III B.Sc., Mathematics Students for attending MAT LAB Training Programme from 28-04-2022 to 30-04-2022 organising by K.B.N. College, Department of Mathematics, Vijayawada – Reg.**

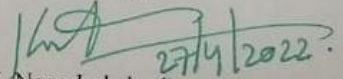
I bring to kind notice that, K.B.N. College, Vijayawada is conducting MAT LAB Training Programme from 28-04-2022 to 30-04-2022 by the Department of Mathematics.

Hence I request you to kindly give permission for the students of II B.Sc. & III B.Sc. for attending the MAT LAB Training Programme from 28-04-2022 to 30-04-2022, which is useful to the Students. I am here with enclosing the List of the Participating Students & Broacher of the Programme.


Thanking you.

Encl: 1) List of the Participating Students.
2) Broacher of the Programme

Yours faithfully,


(K.V. Naga Lakshmi)

In-charge of Mathematics Dept.


27.4.2022

S.R.R. & C.V.R. GDC (A), Dept. of Chemistry :

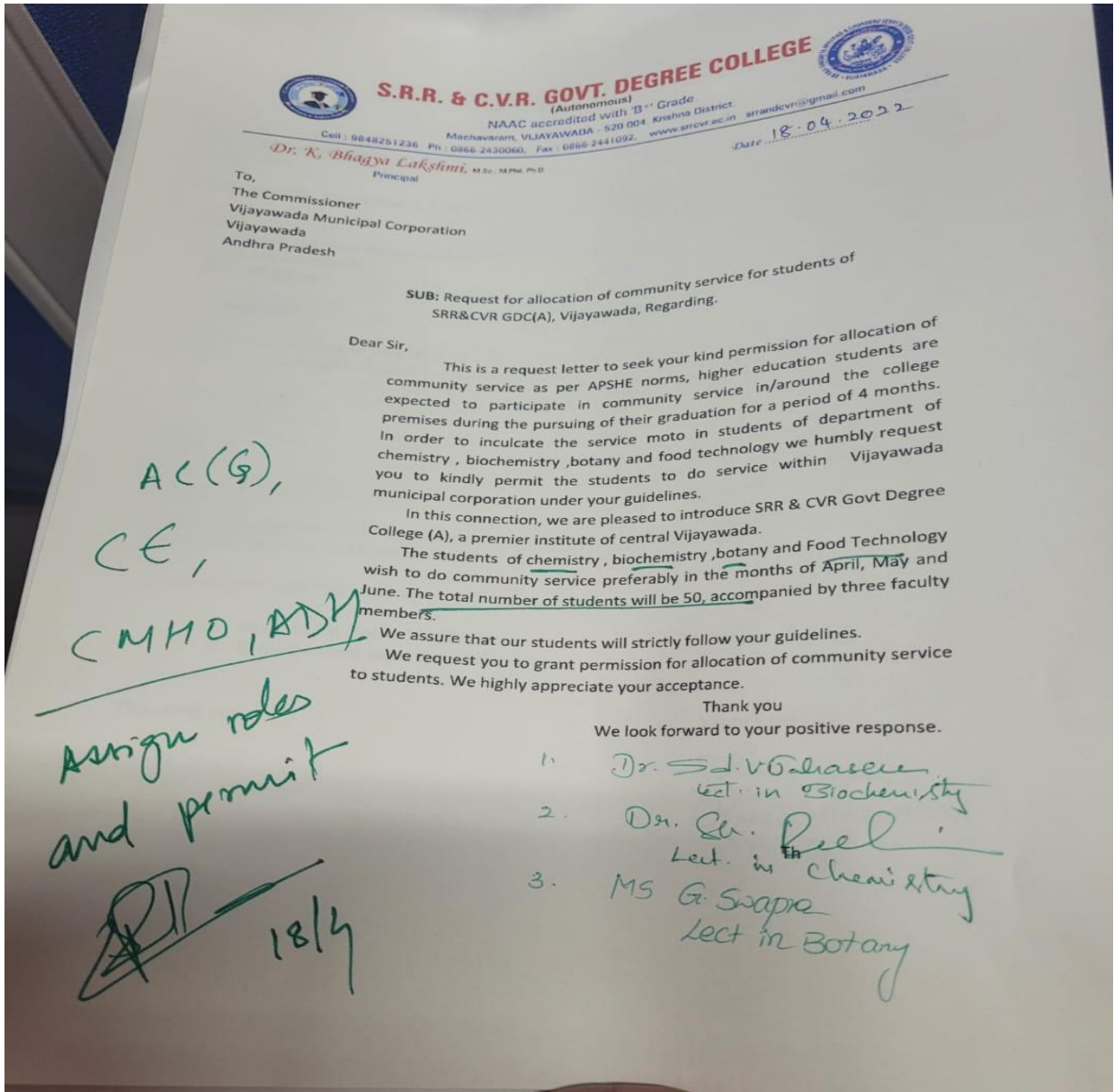
Parishubrata warotsavaalu in vijayawda

Outreach programme- Swatch sarvekshan by II Year - M.P.C, M.B.C, B.Z.C and M.C.CS students

21.04.2022 to 26.04.2022

Documentation by Dr. Sk. Beebi

Dept. of Chemistry joined with Dept. of Biochemistry, Dept. of Botany has planned an extension activity under the collaboration of Vijayawada Municipal corporation sensitised the students towards social responsibility in the Vijayawada city. Total 60 students participated in Swatch sarvekshan (Parisaralu parishuratha) programme conducted by Vijayawada Municipal Corporation from 21st April to 26th April, 2022 in different localities across the Eluru road.



The objective of this OUTREACH PROGRAMME by our students is to inculcate social responsibility and to understand the current day social problems and their remedies.

The programme is scheduled for 6 days., Each day with a separate theme of campaigning.

Day 1 : Monday – Don't throw waste on roads

Day 2 : Tuesday – Keep separate dustbin for wet waste and dry waste

Day 3: Wednesday – Cleaning and drying

Day 4 : Thursday – Ban plastic covers and plastic usage

Day 5 : Friday – Dry-day: Keep our surroundings' clean and dry

Day 6: Planting trees

The programme started on Monday by planting the trees and ended up by planting the trees.





Vijayawada, Andhra Pradesh, India
32-40/1-75A, Divine Nagar, Machavaram, Vijayawada, Andhra Pradesh 520004, India
Lat 16.519593°
Long 80.654958°
22/04/22 08:55 AM



Vijayawada, Andhra Pradesh, India
32-40-36, Yaram Vari St, Machavaram Down, Machavaram, Vijayawada, Andhra Pradesh 520004, India
Lat 16.518767°
Long 80.652434°
22/04/22 08:42 AM



GPS Map Camera



Vijayawada, Andhra Pradesh, India
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Long 80.652298°
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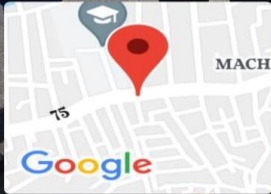


GPS Map Camera



Vijayawada, Andhra Pradesh, India
Dasanjanya Swamy Machavaram Down Bus Stop, Eluru Rd, Machavaram Down, Near To Dasanjanya Temple, Machavaram, Vijayawada, Andhra Pradesh 520004, India
Lat 16.519134°
Long 80.651877°
25/04/22 09:42 AM





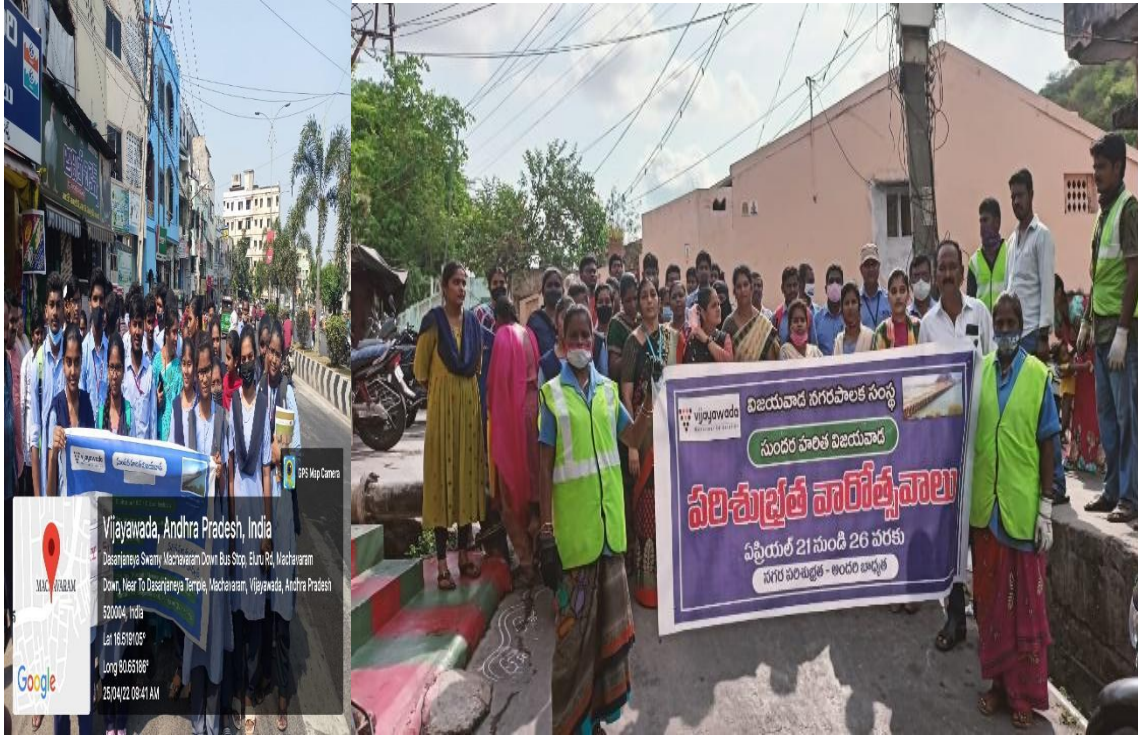
Vijayawada, Andhra Pradesh, India
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 India
 Lat 16.518722°
 Long 80.649586°
 26/04/22 09:25 AM

GPS Map Camera



Vijayawada, Andhra Pradesh, India
 32-26, 76/2, Eluru Rd, Machavaram, Vijayawada, Andhra Pradesh
 520004, India
 Lat 16.518589°
 Long 80.64879°
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GPS Map Camera



Conclusion: This programme motivated our students towards cleanliness and inculcated the thought of clean and green environment which imply absence of pollution and a better quality of life. Everyone should think of its our God given duty to take care of our environment and keep it clean.

పారిశుధ్య నిర్వహణకు ప్రాధాన్యత



విజయవాడ, మహానగర్

పారిశుధ్య నిర్వహణకు ప్రభుత్వం అత్యంత ప్రాధాన్యతనిస్తోందని కార్పొరేటర్ అంబడిపూడి నిర్మలకుమారి పేర్కొన్నారు. నగర పాలక సంస్థ నిర్వహిస్తున్న ప్రత్యేక పారిశుధ్య అవగాహన కార్యక్రమంలో భాగంగా శనివారం రెండో డివిజన్ పరిధిలో అవగాహన కార్యక్రమాలు నిర్వహించారు. ఎస్సారార్ కాలేజీ విద్యార్థులతో కలిసి ప్లాస్టిక్ నిషేధం, పరిసరాల పరిశుభ్రత గురించి మాచవరం పరిసర ప్రాంతాల్లో అవగాహన కార్యక్రమం నిర్వహించారు. ఈ కార్యక్రమంలో కార్పొరేటర్ అంబడిపూడి నిర్మలకుమారి, స్పెషల్ ఆఫీసర్ చంద్రశేఖర్, డివిజన్ పరిధిలోని శానిటరీ సిబ్బంది, సచివాలయ సిబ్బంది, రెవెన్యూ సిబ్బంది పాల్గొన్నారు.

CERTIFICATE COURSE
LIFE SKILLS DEVELOPMENT TRAINING

in Association with

Barclays - Rubicon Foundation

DATE: 16-12- 2021 to 21-12-2021

No. of Participants : 127

**Resource Persons : Jagadeesh & M. Sarkar (Rubicon
Foundation Trainers)**



DEPARTMENT OF PHYSICS & ELECTRONICS
SRR & CVR GOVERNMENT DEGREE
COLLEGE(AUTONOMOUS)

Machavaram, Vijayawada - 520 004

BARCLAYS - RUBICON LIFESKILLS TRAINING PROGRAMME

Rubicon “Connect with work ” program supported by Barclays FinancialBank is conducted to the SRR & CVR GOVERNMENT DEGREE COLLEGE, VIJAYAWADA students in ONLINE mode. Under this training students are trained by corporate trainers . This enhanced their life skills which might increase their chances of succeeding in a job interview.

Objectives of the Training

To enhance one’s ability to be fully self aware by helping oneself to overcome all fears and insecurities.

To set appropriate goals, manage stress and time effectively.

To adapt workplace environment.

Batch No	Date & Time	No. of Days	No. of students trained	Mode of Training	Trainer Name	Remarks
1&2	16 th to 21st December 2021 9AM - 2PM	6 days 30 hours	127	ONLINE	JAGADEE SH & M. Sarkar	127 students received their certificates

Course outline (ONLINE)

New Hire Training/ Personality Development/ Employability Skills			
Sr. No.	Topic	Learning Objectives	Durati on
1	Expectation setting	To learn Industry expectations from freshers	1
2	Ice breaking	To know more about the trainer & candidates	1
3	Organizational Structure	To learn Organizational structure	2
4	SWOT Analysis	To identify their Strength/Weakness/Opportunities/ Threat	2
5	Corporate Jargons	To learn most commonly used words in corporates	1
6	Public Speaking	To eliminate stage fear	2
7	Presentation Skills	To articulate your thoughts through Power point presentation	2
8	E-mail Etiquette	To learn E-mail writing skills	2
9	Grooming	Dress to impress/ Proximity/ Personal hygiene/	2

10	Body language	To learn positive body language	1
11	Telephone Etiquette	To handle telephonic round of interview/ To learn call mechanics	2
12	Group Discussion	To assess candidates' public speaking skills	4
13	Personal Interview	To perform well during interviews	8
Total			30hrs

[Permission letter.pdf](#)

S.No	Student name	Class/ group
1	S.Jagadeesh	B.Sc - III Year
2	M.Gopi Krishna	B.Sc - III Year
3	Y.Sai Praveen	B.Sc - III Year
4	M. Krupa	B.Sc - III Year
5	A. Lavanya	B.Sc - III Year
6	N.Likhitha	B.Sc - III Year
7	M. Bhagya Lakshmi	B.Sc - III Year
8	D.Krishnaveni	B.Sc - III Year
9	D. Keerthi	B.Sc - III Year
10	M. Pushpa Latha	B.Sc - III Year
11	K.Keerthi	B.Sc - III Year
12	P. Dhanyasri	B.Sc - III Year
13	E. Nagarjuna	B.Sc - III Year
14	I.Nagavamsi	B.Sc - III Year
15	V.Hemanth Kumar	B.Sc - III Year
16	K Manikanta	B.Sc - III Year
17	K.Ganesh	B.Sc - III Year
18	Prudhvi	B.Sc - III Year
19	P.Yaswanth Kumar	B.Sc - III Year
20	Sk.Althaf	B.Sc - III Year
21	Chaitanya Kumar	B.Sc - III Year
22	R Naveen Naik	B.Sc - III Year
23	M.Sweety	B.Sc - III Year
24	V Mantru Naik	B.Sc - III Year
25	S. Bhavitha	B.Sc - III Year
26	A.Brahmaiah	B.Sc - III Year
27	K. Rajeswari	B.Sc - III Year
28	Md. Shahin	B.Sc - III Year
29	S.M.L Sireesha	B.Sc - III Year

30	Shaik Shahanaz	B.Sc - III Year
31	R.Roopesh	B.Sc - III Year
32	K.Teja	B.Sc - III Year
33	V.Narasimha Naidu	B.Sc - III Year
34	V.Vijay Kumar	B.Sc - III Year
35	G.V.Ajay Kumar	B.Sc - III Year
36	V.Durga Eshwar	B.Sc - III Year
37	M.Jaswanth	B.Sc - III Year
38	L.Subhashini	B.Sc - III Year
39	M.Siddartha	B.Sc - III Year
40	A.N.D Kalyani	B.Sc - III Year
41	Swarna Sri	B.Sc - III Year
42	V. Nagamani	B.Sc - III Year
43	S. Naga Seetha	B.Sc - III Year
44	K. Sravanthi	B.Sc - III Year
45	B.Hemalatha	B.Sc - III Year
46	B. Lakshmanrao	B.Sc - III Year
47	Venkataiah	B.Sc - III Year
48	A. Anantharaju	B.Sc - III Year
49	K. Venu	B.Sc - III Year
50	U. Anil Kumar	B.Sc - III Year
51	Alladi Manasa	B.Sc - III Year
52	G.Nagendrababu	B.Sc - III Year
53	R Pavan Kumar	B.Sc - III Year
54	K. Naveen	B.Sc - III Year
55	T Ganesh	B.Sc - III Year
56	Srinu	B.Sc - III Year
57	P.Pothuraju	B.Sc - III Year
58	K.Durgarao	B.Sc - III Year
59	D.Prudhvi	B.Sc - III Year
60	P. M. D. Sai Sandeep	B.Sc - III Year
61	Sk.Duran	B.Sc - III Year
62	J.Pavan Kumar	B.Sc - III Year
63	J.Pradeep	B.Sc - III Year
64	Y.Siva Sai Ram	B.Sc - III Year
65	S.Adi Narayana	B.Sc - III Year
66	K.Swami Sekhar	B.Sc - III Year
67	Rokesh.P	B.Sc - III Year
68	E.Veeranjaneyulu	B.Sc - III Year
69	B.Venkatesh	B.Sc - III Year
70	N.Premchend	B.Sc - III Year
71	R.Chandra Sekhar	B.Sc - III Year

72	M.Vijay Kumar	B.Sc - III Year
73	K.Suresh	B.Sc - III Year
74	S.Gopi Krishna	B.Sc - III Year
75	N.Jayanth	B.Sc - III Year
76	K.Akhil	B.Sc - III Year
77	M.Subba Rao Naik	B.Sc - III Year
78	Matta Samuel Paul	B.Sc - III Year
79	R.Venkatapathi Devaraya	B.Sc - III Year
80	B. Gopi Krishna Naik	B.Sc - III Year
81	K. Vinod Kumar	B.Sc - III Year
82	R.Sai Kumar	B.Sc - III Year
83	Y.Siva Narayana	B.Sc - III Year
84	P.Jagadeesh	B.Sc - III Year
85	Durga Prasad	B.Sc - III Year
86	P.Phanindra	B.Sc - III Year
87	S.Siddhardha	B.Sc - III Year
88	M.Anil	B.Sc - III Year
89	P.Kishore Reddy	B.Sc - III Year
90	R.Dinesh Sai Kumar	B.Sc - III Year
91	E.Sai Krishna	B.Sc - III Year
92	Sk.Sameer	B.Sc - III Year
93	P.Adi	B.Sc - III Year
94	I.Sandya Bhavani	B.Sc - III Year
95	Sowjanya	B.Sc - III Year
96	V.Hareesh	B.Sc - III Year
97	B. Lakshmanrao	B.Sc - III Year
98	B. Balaji	B.Sc - III Year
99	M.Meena Kumari	B.Sc - III Year
100	Kommu Venu	B.Sc - III Year
101	Adhi Lakshmi	B.Sc - III Year
102	K Venkat	B.Sc - III Year
103	A. Anantha Raju	B.Sc - III Year
104	P. Venkatesh	B.Sc - III Year
105	T. Varalakshmi	B.Sc - III Year
106	V. Mathew Babu	B.Sc - III Year
107	V. Raja	B.Sc - III Year
108	P. Jaswanth	B.Sc - III Year
109	R.Siva	B.Sc - III Year
110	K. Komali	B.Sc - III Year
111	M. Hima N	B.Sc - III Year
112	K. Nagarjuna	B.Sc - III Year
113	Vinod Kumar	B.Sc - III Year

114	Mohammed.Haseena	B.Sc - III Year
115	Kundeti.Anitha	B.Sc - III Year
116	Daggupati.Harileela	B.Sc - III Year
117	Korada.Suguna	B.Sc - III Year
118	Rowthu.Sirisha	B.Sc - III Year
119	Peddireddy.Leela R Mani	B.Sc - III Year
120	Uriviti.Sravana Lakshmi	B.Sc - III Year
121	Pothireddy.Ramya	B.Sc - III Year
122	Kommu.Hema Bhargavi	B.Sc - III Year
123	Gaddam. Divya	B.Sc - III Year
124	Gompa. Srinu	B.Sc - III Year
125	Sura. Nani	B.Sc - III Year
126	Katta Srinivasa Rao	B.Sc - III Year
127	Bevara Ganesh	B.Sc - III Year

Action Plan: 127 Students from MPC , MPCs , MECs streams from B.Sc are registered to this program through URL shared by Rubicon Team with their details like Aadhar ID, Name, College. A WhatsApp group is created to guide & instruct the students. Raagini – Rubicon (Business Executive) coordinated this program. Everyday at 8.50AM ZOOM link is shared to students group, only who registered are allowed to attend this program. Later Students joined in their respective Breakout sessions. The course is highly interactive & trainers tried to interact with each student. Assignments are given to students. students posted their assignments chat box / emailed to the Trainer. The entire training is coordinated by B. Nagamani, Lecturer in physics from SRR & CVR GDC, VJA.

[CERTIFICATES BARCLAYS RUBICON SRR& CVR GDC PHYSICS DEPT](#)



Student feedback

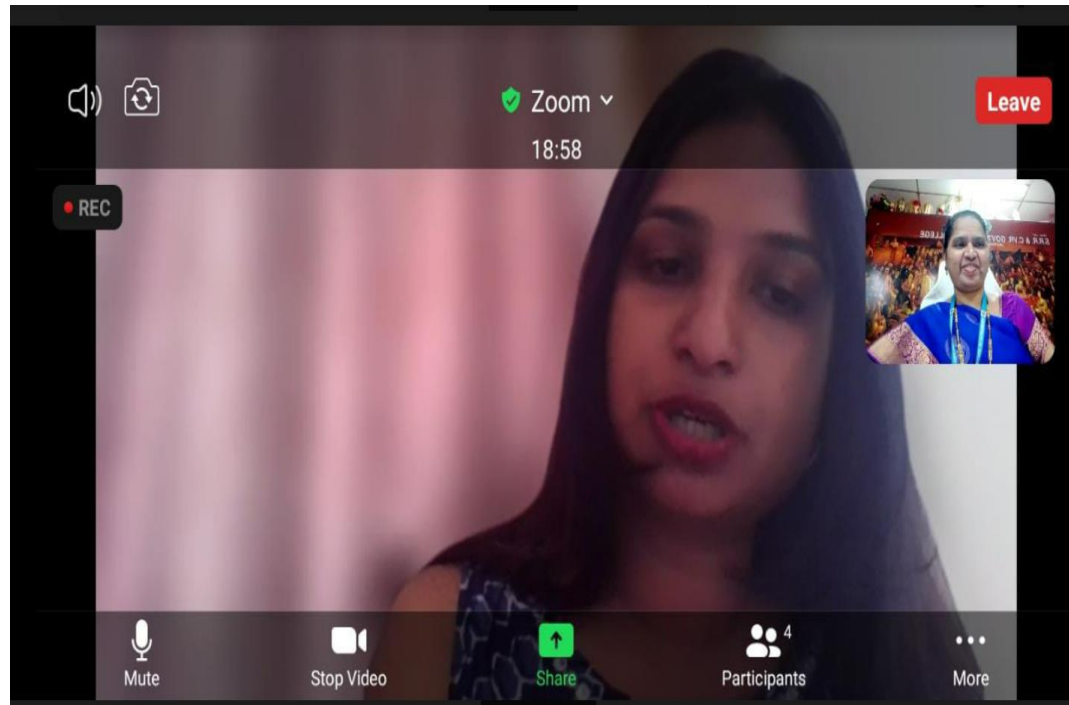
Before training students have issues with problem solving attitude, ability to express their thoughts, and when & how to start a conversation.

After training they overcome these challenges by curiosity, time management, self motivation and breaking their work process into small steps.

They are able to prepare their resume for a job interview. They developed skills like grooming, body language and communication skills , which are necessary for job interviews.

MURALIKRISHNA FEEDBACK

Dr. K. Bhagya Lakshmi, ,PRINCIPAL SRR & CVR GOVERNMENT DEGREE COLLEGE (A), VIJAYAWADA connected on Zoom meeting with rubicon CEO Dhanya Narayanan and gave feedback on 28 -02 -2022.




















Learning Outcomes

- Build confidence both in spoken skills and for group collaboration and cooperation.
- Develop a greater sense of self-awareness
- Agility and adaptability to different roles and flexible working environments
- The ability to self-manage, solve problems and understand the business environment.

Close Participants (106)

Search

-  SESHI SABU KASSI-SRRGDC (HR)
-  Trainer Tamosi M Sarkar (HR)
-  1R 1 RF CH DURGA PRASAD SRRGDC
-  1R 1 RF Chanchal Mehra BGCBC
-  1R 1 RF Chetna soni BGCBC
-  1R 1 RF Chetna Ratna Durgelwar SRRGDC
-  H 1 RF Hozhu BGCBC
-  1R 1 RF Jyoti BGCBC
-  1R 1 RF Kavita Gujjar BGCBC
-  K 1 RF kornal agarwal BGCBC
-  M 1 RF Meenal Kumawat BGCBC
-  1R 1 RF NIRVLA YADAV BGCBC
-  1R 1 RF Shaina Simran BGCBC
-  1R 1 RF Shaina-SRRGDC
-  1R 1 RF SONU MEENA BGCBC
-  1R 1 RF-GOPH TARUN KUMAR-SRRGDC
-  1R 1 RF Vaidha chandlar naik SRRGDC

Depart

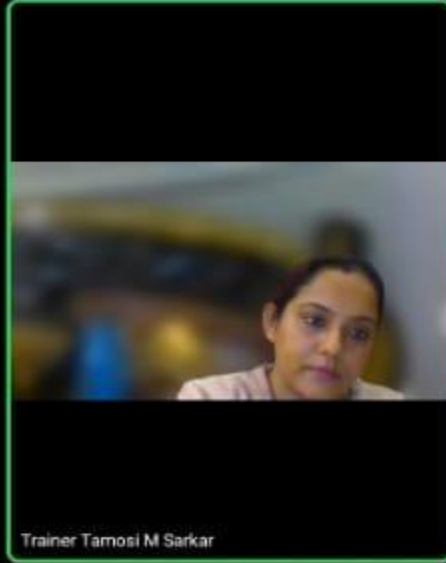
11:36 AM

120KB/s

REC



1RF-SESHU BABU KASSE-SRRGDC



Trainer Tamosi M Sarkar



1 RF kornal agarwal BGBC



1 RF jyoti meena BGBC

Close

Participants (14)

Search



1RF-SESHU BABU KASSE-SRRGDC (me)



1R

1 RF-Gopi Krishna SRRGDC



1K

1FR_GOPI KRISHNA_SRRGDC



1-

1RF - PHANINDRA-SRRGDC



1-

1RF - Suresh (TM) - SRR



1RF Kanna umachandu-SRRGDC



1K

1RF kishore reddy SRRGDC



M

1RF_keerthi kondepogu_SRR



1

1RF-SD.ESUB-SRRGDC



1P

1RF-Singamsetty pranitha-SRR GDC



1K

1RF-VeeraBabu Kota SRR GDC



K

KUNAKALA KARUNAKAR



MP

Manikyam pushpa latha _SRR



RS

Rajahmundry.Bhuvana suresh 1-RF SRR GDC



Invite

Participants (75)

Search

- SESHU BABU KASSE-SRRGDC (me)
- Trainer - Neeti Mudgal Sharma (host)
- Mothi Shaik-SRR GDC
- *1RF-Swarna Sri-SRRGDC*
- 1R CH DURGA PRASAD SRRGDC
- 1R Ishwar Gadhe SVIT
- 1G 1-RF-Akanksha Golesar-SVIT
- 1K 1RF_GOPI KRISHNA_SRRGDC
- 1_ 1rf _MANIKYAM pushpa latha _SRR
- 1- 1RF - PHANINDRA-SRRGDC
- 1- 1RF - Ravi Naik - SRRGDC
- 1- 1RF - suresh (tm) - srr&and
- 1RF -Rama G -SRR GDC
- 1C 1RF chaitali tambe Svit
- 1G 1RF Gayatri Varsale-SVIT
- 1G 1rf Gopi Krishna naik srrGdc
- 1H 1RF Hareesh Vempatapu-SRRGDC
- 1RF Karina umachandu-SRRGDC
- 1K 1RF kishore reddy SRRGDC
- 1P 1RF Priyanka Borade SVIT
- 1S 1RF Saridya immandhi SRRGDC
- 1S 1RF Satya naga vara prasad Pujari SRR GDC
- 1V 1RF V.VENKATESH-SRR GDC
- 1E 1RF_CHANDRIKA E _SRRGDC
- 1S 1RF_Ejaz_ SRR GDC
- 1S 1RF_Ejaz_ SRR GDC
- H 1RF_HEMALATHA BONU _SRRGDC
- M 1RF_keerthi kondepogu_SRRC
- 1P 1RF_Omkar Pandey_SVIT
- K 1RF_RAJESWARI K_SRRC
- S 1RF_SHAHIN MD_SRRC
- S 1RF_SRAVANTHI K_SRRGDC
- 1RF-ADI PALLI-SRRC
- 1RF-Adilakshmi Ganduri SRRGDC

Department of

ubicon LSDT”



GOVT. DEGREE COLLEGE

AVANIGADDA-521121. KRISHNA DT. (A.P).

NAAC - B



gdcjkc.avanigadda@gmail.com

www.gdcavanigadda.ac.in

08671-272261

94-94-299418

WINNERS ARE FORGED HERE

Dr.D.Uma Rani. M.A,Ph.D.,

PRINCIPAL.

To

The Principal,

SRR & CVR Government degree College ,

Vijayawada.

Madam,

I request that Dr. A. Bhanu Prasad, lecturer in Hindi may be deputed to our college under faculty exchange program for 3 days, that is 8th 9th 10th of November 2021.

Thanking you,

Yours sincerely

D. R. 30/10/21

PRINCIPAL
GOVT. DEGREE COLLEGE,
AVANIGADDA, Krishna Dist.



GOVT. DEGREE COLLEGE

AVANIGADDA-521121. KRISHNA DT. (A.P).

NAAC - B



gdejke.avanigadda@gmail.com

www.gdcavanigadda.ac.in

■ 08671-272261

☎ 94-94-299418

WINNERS ARE FORGED HERE

Dr.D.Uma Rani, M.A.Ph.D.,

PRINCIPAL.

Attendance Certificate

This is to Certify that Dr.A.Bhanu Prasad, Lecturer in Hindi SRR & CVR Govt. Degree College, Vijayawada, has attended GDC-AVANIGADDA for Three Days i.e., 08/11/2021 to 10/11/2021.He has conducted Orientation Classes and Literary Activities during that period.

D. ~ ~ 10/11/21

PRINCIPAL

PRINCIPAL
GOVT. DEGREE COLLEGE,
AVANIGADDA, Krishna Dist.



GOVT. DEGREE COLLEGE

AVANIGADDA-521121. KRISHNA DT. (A.P).

NAAC - B



gdcjkc.avanigadda@gmail.com
www.gdcavanigadda.ac.in

☎ 08671-272261
☎ 94-94-299418

WINNERS ARE FORGED HERE

FROM
Dr.D.Uma Rani,M.A ,P.hD
PRINCIPAL.

Date:-24/02/2022

TO
Principal,
SRR & CVR College(A), Vijayawada,
Vijayawada.

Respected Madam,

Sub:-Govt. Degree College, Avanigadda-DRC Resolution under Faculty Exchange Programme- Deputation of Sri.A.Bhanu Prasad Lecturer in Hindi, SRR & CVR College(A), Vijayawada to our college for 2 Days - Request-Regarding.

Ref:- 1.Resolutions in DRC Meeting held on 08-02-2022.

We request that Dr.A.Bhanu Prasad, Lecturer in Hindi may be deputed to our college on 25-02-2022 and 26-02-2022 under Faculty Exchange Programme.

Thank you Madam,

Yours Sincerely,

D. r. — 24/2/22

PRINCIPAL
GOVT. DEGREE COLLEGE,
AVANIGADDA, Krishna Dist.

GOVERNMENT DEGREE COLLEGE

AVANIGADDA-521 121.

KRISHNA DT.(A.P).

gdcjkc.avanigadda@gmail.com

NAAC-B

08671-272261

gdc-avg@rediffmail.com

08671-273008

From
Dr. D.Uma Rani,
M.A, Ph.D.
Principal.

Attendance Certificate

This is to certify that Dr.A.Bhanu Prasad, Lecturer in Hindi, SRR & CVR Government Degree College (A), Vijayawada, has attended for Faculty Exchange Programme at Government Degree College, Avanigadda on 25-02-2022 & 26-02-2022.



D. Uma Rani
Principal
GOVT. DEGREE COLLEGE
AVANIGADDA, Krishna Dt. 521121.

Student Exchange programme on Nanoparticle preparations

S.R.R. & C.V.R. GDC (A) - Dept. of Chemistry

13.06.2022 to 17.06.2022 – ANDHRA LOYOLA COLLEGE, Vijaywada

As a part of Student exchange programme, Dept. of Chemistry has taken students to ANDHRA LOYOLA COLLEGE (A), Vijayawada for performing project (which is mandatory for cluster system in 8.3 practicals) during the period 13.06.2022 to 17.06.2022. 36 students of III-B.Sc Chemistry cluster accompanied by two faculty members – Dr. V. Srinivasa Rao, Incharge of Dept. of Chemistry and Dr. G. Nagarjuna have participated in this programme.

We have taken the prior permission and acceptance from the Principal, Andhra Loyola College (A), Vijayawada for student exchange programme in the month of May, 2022.

Our III B.Sc Chemistry Cluster batch of 36 students, (Final year students of 2021-2022) is participated in **Student Exchange Programme** at Department of Chemistry, Andhra Loyola College, Vijayawada. During this programme the students are carried out a project work on Green Synthesis of Nano materials like CuO, ZnO & mixture of CuO and ZnO with Peepal tree leaf extract, from 13/06/2022 to 17/06/2022 under the guidance of lecturers Dr. K. Rayapa Reddy, Dr. K.T.S. Thomas Raju and Dr.Y. Subba Reddy. The students are divided into three batches and carried out their chemistry cluster project work. Nanomaterials are prepared in a green synthetic approach and their characterization was done by XRD and UV-Visible Spectrometry. The faculty and laboratory staff of dept. of chemistry, Andhra Loyola College (A) has provided their assistance in terms of chemicals, lab equipment for the synthesis of nanomaterials.



S.R.R. & C.V.R. GOVT. DEGREE COLLEGE

(Autonomous)

NAAC accredited with 'B++' Grade

Machavaram, VIJAYAWADA - 520 004, Krishna District.

Cell : 9848251236 Ph : 0866-2430060, Fax : 0866-2441032, www.srrcvt.ac.in srrandcvt@gmail.com



Dr. K. Bhagya Lakshmi, M.Sc. M.Phil Ph.D.
Principal

Date

To
The principal,
Andhra Loyola college,
Vijayawada,
Andhra Pradesh.

06.05.2022

Sir,

SUB: Request -to accord permission for student exchange programme- III B.Sc.Chemistry cluster students of SRR&CVRGDC(A), Vijayawada, Regarding.

The dept. of chemistry, SRR & CVR GDC (A), Vijayawada wishes to send III B.Sc. Chemistry cluster students (36) to learn different practical techniques related to various projects in your college, at the dept. of chemistry **under the student exchange programme for the year 2021-22**. In this regard, I request your good self to give permission to our students to do practicals for a week in the month of May, 2022.

The total number of students are 36, accompanied by 2 faculty members. We assure that our students will strictly follow your guidelines. We request you to grant permission. We highly appreciate your acceptance.

Thanking you.

We look forward to your positive response.

Bhagya Lakshmi
6.5.2022
PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)
Machavaram, VIJAYAWADA-4.

Permission letter for carrying out student exchange programme



Group of students participated in student exchange programme



Induction programme on 13.06.2022 to students of SRR and CVR GDC (A), Vijayawada at Dept. of Chemistry, Andhra Layola College (A), Vijayawada.



54-1-20/66, Loyola College Rd, Film Colony, Jayaprakash Nagar, Vijayawada, Andhra Pradesh 520010, India

Vijayawada
Andhra Pradesh
India

2022-06-13(Mon) 10:18(am)



28°C
82°F



Preparatory work for green synthesis of Nano particles





Synthesis of CuO- nano particles from Peepal tree leaf extract





Dr. Y. Subba Reddy garu explaining the procedure for synthesis of nano-materials



Student details and projects carried out in student exchange programme – June, 2022

DEPARTMENT OF CHEMISTRY , SRR & CVR GOVT.DEGREE COLLEGE (A) MACHAVARAM, VIJAYAWADA .

1. Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials.
2. Eco friendly synthesis and Characterization of Copper Oxide (Cu O) Nano materials
3. Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials .

Project submitted by the following students during the academic Year 2021-2022

S.No	Regd No:	Group	Name of the student	Project Title	Signatures
1.	19313217	MBC	E. DIVYA KEERTHANA	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials .	Divya Keerthana
2.	19313226	MBC	AMEENA KOUSAR	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials .	Ameena Kousar
3.	19313230	MBC	K.PRIYA KRISHNA	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials .	K. Priya Krishna
4.	19311204	BZC	A.CHAITANYA BHARATHI	Eco friendly synthesis and Characterization of Copper Oxide(Cu O)Nanomaterials	A.chaitanya Bharathi
5.	19311208	BZC	P.LIKITHA	Eco friendly synthesis and Characterization of Copper Oxide(CuO)Nanomaterials	Likitha Pulivarthi
6.	19311233	BZC	P.JAYA LAKSHMI	Eco friendly synthesis and Characterization of Copper Oxide(CuO) Nanomaterials	A. Jaya
7.	19306204	MCCS	K.BHAVANI	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	K. Bhavani
8.	19306208	MCCS	M. BHAVYA	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	M. Bhavya
9.	19306211	MCCS	P. LAKSHMI PRASANNA	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	P. Lakshmi Prasanna
10.	19306212	MCCs	A.ARUN KUMAR	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	A. Arun Kumar
11.	19306215	MCCs	G. BHARGAVI	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	G. Bhargavi
12.	19306220	MCCs	K. VENKATA GOPI	Eco friendly synthesis and Characterization of Copper	K. Venkata Gopi

13.	19306227	MCCs	B. VENKATAPATHI RAJU	Oxide(CuO)Nano materials Eco friendly synthesis and Characterization of Copper Oxide(CuO)Nano materials	B. Venkata Pr
14.	19306228	MCCs	D.SUJATHA	Eco friendly synthesis and Characterization of Copper Oxide(CuO)Nano materials	D. Sujatha
15.	19306230	MCCs	G.PEDDANNA	Eco friendly synthesis and Characterization of Copper Oxide(CuO)Nano materials	G. peddanna
16.	19306231	MCCs	G.PRAVEEN	Eco friendly synthesis and Characterization of Copper Oxide(Cu O)Nanomaterials	G. Praveen

Under the Supervision of

Dr. Nagarjuna

M.Sc., B.Ed., M.Ed., M.Phil., Ph.D

Lecturer in Chemistry

Dr. V. SRINIVASA RAO,

M.Sc., B.Ed., M.Phil., Ph.D

Lecturer in Chemistry

PRINCIPAL

PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)
Machavaram, VIJAYAWADA-4.

**DEPARTMENT OF CHEMISTRY , SRR & CVR GOVT.DEGREE COLLEGE (A)
MACHAVARAM, VIJAYAWADA .**

1. Eco friendly synthesis and Characterization of Copper Oxide (Cu O) Nano particles
2. Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials .

**Project submitted by the following students during the academic
Year 2021-2022**

S.No	Regd No.	Group	Name of the student	Project Title	Signature
17	19301003	MPC™	K.VINOD KUMAR	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials	K. Vinod K.V.
18	19301005	MPC™	K.SRIKANTH	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials	K. Srikanth
19	19301007	MPC™	R. CHANDRA SEKHAR	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials	R. Chandrasekhar
20	19301012	MPC™	K.SURESH	Eco friendly synthesis and Characterization of Copper Oxide (Cu O) Nano materials	K. Suresh
21	19301013	MPC™	B.GOPI KRISHNA NAIK	Eco friendly synthesis and Characterization of Copper Oxide (Cu O) Nano materials	B. Gopi Krishna Naik
22	19301015	MPC™	S. GOPI KRISHNA	Eco friendly synthesis and Characterization of Copper Oxide (CuO)Nano materials	S. Gopi Krishna

Under the Supervision of

Dr.V. SRINIVASA RAO,

M.Sc., B.Ed., M.Phil., Ph.D

Lecturer in Chemistry

[Signature]
PRINCIPAL

PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)
Machavaram, Vijayawada-4.

**DEPARTMENT OF CHEMISTRY , SRR & CVR GOVT.DEGREE COLLEGE
MACHAVARAM, VIJAYAWADA .**


1. Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials.
2. Eco friendly synthesis and Characterization of Copper Oxide (Cu O) Nano particles
3. Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials .

**Project submitted by the following students during the academic
Year 2021-2022**

S.No.	Regd No:		Name of the student	Project Title	Signatures
23	19301202	MPC EM	P.JAGADEESH	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials	P.Jagadeesh
24	19301207	MPC EM	V.LOKESH	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials	V.Lokesh
25	19301208	MPC EM	P.ADI	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials	
26	19301209	MPC EM	SAKEENA BANU	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials	Sakeena Banu
27	19301212	MPC EM	R.DINESH SAI KUMAR	Phytochemical Assisted Synthesis and Characterization of Mixture of CuO and ZnO Nano materials	R.Sai
28	19301216	MPC EM	M.JYOTHI	Eco friendly synthesis and Characterization of Copper Oxide (Cu O) Nano materials	M.Nagajyothi
29	19301218	MPC EM	CH. DURGA PRASAD	Eco friendly synthesis and Characterization of Copper Oxide (CuO) Nano materials	Ch. Durga Prasad
30	19301220	MPC EM	I.PARALOK	Eco friendly synthesis and Characterization of Copper Oxide (CuO) Nano materials	I.Paralok
31	19301225	MPC EM	E.SAI KRISHNA	Eco friendly synthesis and Characterization of Copper Oxide (CuO) Nano materials	E.Sai Krishna

32	19301234	MPC EM	R.SAI KUMAR	Eco friendly synthesis and Characterization of Copper Oxide (CuO) Nano materials	R. Sai Kumar
33	19301246	MPC EM	D. SUBHANI	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	D. Subhani
34	19301250	MPC EM	V.HAREESH	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	V. Hareesh
35	19301251	MPC EM	G.NANI BABU	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	G. Nani Babu
36	19301254	MPC EM	Y.SIVA NARAYANA	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	Y. Sivanarayana
37	20190308021	MPC EM	I.SANDYA BHAVANI	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	I. Sandhya


Dr. V. SRINIVASA RAO,
 M.Sc., B.Ed., M.Phil., Ph.D
 Lecturer in Chemistry


PRINCIPAL
PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)
Machavaram, VIJAYAWADA-4.

Acknowledgements: we extend our heartfelt thanks to the **principal, SRR and CVR GDC (A), Vijayawada** for her encouragement and the **principal, Andhra Loyola College (A), Vijayawada** for giving permission. Our special thanks to **Dept. of Chemistry, Andhra Loyola College** for rendering their services in-terms of their time, chemicals and instruments. Special thanks to **Dr. Sk. Beebi, Lecturer in chemistry,** for documenting the programme and our colleagues in the dept. for supporting us.


Thanking you,

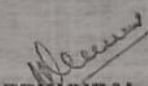
Dr. G. Nagarjuna
 Dept. of Chemistry

Dr. V. Srinivasa Rao
 Dept. of Chemistry

Principal
 SRR and CVR GDC (A)

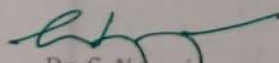
32	19301234	MPC EM	R.SAI KUMAR	Eco friendly synthesis and Characterization of Copper Oxide (CuO) Nano materials	R. Sai Kumar
33	19301248	MPC EM	D. SUBHANI	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	D. Subhani
34	19301250	MPC EM	V.HAREESH	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	V. Hareesh
35	19301251	MPC EM	G.NANI BABU	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	G. Nani Babu
36	19301254	MPC EM	Y.SIVA NARAYANA	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	Y. Sivanarayana
37	20190308021	MPC EM	I.SANDYA BHAVANI	Green Synthesis and Characterization of Zinc Oxide (ZnO) Nano materials	I. Sandya

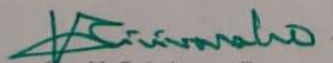

DR. V. SRINIVASA RAO,
 M.Sc., B.Ed., M.Phil., Ph.D
 Lecturer in Chemistry

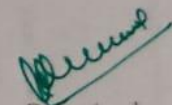

PRINCIPAL
 PRINCIPAL
 SRR & CVR GOVT. DEGREE COLLEGE
 (Autonomous)
 Machavaram, Vijayawada, A.P.

Acknowledgements: we extend our heartfelt thanks to the principal, SRR and CVR GDC (A), Vijayawada for her encouragement and the principal, Andhra Layola College (A), Vijayawada for giving permission. Our special thanks to Dept. of Chemistry, Andhra Layola College for rendering their services in-terms of their time, chemicals and instruments. Special thanks to Dr. Sk. Beebi, Lecturer in chemistry, for documenting the programme and our colleagues in the dept. for supporting us.

Thanking you,


 Dr. G. Nagarjuna
 Dept. of Chemistry


 Dr. V. Srinivasa Rao
 Dept. of Chemistry


 Principal
 SRR and CVR GDC (A)

SRR & CVR GOVT. DEGREE COLLEGE (A) VIJAYAWADA
DEPARTMENT OF MICROBIOLOGY



Internship

Scientific Beekeeping

In association with Krishi Vigyan Kendra, Ghantasala, Krishna (Dist.) Under
National Bee Board (NBB) of Ministry of Agriculture Hyderabad

BSc Microbiology (MBC & MBF)

From 28th Feb To 7th March 2022



Samsung Quad Camera
Gopal Camera

SRR & CVR GOVT DEGREE COLLEGE (a), VIJAYAWADA
DEPARTMENT OF MICROBIOLOGY

To
The Principal
SRR & CVR Govt. Degree College (A)
Vijayawada
Machavaram
Andhra Pradesh

Respected Madam,

Sub: - Department of Microbiology- Student Internship/Training programme - KVK, Ghantasala- Permission -Request - Regarding.

I submit to inform that the department of Microbiology has been planned 7 days student training programme /Internship on "Scientific Beekeeping" in association with Krishi Vigyan Kendra, Ghantasala, Krishna (Dist.), is one of the best organizations under National Bee Board (NBB) of Ministry of Agriculture, Hyderabad to be scheduled from 28th to 7th March 2022. Since our students have industrial production, sources of Food spoilage and Food Preservation in their syllabus in the Course "Food and Industrial Microbiology" and field visit is a part of curriculum. I further inform that the host institute will provide TA, DA and Certification to the participants. Hence I request you to kindly permit 20 BSc (III & II MBC & MBF) students to attend training programme and teaching staff of Dr. D. Jyothi and Dr .K. Aruna, Department of Microbiology and kindly consider my absence as on-duty.

Thanking you Madam,

Yours Sincerely

1. Dr. D. Jyothi
22/02/2022
2. Aruna
(Dr. K. ARUNA)
22/2/2022

List of Enclosures:

1. List of Students

22.2.2022

SRR & CVR GOVT. DEGREE COLLEGE (A), VIJAYAWADA

DEPARTMENT OF MICROBIOLOGY

**7 Day Training programme on "Scientific Beekeeping" Krishi Vigyan Kendra,
Ghantasala, Krishna (Dist.) under National Bee Board (NBB) of Ministry of
Agriculture, Hyderabad. From 28th Feb to 7th March 2022.**

LIST OF STUDENTS:

S.NO	Name of the Student	Class	Signature
1	J. Chandini Priya	III BSc MBC	J. Chandini Priya
2	P. Sadhika	III BSc MBC	P. Sadhika
3	V. Rameswar Reddy	III BSc MBC	V. Rameswar Reddy
4	T. Durga Amal Prasad	III BSc MBC	T. Durga Amal Prasad
5	P. Ravi Teja	III BSc MBC	P. Ravi Teja
6	J. Venkateswaralu	III BSc MBC	J. Venkateswaralu
7	K. Kinnera	III BSc MBC	K. Kinnera
8	G. Gopal Rao	III BSc MBC	G. Gopal Rao
9	K. Vagadhan Babu	III BSc MBC	K. Vagadhan Babu
10	B. Aaron Wesley Paul	III BSc MBC	B. Aaron Wesley Paul
11	Ch. Ramdevu	III BSc MBC	Ch. Ramdevu
12	T. Bharathi	III BSc MBC	T. Bharathi
13	T. Teja	III BSc MBC	T. Teja
14	V. Vasanth Srinivas	II BSc MBF	
15	Ch. Pranoy Roy	II BSc MBF	Ch. Pranoy Roy
16	G. Anil Kumar	I BSc MBF	G. Anil Kumar
17	G. Revanth	I BSc MBF	G. Revanth
18	K. Vijay	I BSc MBC	K. Vijay
19	R. Sai Vardhani	I BSc MBC	R. Saithardhani
20	K. Naga Sriya	I BSc MBC	K. Naga Sriya
21	E Bhanu Teja	II BSc MBC	E. Bhanu Teja
22	P. Rajya Lakshmi	II BSc MBC	P. Rajyalakshmi
23	Y. Muthyam	II BSc MBC	Y. Muthyam
24	N. Naga Lakshmi	II BSc MBC	N. Naga Lakshmi
25	Sk. Refatunisa	II BSc MBC	Sk. Refatunisa
26	Abdul Roshini	II BSc MBF	
27	R. Gopi Krishna	II BSc MBF	R. Gopikrishna
28	B. Sowmya	II BSc MBC	B. Sowmya

FACULTY ATTENDING:

1	Dr. D. Jyothi	IN-CHARGE, DEPT. OF MICROBIOLOGY
2	Dr. Kopuri Aruna	LECTURER IN MICROBIOLOGY


SIGNATURE OF IN-CHARGE

PRINCIPAL

SRR & CVR GOVT. DEGREE COLLEGE (A) Vijayawada

Department of Microbiology

Activity Register 2021-2022

Date	From 28th Feb To 7th March 2022
Conducted through (DRC/JKC/ELF/NCC/NSS/Departments etc.)	Department of Microbiology
Nature of Activity (Seminar/Workshop/Extn. Lecture etc.,)	Internship
Title of the Activity	Scientific Beekeeping
Name of the Department/Committee	Department of Microbiology
No. of students participated	28 BSc Microbiology MBC & MBF
Brief Report on the activity	<p>The Department of Microbiology has been planned 7 days student training programme on “Scientific Beekeeping” in association with Krishi Vigyan Kendra, Ghantasala, Krishna (Dist.), is one of the best organizations under National Bee Board (NBB) of Ministry of Agriculture, Hyderabad to be scheduled from 28th to 6th March 2022. Since our students have industrial production, sources of Food spoilage and Food Preservation in their syllabus in the Course “Food and Industrial Microbiology”.</p> <p>The training program emphasized on adopting the techniques of scientific beekeeping and developing entrepreneurship.</p>
Name of the Lecturers who Planned & conducted the activity	Dr .D .Jyothi & Dr.Kopuri Aruna
Signature of the In- Charge	
Signature of the Principal	

DAY 1: INAUGURAL SESSION



WHY BEEKEEPING?



PRE EVALUATION

Day 1:

Session 1: Introduction to National Beekeeping and Honey Mission by Dr Sudha Jacob, Senior Scientist, Entomology, KVK Ghantasala

Govt. of India has approved a new Central Sector Scheme entitled “National Beekeeping & Honey Mission (NBHM)” for 2 years for overall promotion and development of scientific beekeeping in mission mode to achieve the goal of “Sweet Revolution” in the country by giving thrust on capacity building & trainings, specific focus on women, input support for promotion & production, setting up of Integrated Beekeeping Development Centres (IBDCs), other Infrastructures, Digitization /online registration, etc., processing, value addition, market support, etc. & R&D under 3 Mini Missions (MM s)-MM-1, MM-2 & MM-3.

Session 2: Types of Bees and Its importance by Dr Sudha Jacob, Senior Scientist, Entomology, KVK Ghantasala

Apis dorsata, the **giant honey bee**, is a honey bee of South and Southeast Asia, found mainly in forested areas. They are typically around 17–20 mm (0.7–0.8 in) long. Nests are mainly built in exposed places far off the ground, like on tree limbs, under cliff overhangs, and sometimes on buildings. These social bees are known for their aggressive defense strategies and vicious behavior when disturbed. Though not domesticating it, indigenous peoples have traditionally used this species as a source of honey and beeswax, a practice known as honey hunting

Session 3: Study on Bees by Dr Purnachandan Rao, Senior Scientist

- Colony initiation
- Colony migration and decline
- Mating
- Communication

- Foraging
- Worker policing
- Nest recognition and fidelity

Session 4: Practical Examination of Various Bees Dr Sudha Jacob, Senior Scientist, Entomology, KVK Ghantasala



DAY 2: SESSION 1



DR. SUDHA RANI, SENIOR SCIENTIST Honey Bee Managementt



SESSION 2: DR. JHANSI, PROGRAME CO-ORDINATOR, KVK GHANTASALA

Pesticides and Disorders - Honeybee

SESSION 3:



MR. NAVEEN, Govt. Teacher, Chilakaluripeta,

Scientific beekeeping of *Apis ceranea*

- Colony initiation
- Colony migration and decline
- Mating
- Communication
- Foraging
- Worker policing
- Nest recognition and fidelity

DAY 3: SESSION 1



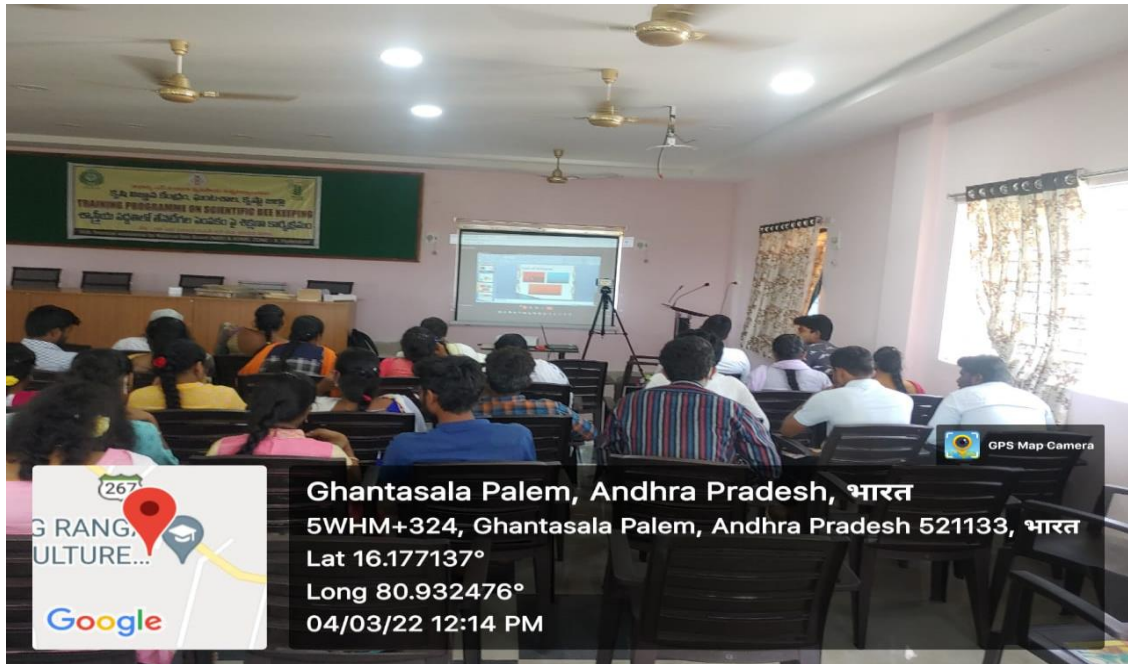
MR. CHINNA BABU, Honeybee farming

SESSION 2:



Tools and Bee Box by Dr Sudha Jacob, Senior Scientist, Entomology, KVK Ghantasala

DAY 4 SESSION 1



ROLE OF POLLENATORS IN CROP YIELD INCREASE BY DR G A D GRACE, RARS, LAM, GUNTUR

SESSION 1



BEEKEEPIN MANAGEMENT

Dr. Mohan Rao, Principal scientist AICRP on Bees, Vijayarai

DAY 5: FIELD VISIT & HANDS ON TRAINING AT AICRP ON BEES, VIJAYARAI



PREPARATION OF SUGAR SYRUP

OBSERVATION OF BROOD RACK





HONRY EXTRACTOR

BEEWAX FOUNDATION SHEET MACHINE

Ovoid brood cells and honey pots within a *Trigona laeviceps* nest



BEEHIVE BOX OBSERVATION

ARTIFICIAL BREEDING OF QUEEN BEE





Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.177489°
Long 80.93252°
05/03/22 11:07 AM



realme Shot by Ravi_Palepu

AICRP ON BEES, VIJAYARAI



Ghantasala Palem, Andhra Pradesh
5WHM+324, Ghantasala Palem, Andhra Pradesh
Lat 16.177211°
Long 80.932378°
07/03/22 01:06 PM



Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.17722°
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Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.17723°
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Ghantasala Palem, Andhra Pradesh
5WHM+324, Ghantasala Palem, Andhra Pradesh
Lat 16.177229°
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Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.177211°
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Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.177209°
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07/03/22 01:07 PM

PRESENTATION OF CERTIFICATES



Ghantasala Palem, Andhra Pradesh

5WHM+324, Ghantasala Palem, Andhra Pradesh

Lat 16.177208°

Long 80.932304°

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Ghantasala Palem, Andhra Pradesh, India

5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India

Lat 16.177205°

Long 80.932309°

07/03/22 01:08 PM



Ghantasala Palem, Andhra Pradesh, India

5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India

Lat 16.177219°

Long 80.932302°

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Ghantasala Palem, Andhra Pradesh

5WHM+324, Ghantasala Palem, Andhra Pradesh

Lat 16.17721°

Long 80.932309°

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Ghantasala Palem, Andhra Pradesh, India

5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India

Lat 16.17721°

Long 80.932303°

07/03/22 01:09 PM



Ghantasala Palem, Andhra Pradesh, India

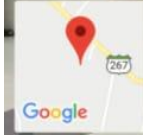
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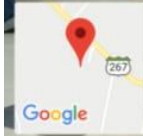
PRESENTATION OF CERTIFICATES



Ghantasala Palem, Andhra Pradesh, India
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Lat 16.17718°
Long 80.932304°
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Ghantasala Palem, Andhra Pradesh,
5WHM+324, Ghantasala Palem, Andhra Pradesh 5
Lat 16.177214°
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07/03/22 01:10 PM



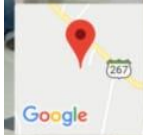
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5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.17718°
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Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.177213°
Long 80.932302°
07/03/22 01:10 PM



Ghantasala Palem, Andhra Pradesh,
5WHM+324, Ghantasala Palem, Andhra Pradesh 5
Lat 16.177206°
Long 80.932287°
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Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.177213°
Long 80.932301°
07/03/22 01:10 PM

PRESENTATION OF CERTIFICATES



Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
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Long 80.9323°
07/03/22 01:12 PM



Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.17721°
Long 80.932297°
07/03/22 01:11 PM



Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.177216°
Long 80.9323°
07/03/22 01:12 PM



Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.177219°
Long 80.93231°
07/03/22 01:11 PM



Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.177213°
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07/03/22 01:11 PM



Ghantasala Palem, Andhra Pradesh, India
5WHM+324, Ghantasala Palem, Andhra Pradesh 521133, India
Lat 16.177206°
Long 80.932293°
07/03/22 01:11 PM

PRESENTATION OF CERTIFICATES



INTERNSHIP “SCIENTIFIC BEEKEEPING”

In association with Krishi Vigyan Kendra, Ghantasala, Krishna (Dist.) Under National Bee Board (NBB) of Ministry of Agriculture Hyderabad

BSc Microbiology (MBC & MBF) SRR & CVR Govt. Degree College (A), Vijayawada

From 28th Feb To 7th March 2022

ACKNOWLEDGEMENTS

We express our deep sense of gratitude to Dr. K. Bhagya Lakshmi, Principal SRR & CVR Govt. Degree College Autonomous, and Vijayawada for her support and constant encouragement to upgrade the knowledge and skills of students.

We wish to express our sincere thanks Dr. K. Jhansi, Program Coordinator, KVK Ghantasala, Krishna District and Course Director, Dr Sudha Jacob, Senior Scientist, Entomology, KVK Ghantasala for providing internship to Microbiology students.

D. Jyothi

Anil

PRINCIPAL



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs*J. Chandini Priya*..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.


Course Director


Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *P. Sadhuika*..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

[Signature]
Course Director

[Signature]
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs V. Rameswar Reddy..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.


Course Director


Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *T. Surja Anil Prasad*..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

[Signature]
Course Director

[Signature]
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *P. Kavi Teja* has successfully completed 7 days training programme on 'Scientific Beekeeping' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

[Signature]

Course Director

[Signature]

Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs F. Venkateswarlu..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.


Course Director


Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs K. Kinnesa has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.


Course Director


Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *K. Vagdan Babu* has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

[Signature]
Course Director

[Signature]
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 01.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *B. Aaron Wesley Paul*..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.


Course Director


Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs T. Bharathi..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

Course Director

**Programme Coordinator
KVK, Ghantasala**

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs*I. Teja*..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

Course Director

**Programme Coordinator
KVK, Ghantasala**

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *V. Vasanth Srinivas*..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.


Course Director


Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *Shri. Pranoy Roy*..... has successfully completed 7 days training programme on 'Scientific Beekeeping' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

[Signature]
Course Director

[Signature]
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *Shri. Anil Kumar*..... has successfully completed 7 days training programme on 'Scientific Beekeeping' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

Handwritten signature of Course Director

Course Director

Handwritten signature of Programme Coordinator

**Programme Coordinator
KVK, Ghantasala**

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *Shri. Revanth Kumar*..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

[Signature]
Course Director

[Signature]
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *K. Vijay* has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

[Signature]
Course Director

[Signature]
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07-03-2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs R. Sai Vardhani has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.


Course Director


Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *K. Naga Sriya*..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

[Signature]
Course Director

[Signature]
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *.....E. Bhanu Teja.....* has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

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Course Director

Marek
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: *07.03.2022*



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *P. Rajya Lakshmi*..... has successfully completed 7 days training programme on 'Scientific Beekeeping' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

[Signature]
Course Director

[Signature]
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs Y. Nuthyam..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.


Course Director


Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *N. Nagalakshmi*..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

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Course Director

[Signature]
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *..Sk..Refatunnisa.....* has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

Course Director

**Programme Coordinator
KVK, Ghantasala**

Place: Ghantasala

Date: 7.3.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs*Abdul Rashimi*..... has successfully completed 7 days training programme on '**Scientific Beekeeping**' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

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Course Director

Manoj
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 7.3.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs *R. Yopi Krishna*..... has successfully completed 7 days training programme on 'Scientific Beekeeping' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.

[Signature]
Course Director

[Signature]
Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 7.3.2022



**Krishi Vigyan Kendra, Ghantasala, Krishna Dt.
Acharya N. G. Ranga Agricultural University**

Certificate

This is to certify that Shri/Miss/Mrs B. Sujanya..... has successfully completed 7 days training programme on 'Scientific Beekeeping' conducted at Krishi Vigyan Kendra, Ghantasala under Mini Mission-I under revised National Beekeeping and Honey Mission (NBHM) of National Bee Board (NBB) of Ministry of Agriculture and Farmers Welfare, Government of India through ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-X, Hyderabad, from 28.02.2022 to 07.03.2022.


Course Director


Programme Coordinator
KVK, Ghantasala

Place: Ghantasala

Date: 07.03.2022

CERTIFICATE COURSE

Basics on Electrical Appliances & Air Conditioning Mechanism

in Association with

INDUSTRIAL TRAINING INSTITUTE, VIJAYAWADA &

ANDHRA PRADESH STATE SKILL DEVELOPMENT CORPORATION

DATE: 15 - 03 - 2022 to 19 - 03- 2022 (30 Hours)

No. of participants :66

Instructors: Kishore, Murali, Surya Prakash
(ITI faculty, Hitachi company trainer)



DEPARTMENT OF PHYSICS & ELECTRONICS
SRR & CVR GOVERNMENT DEGREE
COLLEGE(AUTONOMOUS), VIJAYAWADA

Basics on Electrical Appliances & Air Conditioning Mechanism

Objectives of the Training Program

- To get hands-on experience for “Electrical Appliances” paper introduced for 1st semester Science Students as a part of Skill Development Course.
- Fault detection and repairing of domestic appliances.



S.R.R. & C.V.R. GOVT. DEGREE COLLEGE

(Autonomous)

NAAC accredited with 'B+' Grade

Machavaram, VIJAYAWADA - 520 004. Krishna District.

Cell : 9848251236 Ph : 0866-2430060, Fax : 0866-2441092, www.srrcvr.ac.in srrandcvr@gmail.com



Dr. K. Bhagya Lakshmi, M.Sc., M.Phil, Ph.D.
Principal

Date

Dt: 03.03.2022,

From
Dr.K.Bhagya Lakshmi M.Sc., M.Phil., Ph.D.
Principal,
SRR & CVR Government Degree College (A)
Vijayawada

To
The Principal,
Government ITI College,
Vijayawada.

Respected Sir,

Sub: SRR & CVR Government Degree College (A), Vijayawada-
Department of Physics & Electronics- Work shop on Electrical
Appliances at your Institute- Permission-Request-Regarding.

I would like to request that to conduct a workshop on “Electrical Appliances” at your institute for the period of one week to our students. It would be very helpful for students to get hands-on experience for their skill development paper on “Electrical Appliances”, which is introduced in 1st semester B.Sc course according to the norms of new NPE. The main focus of the workshop will be working and maintenance of Electrical Appliances.

At present 179 students are studying B.Sc Physics & Electronics course in our college. The duration of the workshop will be 10 to 12 PM for the period of 1 week at your convenient dates for 30 students per batch.

Hence, I request you to permit the students to get work experience at your institute as work shop.

Thanking you Sir,

Yours sincerely,

Dr. K. Bhagya Lakshmi
2.3.2022

PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)
Machavaram, VIJAYAWADA - 520 004.

Course outline

Date	Session	Content	Remarks
15-03-2022 10 - 1 PM & 2- 5 PM	1	Principles of working, parts and servicing of Electric fan, Electric Iron box,	2 batches , 33 students per each Batch
16-03-2022 10 - 1 PM & 2- 5 PM	2	Principles & working of Electric bulbs, CFL, LED lights, Testing Choke, Capacitor,	
17-03-2022 10-1 PM & 2- 5 PM	3	Principles & working of Electric Cooker, electric oven	
18-03-2022 10-1 PM & 2- 5 PM	4	Basic science of REFRIGERATION., Basics of air conditioning	
19-03-2022 10-1 PM & 2- 5 PM	5	electrical parts of air conditioner testing, function. electronic components.	

From All the sciences groups, MPCs, MECs, MPCA & MPC of 1st semester a total of 66 students had participated in this hands-on experience training Program.

Participated Students Details

SRR & CVR GDC (A) VIJAYAWADA - Electrical Appliances workshop at GOVT. ITI COLLEGE, VIJAYAWADA Batch - 2									
Name of the student	Class/ Group	contact number	Email ID	Batch No.	Date 15-03-2022	Date 16-03-2022	Date 17-03-2022	Date 18-03-2022	Date 19-03-2022
1 T. Siddu	1st BSC(MPCS)	630151533 0	tiriveedhisiddu@gmail.com	II	P	P	P	P	P

2	I.VAMSI KUMAR	1st BSC(MPCS)	770286446 1	illurivamsikumar123@gmail.com	II	P	P	P	P	P	P
3	A.Abhishek	1st BSC(MPCS)	807434187 8	abhishekanasuri123@gmail.com	II	P	P	P	P	P	P
4	Rajkumar	1st BSC(MPCS)	934682754 5	rajkumar934683@gmail.com	II	P	P	P	P	P	P
5	Gopichand	1st BSC(MPCS)	630048843 9	gopichandguduru9@gmail.com	II	P	P	P	P	P	P
6	S. Mahesh	1st BSC(MPCS)	733063115 2	maheshsivalanke@gmail.cok	II	P	P	P	P	P	P
7	M.Rakesh kumar	1st BSC(MPCS)	738652200 1	maheshyohusuva@gmail.com	II	P	P	P	P	P	P
8	K.Karunakar	1st BSC(MPCS)	630199312 8	karthikkola98@gmail.com	II	P	P	P	P	P	P
9	P.Naveen	1st BSC(MPCS)	910095652 7	naveen.peddhapurapu@gmail.com	II	P	P	P	P	P	P
10	T.Apparao	1st BSC(MPCS)	630058751 6	tekuchinna152@gmail.com	II	P	P	P	P	P	P
11	S. Praveen	1st BSC(MPCS)	756935970 3	spraveenkerry143@gmail.com	II	P	P	P	P	P	P
12	T.Mahesh Babu	1st BSC(MPCS)	949454345 8	tumatimaheshbabu2@gmail.com	II	P	P	P	P	P	P
13	B.Altaf	1st BSC(MPCS)	707569053 7	baigalthaf6@gmail.com	II	P	P	P	P	P	P
14	Ch. Harshavardhan	1st BSC(MPCS)	970493568 5	harshavardhanchinthapalli@gmail.com	II	P	P	P	P	P	P
15	P. Murali Krishna	1st BSC(MPCS)	939812053 1	muralipalagarla@gmail.com	II	P	P	P	P	P	P
16	K. Vamsi	1st BSC(MPCS)	939250024 5	kvamsi9392@gmail.com	II	P	P	P	P	P	P
17	Ch. Arjun	1st BSC(MPCS)	912173260 6	reddyarjun166@gmail.com	II	P	P	P	P	P	P

1 8	N.Pavan	1st BSC(MPCS)	709528228 1	nallapavan713@gmail.com	II	P	P	P	P	P
1 9	E.Rakesh Kumar	1st BSC(MPCS)	810608730 6	kumarrakesh05554@gmail.com	II	P	P	P	P	P
2 0	Sk. Zameer	1st BSC(MPCS)	986679008 3	shaikzameer109@gmail.com	II	P	P	P	P	P
2 1	K. Ajay Kumar	1st BSC(MPCS)	912118763 4	kumpatijay84@gmail.com	II	P	P	P	P	P
2 2	Nageswara Rao	1st BSC(MPCS)	709344169 2	nandhipatinageswararao@gmail.com	II	P	P	P	P	P
2 3	Md. Sameer	1st BSC(MPCS)	630231084 1	ms253906@gmail.com	II	P	P	P	P	P
2 4	M. Narendra	1st <u>B.Sc</u> (MECS)	938198339 6	munagapatinarendra9@gmail.com	II	P	P	P	P	P
2 5	B. G. M. Kalidas	1st <u>B.Sc</u> (MECS)	984807156 7	bhogipatikalidas029@gmail.com	II	P	P	P	P	P
2 6	M. Chandrasekha r	1st <u>B.Sc</u> (MECS)	939034799 2	chandrasekharmedasani@gamil.com	II	P	P	P	P	P
2 7	P. Omesh Durga ram	1st <u>B.Sc</u> (MECS)	850036362 4	omeshdurgaram@gmail.com	II	P	P	P	P	P
2 8	GOLLURI MOHAN BABU	1st <u>B.Sc</u> (MECS)	767591843 2	mohangolluri07@gmail.com	II	P	P	P	P	P
2 9	R.Mahesh babu	1st <u>B.Sc</u> (MECS)	630085268 1	maheshbabu64545@gmail.com	II	P	P	P	P	P
3 0	K.Yelesh	1st <u>B.Sc</u> (MECS)	630523748 6	yeleshkumarikunta@gmail.com	II	P	P	P	P	P
3 1	Y. Anil kumar Reddy	1st <u>B.Sc</u> (MECS)	984860847 2	anilyanamala72@gmail.com	II	P	P	P	P	P
3 2	J. Vinayak	1st BSC(MPCS)	830915367 4	vinayakarjun143@gmail.com	II	p	P	P	P	P
3 3	K.Anwesh	1st BSC(MPCS)	810604561 5	anweshrockster@gmail.com	II	p	P	P	P	P

Instructors

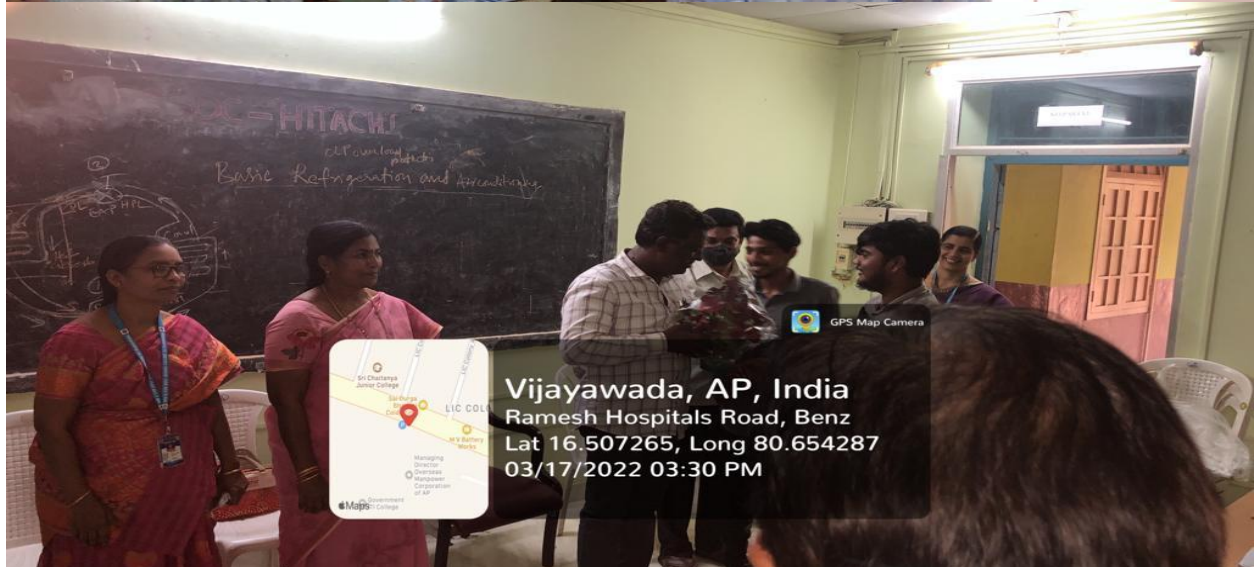
Sri Kishore, Sri Anil from Electrical Department faculty of Government ITI, Vijayawada & Sri Surya Prakash from Hitachi Company staff through APSSDC.

Lab Equipment : Ceiling Fan windings, stator, rotor; Electric bulbs, Choke, capacitor, electric Cooker, Mixie Grinder , series Bulb connection for testing, Air conditioning trainer by Hitachi available at Government ITI, Vijayawada.

Electrical Department , Govt ITI Vijayawada is used as Training Room.

SRR& CVR GDC (A) VIJAYAWADA - Electrical Appliances workshop at GOVT.ITI COLLEGE, VIJAYAWADA ---- Batch 1									
<u>S.No</u>	<u>Name of the student</u>	<u>Group</u>	<u>contact number</u>	<u>emailID</u>	<u>Batch</u>	<u>D:15-03-</u>	<u>D:16-03-</u>	<u>D:17-03-</u>	<u>D:19-03-</u>
1	B.Praveen kumar	1B.SC (MPCA)	8712245876	praveenkumarbokinala2004@gmail.com	I	P	P	P	P
2	B. Vykunta vasu	1st BSC (MPC)	9390567989	bagusriramsriram@gmail.com	I	P	P	P	P
3	B.Crystal	1B.SC (MPCA)	6302626078	bandelacrystal2002@gmail.com	I	P	P	P	P
4	B.Satish	1B.SC (MPCA)	8919069394	budamparthi763@gmail.com	I	P	P	P	P
5	B.Vamsi	1st BSC (MPC)	9701765916	BEVARAVAMSI88@gmail.com	I	P	P	P	P
6	B.Vinay	1st BSC (MPC)	9182866878	akhilvinay@gmail.com	I	P	P	P	P
7	Ch.Jitendra	1B.SC (MPCA)	9391373141	chinhajitendra9391373141@gmail.com	I	P	P	P	P
8	D.Kartek	1st BSC (MPC)	8897992614	karthikxyz46@gmail.com	I	P	P	P	P
9	D.Sandeep	1B.SC (MPCA)	9705698073	sandeepdevarapalli2003@gmail.com	I	P	P	P	P
10	I.Pavan Kalyan naik	1B.SC (MPCA)	7036855368	pavankalyannaik98@gmail.com	I	P	P	P	P
11	K.Aditya	1B.SC (MPCA)	9100564390	aadityakomaravalli@gmail.com	I	P	P	P	P
12	K.Balaram	1st BSC (MPC)	9014994891	balaramkparapu9@gmail.com	I	P	P	P	P
13	K.Kishore	1st BSC (MPC)	7997135524	kishorekoppu3@gmail.com	I	P	P	P	P

14	K.Kishore	IB.SC (MPCA)	9014932322	kishorekankipati9@gmail.com	I	P	P	P	P
15	K.Satish	1st BSC (MPC)	9550436304	satishsolo29@gmail.com	I	P	P	P	P
16	M. Paul Devanth Kumar	1st BSC (MPC)	8978104701	devanthk87@gmail.com	I	P	P	P	P
17	M. Trinadh	1st BSC (MPC)	7729873358	maduputrinadh84@gmail.com	I	P	P	P	P
18	Bejjam vamsi krishna	1st BSC (MPC)	8790392640	vamsirowdy28@gmail.com	I	P	P	P	P
19	N.Deva Prasad	1st BSC (MPC)	8897275024	nallagatladevapasrad7@gmail.com	I	P	P	P	P
20	PJagadeesh	IB.SC (MPCA)	8919832761	pjagadeeshjagadeesh98@gmail.com	I	P	P	P	P
21	P.DurgaDinesh	1st BSC (MPC)	9666405707	durgadineshpathiripalli28@gmail.com	I	P	P	P	P
22	P.Suryateja	1st BSC (MPC)	7032152169	suryatejapolaki123@gmail.com	I	P	P	P	P
23	Sk. Hasan	1st BSC (MPC)	6304126715	hasanshaik6121@gmail.com	I	P	P	P	P
24	Sk.Subhan	IB.SC (MPCA)	9989879494	yashsubhan3 gmail.com	I	P	P	P	P
25	T.Sai Kiran	IB.SC (MPCA)	9701414886	saikirantaddisetti@gmail.com	I	P	P	P	P
26	T.Venkata Ramana	1st BSC (MPC)	9618396276	vr536313@gmail.com	I	P	P	P	P
27	V.Durga Prasad	1st BSC (MPC)	7330936294	durgaprasadd164@gmail.com	I	P	P	P	P
28	S. Sai Teja	1st BSC (MPCs)	8074484599	saitejas975@gmail.com	I	P	P	P	P
29	B.Ravi Kumar	1st BSC (MPCs)	7036268299	ravibilugudi@gmail.com	I	P	P	P	P
30	Kambhampati Vamsi	1st BSC (MPC)	9392500245	kvamsi9392@gmail.com	I	P	P	P	P
31	K.Prabhu Kumar	1st BSC (MPC)	8688172218	kagithaprabhukumar@gmail.com	I	P	P	P	P
32	G.Karthik	1st BSC (MPC)	7386613196	mudhirajkarthik391@gmail.com	I	P	P	P	P
33	B.BhanuPrasad	1st BSC (MPC)	9492813882	prasadbhanu052@gmail.com	I	P	P	P	P
36	Sai Teja	1st BSC (MPCs)			I	P	P	P	P



DEPARTMENT OF PHYSICS & ELECTRONICS “ Basics of Electrical Appliances & Air Conditioning Mechanism”



[Certificates Batch2](#)

[Certificates Batch1](#)

[Student feedback ITI electrical Appliances](#)

DEPARTMENT OF PHYSICS & ELECTRONICS “ Basics of Electrical Appliances & Air Conditioning Mechanism”



CERTIFICATE OF TRAINING



ANDHRA PRADESH STATE SKILL DEVELOPMENT CORPORATION
in association with
GOVERNMENT INDUSTRIAL TRAINING INSTITUTE, VIJAYAWADA

&
SRR & CVR GOVERNMENT DEGREE COLLEGE

AN AUTONOMOUS & ISO 9001-2015 CERTIFIED INSTITUTION

RANKED BY NIRF 101-150 BAND at 2020 - NIRF & 151-200 BAND at 2021-NIRF

NAAC ACCREDITED INSTITUTION WITH B+ GRADE

VIJAYAWADA, KRISHNA(Dt), AP(State)

DEPARTMENT OF PHYSICS

This is to certify Mr. A.Abhishek, I B.Sc MPCS of **SRR & CVR GOVERNMENT DEGREE COLLEGE (A), Vijayawada** has successfully completed the course on "**Basic of Electrical Appliances & Refrigeration Mechanism**" conducted during 15-03-2022 to 19-03-2022 at Government INDUSTRIAL TRAINING INSTITUTE, VIJAYAWADA.

Principal,
Govt. ITI, Vijayawada

Principal,
SRR & CVR GDC(A)

Skill Development officer
APSSDC



CERTIFICATE OF TRAINING



ANDHRA PRADESH STATE SKILL DEVELOPMENT CORPORATION
in association with
GOVERNMENT INDUSTRIAL TRAINING INSTITUTE, VIJAYAWADA

&
SRR & CVR GOVERNMENT DEGREE COLLEGE

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RANKED BY NIRF 101-150 BAND at 2020 - NIRF & 151-200 BAND at 2021-NIRF

NAAC ACCREDITED INSTITUTION WITH B+ GRADE

VIJAYAWADA, KRISHNA(Dt), AP(State)

DEPARTMENT OF PHYSICS

This is to certify that Mr. **Deva prasad** I B.Sc **MPC** of **SRR & CVR GOVERNMENT DEGREE COLLEGE, Vijayawada** has successfully completed the course on " **Basics of Electrical Appliances & Refrigeration Mechanism**" conducted during " 15-03-2022 to 19-03-2022 at Government Industrial Training Institute, Vijayawada.

Principal
Govt. ITI, Vijayawada

Principal
SRR & CVR GDC(A)

Skill Development officer
APSSDC

Learning Outcomes

After attending this training, Students got Knowledge that how to test any electrical device like Bulb, grinder, choke coil, capacitor, electric cooker etc.

They are aware to check and repair any electrical device using safety measures.

Students got the knowledge of the mechanism that how refrigerants cool the environment etc.

DEPARTMENT OF PHYSICS & ELECTRONICS " **Basics of Electrical Appliances & Air Conditioning Mechanism**"



**SRR & CVR GOVERNMENT DEGREE COLLEGE
(AUTONOMOUS)
MACHAVARAM, VIJAYAWADA-520004
DEPARTMENT OF ZOOLOGY**

Name of the Activity	ONE WEEK TRAINING PROGRAMME on Principles of Aquaculture, and Demonstration on aquaculture laboratory procedures
Place	Organized by state institute of fisheries technology SIFT, Kakinada, Andhra Pradesh
Date	21-3-2022 to 26-03-2022





Students had Hands on Experience in STATE INSTITUTE OF FISHERIES TECHNOLOGY (SIFT) IN KAKINADA A.P by one week TRAINING PROGRAMME ON PRINCIPLES OF AQUACULTURE AND DEMONSTRATION OF AQUA LAB PROCEDURES (water and soil analysis, microbiology, feed analysis and PCR) in different parameters and sectors of aquaculture.



**SRR & CVR GOVERNMENT DEGREE COLLEGE
(AUTONOMOUS)
MACHAVARAM, VIJAYAWADA-520004
DEPARTMENT OF ZOOLOGY**

Name of the Activity	SEVEN DAY TRAINING PROGRAMME ON SCIENTIFIC BEE KEEPING
Place	At Krishivigyan Kendra (KVK) Ghantasala Andhra Pradesh organised by ICAR Agriculture Technology
Date	25-03-2022 to 31-03-2022





Students had Hands on Experience on scientific Bee Keeping, they learned about various species of Honey Bee and which species are economically beneficial for the process of Keeping Honey Bees. With these types of training programme students will be able to train themselves as future Entrepreneurs and help them for self-employments

S.R.R. & C.V.R. Government Degree College (A)

An Autonomous & ISO 9001: 2015 Certified Institution:: Ranked by NIRF in 101-150 band at NIRF-2020 & 151-200 band in NIRF 2019 NAAC accredited Institution with grade B+ with C.G.P.A 2.6 during March, 2017

Machavaram, Vijayawada, Krishna District, AP-520 004

ENTREPRENEURSHIP ACTIVITY MUSHROOM CULTIVATION MAY 2022



DEPARTMENT OF BOTANY

SRR & CVR Government Degree College

An Autonomous & ISO 9001: 2015 Certified Institution:: Ranked by NIRF in 101-150 band at NIRF-2020 & 151-200 band in NIRF 2019 NAAC accredited Institution with grade B+ with C.G.P.A 2.6 during March, 2017

Machavaram, Vijayawada, Krishna District, AP-520 004



DEPARTMENT OF BOTANY

Dates	9.5.2022 to 13.5.2022
Conducted through (DRC/JKC/ELF/NCC/NSS/ Departments etc.	Department
Nature of activity (seminar/Workshop/Extn. Lecture etc.	Extension activity
Title of the Activity	Industrial training on Mushroom cultivation
Name of the Department/Committee	Department of Botany
Details of Resource Persons (Name , Designation etc.,)	B.SC BZC Students
No of students participated	45
Name of the Lecturers who planned & conducted the activity	Planned and Organized by G.Swapna Lecturer In Charge Mrs V.N Padmavathi Lecturer in Botany
Remarks	This training provided much needed exposure and on site experience to students on mushroom cultivation .

Department of Botany SRR & CVR Govt Degree College Organized Industrial training for 45 III BZC students from 9.5.2022 to 13.5.2022 for the Project work Paper in cluster which deals with industrial training .

Pre Preparation /Action Plan :

For Organizing this program the Department of Botany Faculty contacted Jyothi Mushrooms, a small scale Mushroom Entrepreneur , Nunna and formulated an action plan for arranging training with the encouragement and support from Principal Madam.

Motive of this program:

For Final year students one of the Cluster papers in Botany cluster is completely about Project Work and Industrial training and one of the Cluster papers is entirely on Mushroom cultivation motivated us to organize this training .

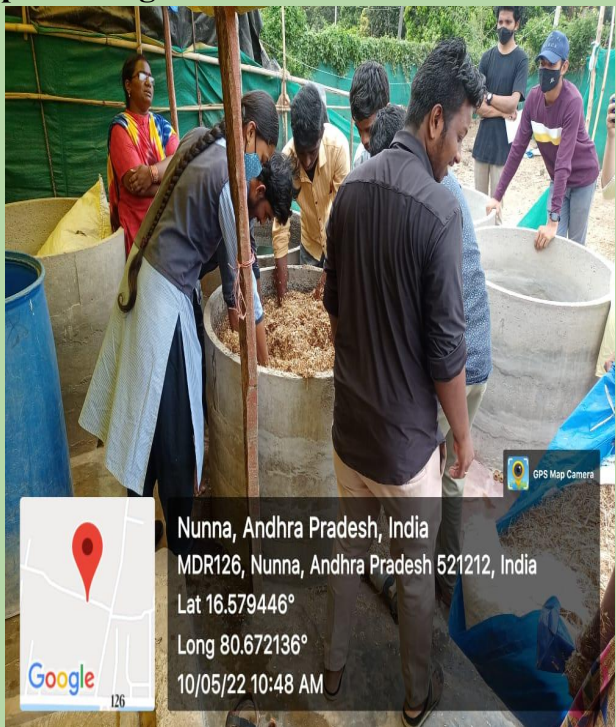
Report of the training :

I Day training dated 9.5.2022 : On First day Jyothi Mushroom cultivation Entrepreneur explained to students about the stages of Mushroom cultivation, Significance of Grass used and the technique of Grass cutting and grass cutting machinery working principles . Students practiced Grass cutting on machines.



II Day training dated 10.5.2022

On the second day of training students got the training on Processing the grass physically and also with the help of grass processing machinery and the chemical substances used for processing .



III Day training dated 11.5.2022 : On the third day of training students got the training on Drying process and filling the mushroom polythene bags with grass and spawn .



IV Day training dated 12.5.2022 : On the fourth day of training students got the training on

preparation of spawn, filling up of polythene covers with grass and spawn , drying casing etc



Nunna, Andhra Pradesh, India
Mushroom project Nunna
Lat 16.579443°
Long 80.672048°
12/05/22 10:41 AM



Nunna, Andhra Pradesh, India
Mushroom project Nunna
Lat 16.579443°
Long 80.672048°
12/05/22 10:07 AM

V Day training dated 13.5.2022 : On the fifth day of training students got the training on preparation of mushroom cases, storage methods , Marketing methods and financial process of mushroom culture industry.



Nunna, Andhra Pradesh, India
MDR126, Nunna, Andhra Pradesh 521212, India
Lat 16.579468°
Long 80.672177°
13/05/22 10:27 AM



Nunna, Andhra Pradesh, India
Mushroom project Nunna
Lat 16.579443°
Long 80.672048°
13/05/22 10:19 AM

Last day of the training explained all the aspects of Mushroom Culture Business .



Honorable principal madam congratulated the students and Faculty of Botany Department for successfully completing the training program and giving the certificates to students .



Press Clippings

చశాయి.

మాచవరం, న్యూస్టుడే:

విద్యార్థులకు స్వయం ఉపాధి కోర్సులపై శిక్షణ ఇస్తున్నట్లు కళాశాల ప్రిన్సిపల్ డాక్టర్ కె.

భాగ్యలక్ష్మి అన్నారు. మాచవ

రంలోని ఎస్సారా అండ్ సీవీఆర్ ప్రభుత్వ డిగ్రీ కళాశాల వృక్షశాస్త్ర విభాగం ఆధ్వర్యంలో కళాశాలలో బీఎస్సీ (బీజెడ్సీ) తృతీయ సంవత్సరం విద్యార్థులు గత అయిదు రోజులుగా నున్నలోని 'జ్యోతి మప్రూమ్స్'లో పుట్టగొడుగుల వెంపకం కేంద్రం వద్ద శిక్షణను విజయవంతంగా ముగించుకొని.. ఉత్తీర్ణులైన విద్యార్థు

స్వయం ఉపాధి కోర్సులపై శిక్షణ

లకు శుక్రవారం కళాశాలలో ఏర్పాటుచేసిన కార్యక్రమంలో ధ్రువపత్రాలను ఆమె అందజేశారు. ఈ సందర్భంగా ప్రిన్సిపల్ మాట్లాడుతూ.. శిక్షణలో

భాగంగా నాణ్యమైన గడ్డి, మట్టి, పుట్టగొడుగుల రకం, స్పానింగ్, స్పాన్ రన్నింగ్, క్రోసింగ్, క్రాపింగ్ వంటి అంశాలను విద్యార్థులు చక్కగా నేర్చుకున్నారు. కార్యక్రమాన్ని చేపట్టిన కళాశాల వృక్షశాస్త్ర విభాగాధిపతి జి.స్వప్న, అధ్యాపకులు వి.నాగపద్మావతి, డాక్టర్ సీహెచ్ శ్రీనివాసరెడ్డి, ఐ.ప్రశాంతిలను అభినందించారు.

విద్యార్థులకు సర్టిఫికేట్ల ప్రదానం



మధురానగర్ (విజయవాడ సెంట్రల్): విద్యార్థులు ధియరీతోపాటు ప్రాక్టికల్ పరిజ్ఞానం పెంపొందించుకోవాలని ఎస్ఆర్ఆర్ అండ్ సీపీఆర్ ప్రభుత్వ కళాశాల ప్రిన్సిపల్ డాక్టర్ కె.భాగ్యలక్ష్మి తెలిపారు. మాచవరం ఎస్ఆర్ఆర్ ప్రభుత్వ కళాశాలలో శుక్రవారం వృక్షశాస్త్ర విభాగం ఆధ్వర్యంగానూ పుట్టగొడుగుల పెంపకం పై శిక్షణ పూర్తి చేసుకున్న బీఎస్సీ తృతీయ సంవత్సరం విద్యార్థులకు సర్టిఫికేట్లు పంపిణీ చేశారు. ఈ సందర్భంగా ఆమె మాట్లాడుతూ అందివచ్చిన అవకాశాలను సద్వినియోగం చేసుకుని ఉన్నత స్థానాలకు చేరుకోవాలని సూచించారు. వృక్షశాస్త్ర విభాగాధిపతి జి.స్వప్న మాట్లాడుతూ శిక్షణలో నేర్చుకున్న అంశాలను క్షేత్రస్థాయిలో అమలు చేసేలా ప్రణాళికలు రూపొందించామని పేర్కొన్నారు. అధ్యాపకులు వి.నాగపద్మావతి, డాక్టర్ సీహెచ్ శ్రీనివాసరెడ్డి, ఐ.ప్రకాంతి తదితరులు పాల్గొన్నారు.

SRR & CVR Government Degree College

An Autonomous & ISO 9001: 2015 Certified Institution:: Ranked by NIRF in 101-150 band at NIRF-2020 & 151-200 band in NIRF 2019 NAAC accredited Institution with grade B+ with C.G.P.A 2.6 during March, 2017

Machavaram, Vijayawada, Krishna District, AP-520 004



DEPARTMENT OF BOTANY

విద్యార్థులకు సర్టిఫికేట్ల ప్రదానం



మచిలీపట్నం(విజయవాడ సెంట్రల్): విద్యార్థులు డియరీలోపాలు ప్రాక్టికల్ పరిజ్ఞానం పెంపొందించుకోవాలని ఎసెఆర్ఆర్ అండ్ సీవీఆర్ ప్రచుర్య కణాళి ప్రిన్సిపల్ డాక్టర్ కె.బాగ్యలక్ష్మి తెలిపారు. మాచిలీపట్నం ఎసెఆర్ఆర్ ప్రచుర్య కణాళిలో శుక్రవారం పూర్వశాస్త్ర విభాగం ఆధ్వర్యంగా పుట్టగొడుగుల పెంపకం పై శిక్షణ ఖార్చి చేసుకున్న బీఎస్సీ తృతీయ సంవత్సరం విద్యార్థులకు సర్టిఫికేట్లు పంపిణీ చేశారు. ఈ సందర్భంగా ఆమె మాట్లాడుతూ అందించిన అవకాశాలను సద్వినియోగం చేసుకుని ఉన్నత స్థానాలకు చేరుకోవాలని సూచించారు. పూర్వశాస్త్ర విభాగాధిపతి జి.స్వప్న మాట్లాడుతూ శిక్షణలో నేర్చుకున్న అంశాలను క్షేత్రస్థాయిలో అమలు చేసేలా ప్రణాళికలు రూపొందించామని పేర్కొన్నారు. అధ్యాపకులు వి.నాగపద్మావతి, డాక్టర్ సీహెచ్ శ్రీనివాసరెడ్డి, ఐ.ప్రశాంతి తదితరులు పాల్గొన్నారు.

SRR & CVR Government Degree College

An Autonomous & Established Central Institution - Ranked 5th NRI in its category by NIRF - Ranked 1st in its category in NIRF among NAC accredited Institutions with an overall score of 4.9 - Institutional Metrics 2022
Machilipatnam, Vijayawada, Krishna District, AP 520 004



DEPARTMENT OF BOTANY

Gopa


LECTURER IN CHARGE
Dept. of Botany
SRR & CVR GOVT. DEGREE COLLEGE
VIJAYAWADA-4, Krishna Dist.

తేదీ: 7-12-2022.

శ్రీమంత్రి SRR & CVR (వేదవేదాంత బుద్ధి కళాశాల వ్యవస్థాపక విభాగం
III-BSC-B2C ఆధ్వర్యంలో) యాద్రీ (సంస్థాపక) భాగంగా "పుట్టు గొడుగుల పెంపకం" చేపట్టడం జరిగింది. అధ్యక్షులు వ్యవస్థాపక అధ్యక్షులు డా॥ చ. ప్రసాద్ రెడ్డి గారి దిశానిర్దేశం వ్రాసిన వ్యవస్థలతో పింక్ డిప్లొమా మద్రాస్, మిస్ మద్రాస్ పెంపకాన్ని సూక్ష్మ జీవ రహిత పరిస్థితుల్లో పడకల తయారీ, విత్తనాల చల్లడం, ఇంటి జీవం, డ్రాపింగ్ వంట అవిధ దశలను వాటి ఫలసాయం సాధించడం జరిగింది.

తక్షణ వెబ్సైట్ లో వివరాలు పొందే అవకాశం వున్న పుట్టు గొడుగుల పెంపకం స్వయం సేవకాండ? మంచి మార్గము, నిరుద్యోగులు, గ్రామీణులు, రైతులు వంటివారికి ఇంటిలోనే చేపట్ట వచ్చునని, సమాజ అవసరాలకు తగిన స్థాయిలో పోషకాహార ప్రాధాన్యతతో వంట పెంపకం మంచి అదాయ వనరుగా పెరగవచ్చునని కళాశాల డిప్లొమా డా॥ కొండల జి. భాగ్యలక్ష్మి సలహా చెప్పారు.

పుట్టు గొడుగులకు B విటమిన్ వ్యవస్థాపకాన్ని పుట్టు గొడుగులకు ఆహారం చేర్చుకోవడం వల్ల రోగనిరోధక శక్తి పెరుగుతుంది, వంటలోని సెలెనియం కాన్సర్ రాకుండా చేస్తుంది, ఇవి స్థూల కాయల బరువు తగ్గించడంలో ఆధునికతాయి, మధుమేహాల్లో చికిత్స స్థాయిల నియంత్రణలో భాగంగా-కాబట్టి వంటలో అందరూ దీనిని ఆహారంలో భాగంగా చేర్చుకోవాలని వ్యవస్థాపక విభాగం అధ్యక్షులు అభిప్రాయం వ్యక్తం చేశారు. ఈ సందర్భంగా ఈ కార్యక్రమం అధ్యక్షుల ప్రధాన అభినందనలు.


7-12-2022
PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)
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**CERTIFICATE
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Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022

For Award
**JYOTHI MUSHROOMS
VIJAYAWADA**



**JYOTHI
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{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



Dr. H. M. S.
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in the Academic year 2021-2022



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VENKAT KARUMURI

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{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022

(Prin)

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Skill Development Training / Project Work in Mushroom Cultivation

Lahoru. Gopi

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LANKA. REX DAYAN

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*{9.5.2022 to 13.5.2022} on Mushroom Cultivation
in the Academic year 2021-2022*



ANAMI
JYOTHI MUSHROOMS
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JYOTHI
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**CERTIFICATE
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Skill Development Training Program
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in the Academic year 2021-2022*

Prithvi
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VIJAYAWADA



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Dr. Annu

Student of III B.Sc. Botany, S.R.R & C.V.R. Govt. Degree College (A)
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in the Academic year 2021-2022*

Annu
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**CERTIFICATE
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Skill Development Training / Project Work in Mushroom Cultivation

M.Srinivas Rao

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in the Academic year 2021-2022*



P. N. Jini
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in the Academic year 2021-2022*



JYOTHI MUSHROOMS
VIJAYAWADA

CERTIFICATE
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Skill Development Training / Project Work in Mushroom Cultivation

NEELAKANTI RAMYA SRI

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JYOTHI
MUSHROOMS

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

P. ANNA PURNA DEVI

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



P. Anna Purna Devi
JYOTHI MUSHROOMS
VIJAYAWADA

JYOTHI
MUSHROOMS

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

P.kadhar Mastan

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

*Has Successfully Completed 5 days Botany
Skill Development Training Program
{9.5.2022 to 13.5.2022} on Mushroom Cultivation
in the Academic year 2021-2022*

*ANAMI
BY JYOTHI MUSHROOMS
VIJAYAWADA*



JYOTHI
MUSHROOMS

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

THALAKAYALA VENKAT

Student of III B.Sc, BZC E.M. S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



P. N. M.
JYOTHI MUSHROOMS
VIJAYAWADA

JYOTHI
MUSHROOMS

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

ULLIBOINA ANIL KUMAR

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



JYOTHI MUSHROOMS
VIJAYAWADA

JYOTHI
MUSHROOMS

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

Anantha Rajee Arula

Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada

Has Successfully Completed 1st Day Training

Skill Development Training Program

(9.5.2022 to 13.5.2022) on Mushroom Cultivation

in the Academic year 2021-2022

Arul

JYOTHI
MUSHROOMS

**CERTIFICATE
ACHIEVEMENT**

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

BANDARU. BHARGAVI

Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



P. N. M.
JYOTHI MUSHROOMS
VIJAYAWADA

**JYOTHI
MUSHROOMS**

CERTIFICATE

ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

Bhukya Nagamani

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

Has Successfully Completed 5 days Botany

Skill Development Training Program

{ 08.5.2022 to 13.5.2022 } on Mushroom Cultivation

Academic year 2021-2022



Dr. N. N. N.
JYOTHI MUSHROOMS
VIJAYAWADA
Cell: 9379444444

**JYOTHI
MUSHROOMS**

CERTIFICATE OF
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

Bhukya Sai babu

Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada

*Has Successfully Completed 5 days Botany
Skill Development Training Program
{9.5.2022 to 13.5.2022} on Mushroom Cultivation
in the Academic year 2021-2022*



Jyothi
MUSHROOMS
VIJAYAWADA

JYOTHI

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

B. Lakshman Rao

Student of III B.Sc, HZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada

Has Successfully Completed edup. Project

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022

Prasad



JYOTHI
MUSHROOMS

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

Albi Lakshmi

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



*JYOTHI MUSHROOMS
VIJAYAWADA*

JYOTHI
MUSHROOMS

**CERTIFICATE
ACHIEVEMENT**

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

Ch. Jaya shankar

**Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada**

*Has Successfully Completed 5 days Botany
Skill Development Training Program
{9.5.2022 to 13.5.2022} on Mushroom Cultivation
in the Academic year 2021-2022*



P. N. S. M.
JYOTHI MUSHROOMS
VIJAYAWADA

**JYOTHI
MUSHROOMS**

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

CH. VENKATIAH

Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada

Has Successfully Completed 5 days Botany

Skill Development Training Program

[9.5.2022 to 13.5.2022] on Mushroom Cultivation

in the Academic year 2021-2022



JYOTHI
MUSHROOMS

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JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

CHIKKAVARAPU. MANIKANTA DEEPAK

Student of III B.Sc, BZC **E.M** S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada

*Has Successfully Completed 5 days Botany
Skill Development Training Program
{9.5.2022 to 13.5.2022} on Mushroom Cultivation
in the Academic year 2021-2022*

*Dr. Jyoti
JYOTHI MUSHROOMS
NUNNA, VIJAYAWADA*



**JYOTHI
MUSHROOMS**

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

Chettipogu.Navya jyothish [E.M]

**Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada**

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



Priyank
JYOTHI MUSHROOMS
VIJAYAWADA

JYOTHI
MUSHROOMS

**CERTIFICATE
ACHIEVEMENT**

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

DARELLI. NANI

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



ANAMI
JYOTHI MUSHROOMS
NUNNA, VIJAYAWADA

**JYOTHI
MUSHROOMS**

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

ELLIPILLI. NARAYANA

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



Prithvi
JYOTHI MUSHROOMS
VIJAYAWADA

JYOTHI
MUSHROOMS

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

G.Durga prasad

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



Prithvi
JYOTHI MUSHROOMS
VIJAYAWADA

JYOTHI
MUSHROOMS

**CERTIFICATE
ACHIEVEMENT**

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

G. satya priya

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

*Has Successfully Completed 5 days Botany
Skill Development Training Program
{9.5.2022 to 13.5.2022} on Mushroom Cultivation
in the Academic year 2021-2022*

Anil
JYOTHI MUSHROOMS
VIJAYAWADA



**JYOTHI
MUSHROOMS**

CERTIFICATE

ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

JAMMALAMUDI RAJASHEKAR

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 13.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



Dr. K. M. S. Reddy
JYOTHI MUSHROOM
VIJAYAWADA
Cell: 9849111111

**CERTIFICATE
ACHIEVEMENT**

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

KOTA. BHAGYA RATNA KUMAR

Student of III B.Sc, BZC **E.M.** S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada

*Has Successfully Completed 5 days Botany
Skill Development Training Program
[9.5.2022 to 13.5.2022] on Mushroom Cultivation
in the Academic year 2021-2022*

ANM
JYOTHI MUSHROOMS
VIJAYAWADA

**JYOTHI
MUSHROOMS**



CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

K.Chandrika

*Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada*

Has Successfully Completed 5 days Botany

Skill Development Training Program

{9.5.2022 to 18.5.2022} on Mushroom Cultivation

in the Academic year 2021-2022



ANM
JYOTHI MUSHROOMS
VIJAYAWADA

JYOTHI
MUSHROOMS

CERTIFICATE
ACHIEVEMENT

JYOTHI MUSHROOMS, NUNNA, VIJAYAWADA

Skill Development Training / Project Work in Mushroom Cultivation

Kota Hema

Student of III B.Sc, BZC S.R.R & C.V.R. Govt. Degree College (A)
Machavaram, Vijayawada

*Has Successfully Completed 5 days Botany
Skill Development Training Program
{9.5.2022 to 13.5.2022} on Mushroom Cultivation
in the Academic year 2021-2022*

Prithvi
JYOTHI MUSHROOMS
VIJAYAWADA

JYOTHI
MUSHROOMS



TRAINING IN SOFT SKILL DEVELOPMENT COURSE

by

APITA – NAANDI Foundation

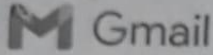
DATES: 23-11-2021 TO 29-11-2021

Target Group: 100 students of II BCOM and II BA

APITA in association with Naandi Foundation conducted a training programme in soft skills on JKC Platform from 23.11.2021 to 29.11.2021 for 50 BA and 50 B.com students. The training was interactive and concentrated on themes like team work, time management and personality development. Students immensely benefitted from all sessions and requested inclusion of such training programmes. Naandi Foundation also issued certificates to students.

11/22/21, 11:37 AM

Gmail - Free Training Program on Soft Skills and Employability Skills by APITA and Naandi Foundation- reg



Jawahar Knowledge Center Vijayawada <vijayawada.jkc@gmail.com>

Free Training Program on Soft Skills and Employability Skills by APITA and Naandi Foundation- reg

1 message

Satya Ratnam Marepalli <satyaratnam.m@ap.gov.in>
To: vijayawada jkc <vijayawada.jkc@gmail.com>

Sat, Nov 20, 2021 at 1:14 PM

Dear Madam,

Greetings From APITA !!

APITA had a MoU with Naandhi Foundation on various skilling programs to the students as a part of that they are providing free Employability and soft skills classes to the APITA registered college students 6 days program.

Offline Employability Skills 6 Days 42 Hours Any Students willing to Seek Job Immediately Classroom Training

Please find the attached 6 days schedule and give your willing to conduct the program at your college

Thanking you,

M. Satya Ratnam
District Development Manager
Krishna District
Andhra Pradesh Information Technology Academy
ITE & C Department , Govt of AP.
9989930766



Frame Work 42 Hours offline.xlsx
10K

SRR & CVR Government Degree College (A)
Vijayawada

JAWAHAR KNOWLEDGE CENTRE (JKC)

22.11.2021

To
The Principal
SRR & CVR Govt. Degree College (A)
Vijayawada

Madam,
Sub: APITA Training in Soft Skills on JKC Platform - 23 - 29 November, 2021 - 50 BA students &
50 BCom students- Request for permission - Regarding

We submit that AP Information Technology Academy (APITA) in association with Naandhi Foundation is offering 6 Day Training in Soft Skills from 23 to 29 November 2021 from 9am to 1PM on JKC platform.

The copy of the mail and agenda is enclosed for your kind perusal and request your permission to conduct the training for 50 BA & 50 BCom students in our college.

The training is free of cost and JKC is asked to provide tea, snacks, water bottles and working lunch for two Trainers and workshop material like Charts, sketches and A4 bundles and water for students. The rooms 208 and 202 will be taken up for the training and are to be maintained clean on all 6 days.

The expenditure incurred for the training will be submitted with related bills and may be met from JKC funds of the college.

Thanking you

Yours faithfully

A. Rosalinda
JKC Coordinator
JKC committee

Approved
U. Srinivas
22.11.2021
PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)
Machavaram, VIJAYAWADA - 520 004.

SRR & CVR Government Degree College (A), Vijayawada		
Jawahar Knowledge Centre (JKC)		
6 Days Training Programme in Soft Skills by AP Information Technology Academy (APITA) in association with Naandi Foundation for 100 II BA & II BCom students		
Day 1		This is me + I am Unique
	23.11.2021	Body Language Grooming and Hyginene
		Yes we can
Day 2		Time Management
	24.11.2021	Social manners
		Point of view
Day3		Story Board
	25.11.2021	Goal Setting
		Money management
Day 4		Count Your blessings
	26.11.2021	Interview Preparation
		Interview Preparation
Day 5		Professional Ethics
	27.11.2021	Group Discussion
		Explaining a Process
Day 6		Skit Preparation
	29.11.2021	Skit Presentation
		Extempore Advance
Day 7		GD (How It Happens In real Interview)
	29.11.2021	Jam (How it Happens I real Interview)
		Spreading happiness
Approved by Principal Madam		Dr.K.Bhagya Lakshmi
JKC Coordinator		Smt. A.Rosalind
JKC Committee		Dr.D Ch.Appa Rao, Dept. of Commerce
		Sri.Ajayi Babu, Dept. of History
		Smt. V. Uma Lakshmi, Dept. of Physics
		Dr.V. Lakshmi Sarvani, Dept. of Computer Science

JKC-APITA SOFT SKILLS SIX DAYS TRAINING PROGRAMME
DATES: 23-11-2021 TO 28-11-2021
INAGURATION



Inauguration of the training programme



DATES: 23-11-2021 TO 28-11-2021
INAGURATION



JKC-APITA SOFT SKILLS SIX DAYS TRAINING PROGRAMME
DATES: 23-11-2021 TO 28-11-2021

INAGURATION



JKC-APITA SOFT SKILLS SIX DAYS TRAINING PROGRAMME

DATES: 23-11-2021 TO 28-11-2021
INAGURATION



JKC-APITA SOFT SKILLS SIX DAYS TRAINING PROGRAMME
DATES: 23-11-2021 TO 28-11-2021
INAGURATION



DAY 1

**Sessions on Self Introduction, Body Language
and
Self Confidence**

JKC-APITA SOFT SKILLS SIX DAYS TRAINING PROGRAMME
DATES: 23-11-2021 TO 28-11-2021
DAY 1



JKC-APITA SOFT SKILLS SIX DAYS TRAINING PROGRAMME

DATES: 23-11-2021 TO 28-11-2021

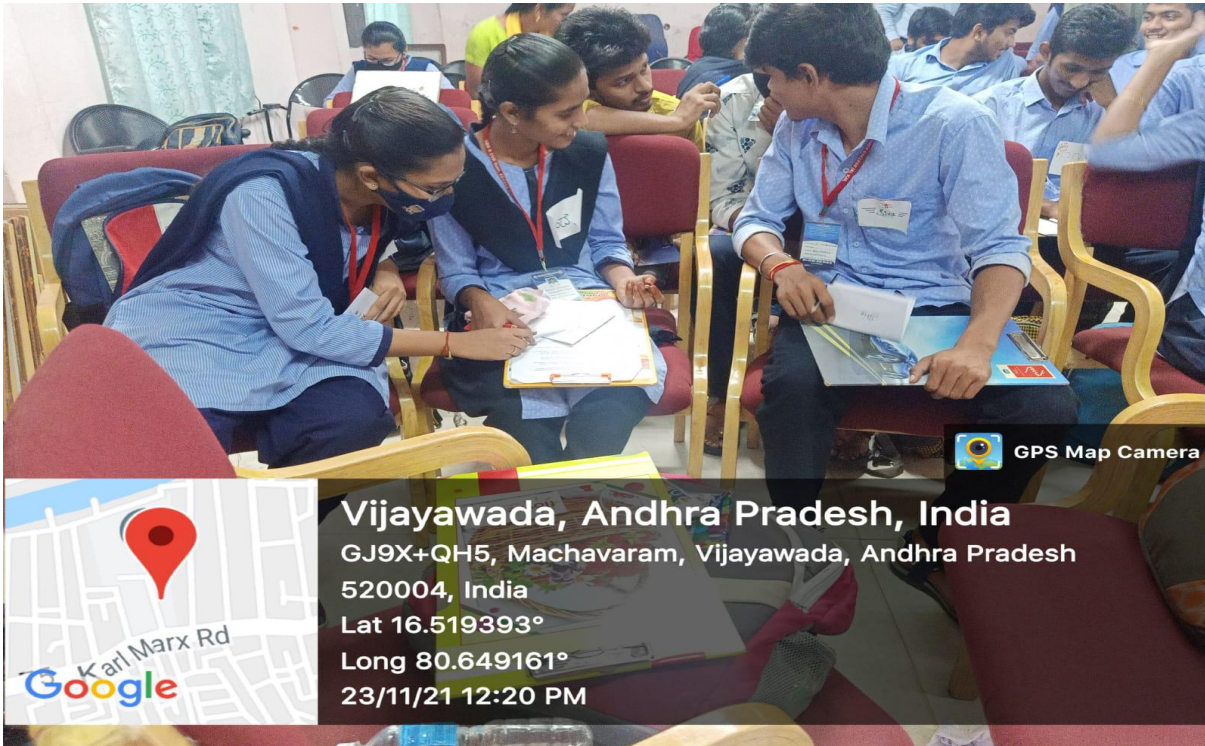
DAY 1



JKC-APITA SOFT SKILLS SIX DAYS TRAINING PROGRAMME
DATES: 23-11-2021 TO 28-11-2021
DAY 1



JKC-APITA SOFT SKILLS SIX DAYS TRAINNING PROGRAMME
DATES: 23-11-2021 TO 28-11-2021
DAY 1



DATES: 23-11-2021 TO 28-11-2021
DAY 1



DAY 2

Sessions on Time Management and Social Manners



GPS Map Camera



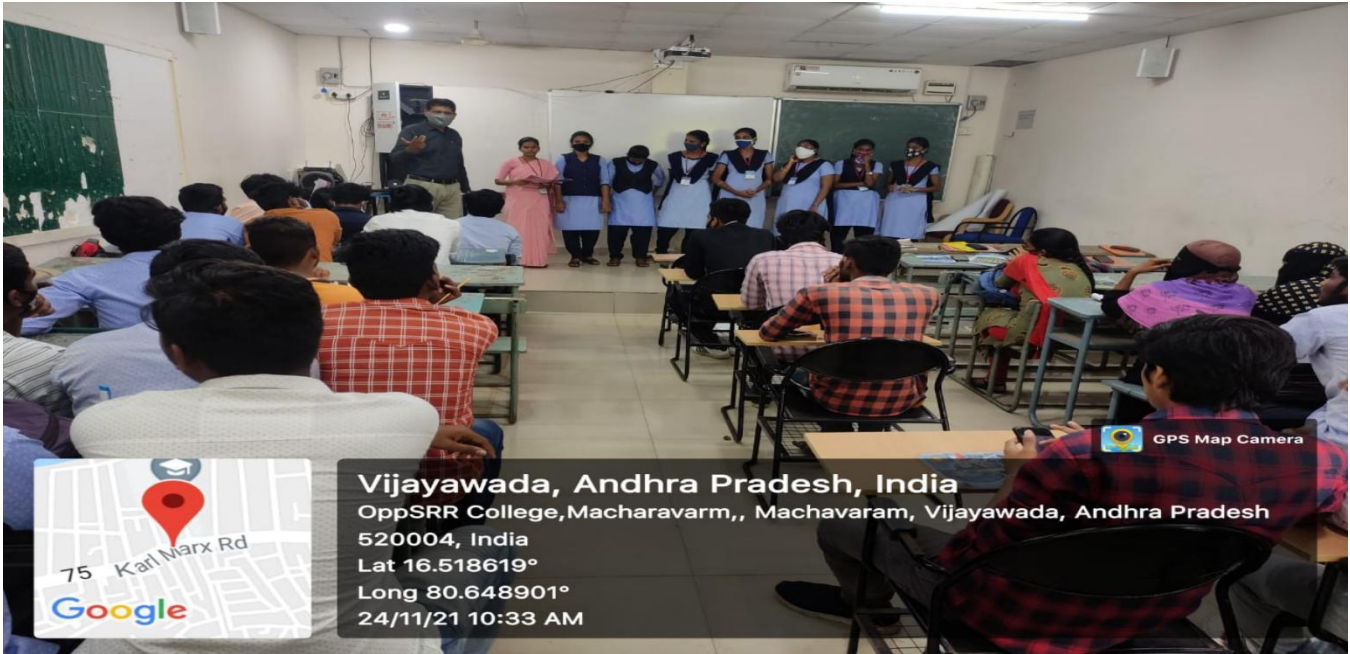
Vijayawada, Andhra Pradesh, India
GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India
Lat 16.519391°
Long 80.649156°
24/11/21 10:26 AM



GPS Map Camera



Vijayawada, Andhra Pradesh, India
GJ9X+JMP, Machavaram, Vijayawada, Andhra Pradesh 520004, India
Lat 16.519036°
Long 80.649129°
24/11/21 10:32 AM



Vijayawada, Andhra Pradesh, India
OppSRR College, Macharavarm,, Machavaram, Vijayawada, Andhra Pradesh
520004, India
Lat 16.518619°
Long 80.648901°
24/11/21 10:33 AM

GPS Map Camera



Vijayawada, Andhra Pradesh, India
OppSRR College, Macharavarm,, Machavaram, Vijayawada, Andhra Pradesh
520004, India
Lat 16.518619°
Long 80.648901°
24/11/21 10:33 AM

GPS Map Camera



Vijayawada, Andhra Pradesh, India
S.R.R. College Bus Stop, Eluru Rd, Near To My Home Complex, Machavaram,
Vijayawada, Andhra Pradesh 520004, India
Lat 16.51873°
Long 80.648949°
24/11/21 10:33 AM



Vijayawada, Andhra Pradesh, India
OppSRR College, Macharavarm,, Machavaram, Vijayawada, Andhra Pradesh
520004, India
Lat 16.518665°
Long 80.648919°
24/11/21 10:33 AM



GPS Map Camera



Vijayawada, Andhra Pradesh, India

GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India

Lat 16.519356°

Long 80.649148°

24/11/21 10:25 AM



GPS Map Camera



Vijayawada, Andhra Pradesh, India

GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India

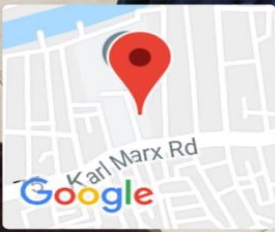
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Long 80.649165°

24/11/21 10:26 AM



GPS Map Camera



Vijayawada, Andhra Pradesh, India

31-10-7, Vsn St, Machavaram, Vijayawada, Andhra Pradesh 520004, India

Lat 16.519378°

Long 80.649171°

24/11/21 10:26 AM



GPS Map Camera



Vijayawada, Andhra Pradesh, India

GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India

Lat 16.519391°

Long 80.649156°

24/11/21 10:26 AM



Vijayawada, Andhra Pradesh, India
31-10-7, Vsn St, Machavaram, Vijayawada, Andhra Pradesh 520004, India
Lat 16.519378°
Long 80.649171°
24/11/21 10:26 AM

GPS Map Camera



24-Nov-2021 2:26:32 pm
Machavaram
Vijayawada
Krishna
Andhra Pradesh



DAY 3

Sessions on Goal Setting and Money Management



GPS Map Camera



Vijayawada, Andhra Pradesh, India

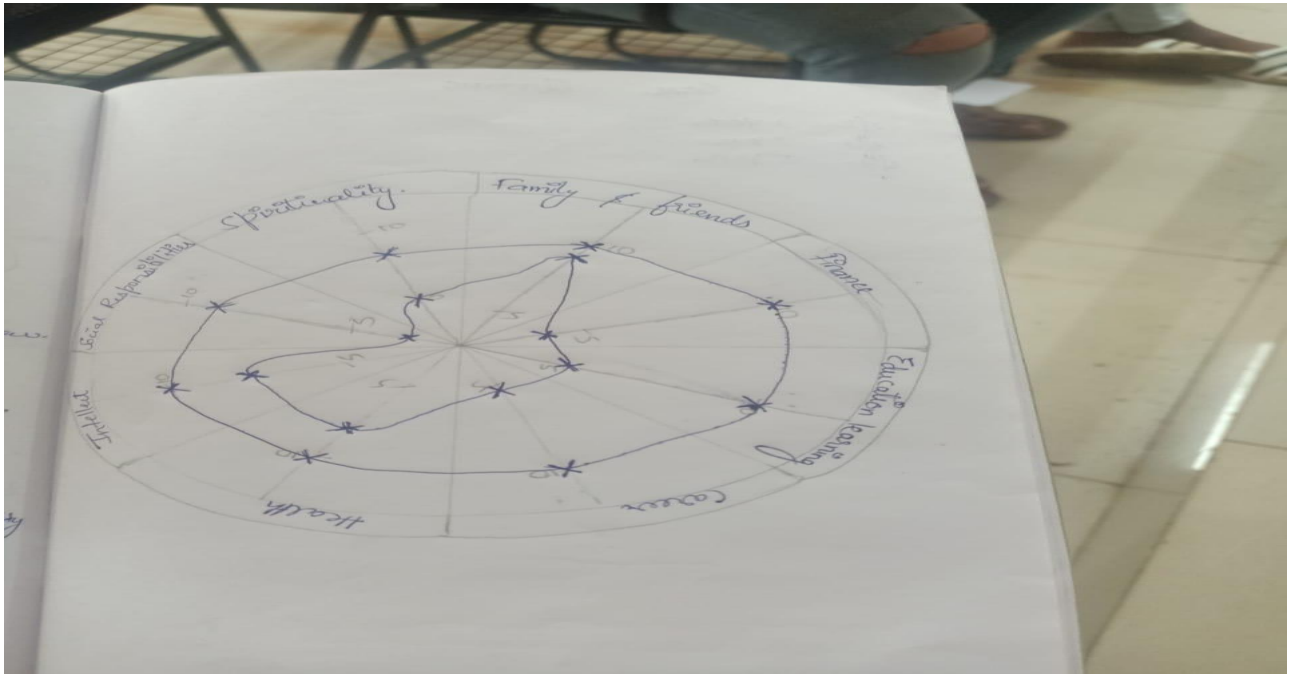
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25/11/21 11:12 AM



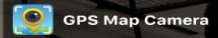








Vijayawada, Andhra Pradesh, India
GJ9X+JMP, Machavaram, Vijayawada, Andhra Pradesh 520004, India
Lat 16.519035°
Long 80.649126°
25/11/21 11:15 AM



Vijayawada, Andhra Pradesh, India
GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India
Lat 16.519409°
Long 80.649178°
25/11/21 11:11 AM





GPS Map Camera



Vijayawada, Andhra Pradesh, India
GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India
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Long 80.649177°
25/11/21 11:12 AM



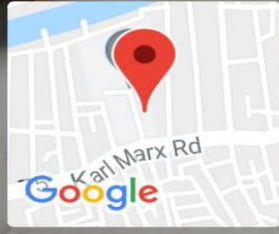
GPS Map Camera



Vijayawada, Andhra Pradesh, India
GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India
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Long 80.649186°
25/11/21 11:12 AM



GPS Map Camera



Vijayawada, Andhra Pradesh, India
GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India
Lat 16.519407°
Long 80.64919°
25/11/21 11:12 AM



GPS Map Camera



Vijayawada, Andhra Pradesh, India
GJ9X+JMP, Machavaram, Vijayawada, Andhra Pradesh 520004, India
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Long 80.649171°
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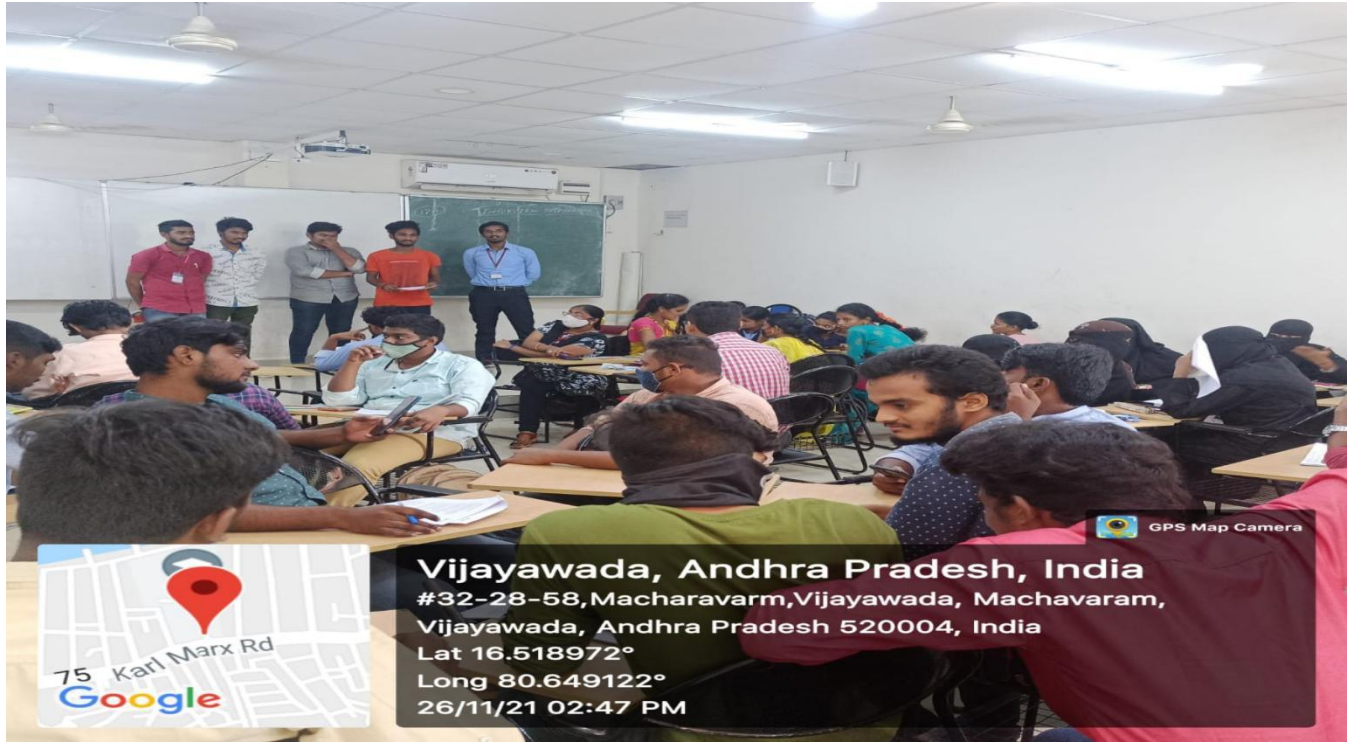


DAY 4

Sessions on Count your Blessings and Interview

Preparation





Vijayawada, Andhra Pradesh, India
#32-28-58, Macharavarm, Vijayawada, Machavaram,
Vijayawada, Andhra Pradesh 520004, India
Lat 16.518972°
Long 80.649122°
26/11/21 02:47 PM

GPS Map Camera

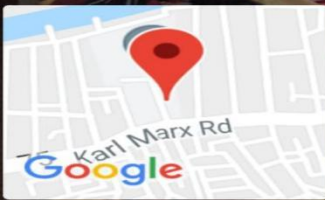


Vijayawada, Andhra Pradesh, India
GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh
520004, India
Lat 16.519433°
Long 80.649203°
26/11/21 10:36 AM

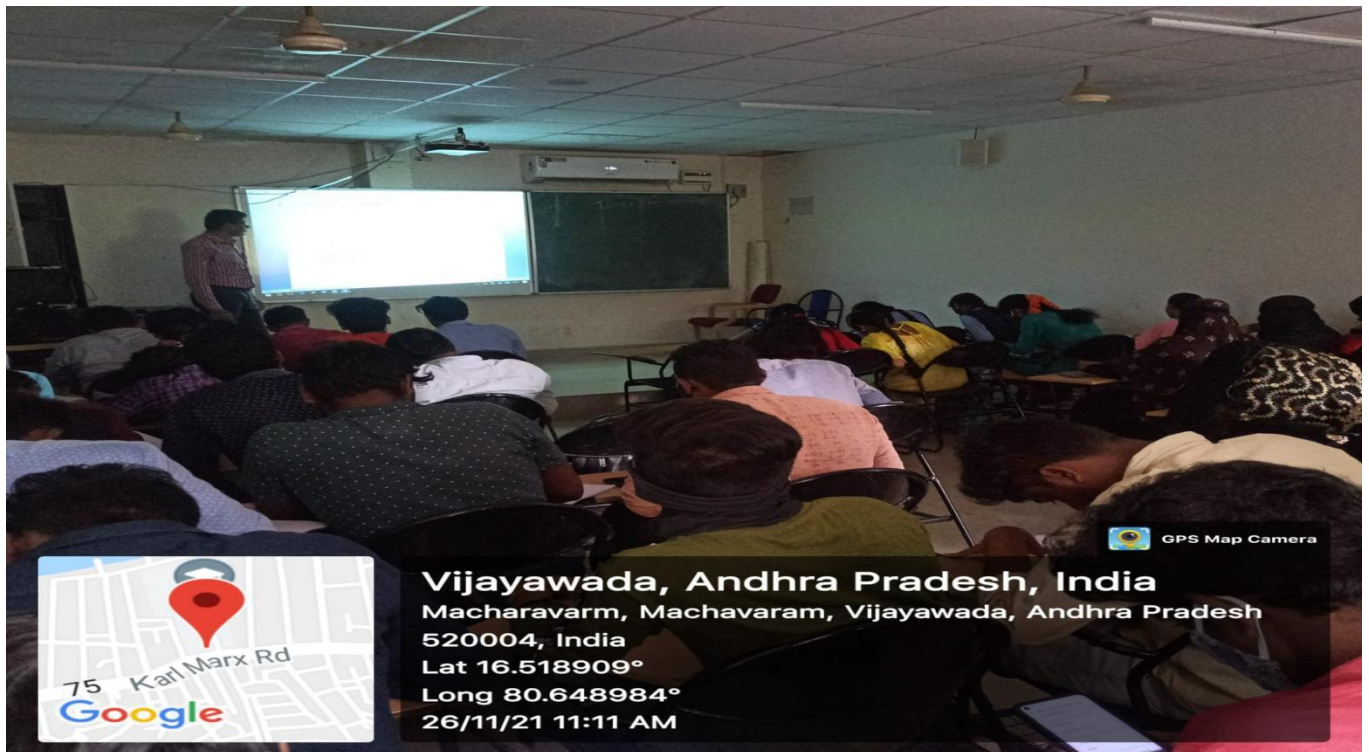
GPS Map Camera



GPS Map Camera



Vijayawada, Andhra Pradesh, India
GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh
520004, India
Lat 16.519317°
Long 80.649157°
26/11/21 02:49 PM



GPS Map Camera



Vijayawada, Andhra Pradesh, India
Macharavarm, Machavaram, Vijayawada, Andhra Pradesh
520004, India
Lat 16.518909°
Long 80.648984°
26/11/21 11:11 AM



Vijayawada, Andhra Pradesh, India
GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh
520004, India
Lat 16.51938°
Long 80.649158°
26/11/21 10:36 AM



Vijayawada, Andhra Pradesh, India
GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh
520004, India
Lat 16.519308°
Long 80.64916°
26/11/21 02:49 PM



DAY 5

Sessions on Professional Ethics and Group Discussion



Vijayawada, Andhra Pradesh, India

GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India

Lat 16.519423°

Long 80.649192°

27/11/21 03:33 PM



Vijayawada, Andhra Pradesh, India

GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India

Lat 16.519423°

Long 80.649192°

27/11/21 03:33 PM



Vijayawada, Andhra Pradesh, India

GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India

Lat 16.519423°

Long 80.649192°

27/11/21 03:33 PM

GPS Map Camera



Vijayawada, Andhra Pradesh, India

GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India

Lat 16.51931°

Long 80.649165°

27/11/21 03:04 PM

GPS Map Camera



GPS Map Camera



Vijayawada, Andhra Pradesh, India

GJ9X+QH5, Machavaram, Vijayawada, Andhra Pradesh 520004, India

Lat 16.519368°

Long 80.649142°

27/11/21 10:47 AM



GPS Map Camera



Vijayawada, Andhra Pradesh, India

SRR College Bus Stop, Eluru Rd, Machavaram, Vijayawada, Andhra Pradesh
520004, India

Lat 16.518822°

Long 80.648958°

27/11/21 10:41 AM



Vijayawada, Andhra Pradesh, India

SRR College Bus Stop, Eluru Rd, Machavaram, Vijayawada, Andhra Pradesh
520004, India

Lat 16.518829°

Long 80.648988°

27/11/21 10:41 AM

75 Karl Marx Rd

Google

GPS Map Camera



Vijayawada, Andhra Pradesh, India

Macharavarm, Machavaram, Vijayawada, Andhra Pradesh 520004, India
Lat 16.518836°

Long 80.648986°

27/11/21 10:41 AM

75 Karl Marx Rd

Google

GPS Map Camera



GPS Map Camera



Vijayawada, Andhra Pradesh, India

SRR College Bus Stop, Eluru Rd, Machavaram, Vijayawada, Andhra Pradesh
520004, India

Lat 16.518829°
Long 80.648988°
27/11/21 10:41 AM



GPS Map Camera



Vijayawada, Andhra Pradesh, India

SRR College Bus Stop, Eluru Rd, Machavaram, Vijayawada, Andhra Pradesh
520004, India

Lat 16.51883°
Long 80.648989°
27/11/21 10:41 AM



DAY 6

Sessions on Skit Preparation

GD and GAM









Feed Back from Students

Feedback on the Trainer for the training conducted by Andhra Pradesh Information Technology Academy

Training dates: 23Nov 2021 to 28 Nov 2021 Training topic: Soft Skills Trainer Name: T. MADHU BABU

College Name and district: SRR & CVR GOVT DEGREE COLLEGE, MACHAVARAM, VIJAYAWADA.

Note: Feedback may be given on the scale of 1 – 5; 1 – Poor, 2 – Below Average, 3 – Average, 4 – Good, 5 – Very Good

S.No	REG NO	FIRST NAME	MIDDLE NAME	LAST NAME	Topic Covered	Doubt Claification	Student Interaction	Subject Knowledge	Teachin g ability	Overall Feedback
1	20101405	PATHAN	SARABT		5	5	5	5	5	5
2	20101414	SHAIK	NOORT		5	5	5	5	5	5
3	20101409	SHAIK	AGNATHUMISA		5	5	5	5	5	5
4	20101415	SHAIK	RUKSANA		5	5	5	5	5	5
5	20101412	SHAIK	MUNINI		5	5	5	5	5	5
6	20101410	SHAIK	FATH/MUNNISA		5	5	5	5	5	5
7	20101417	SHAIK	ZIJEENATH		5	5	5	5	5	5
8	20106021	Raje	Ranalakshamma		5	5	5	5	5	5
9	20106016	Panthakani	Rathna Kumari		5	5	5	5	5	5
10	20101224	KURMA	Priya		5	5	5	5	5	5
11	20101232	Muthyalu	Harika		5	5	5	5	5	5
12	20101028	Yerrinti	Yamuna		5	5	5	5	5	5
13	20205213	Tanniru	Thimothi		5	5	5	5	5	5

Feedback on the Trainer for the training conducted by Andhra Pradesh Information Technology Academy

Training dates: 23Nov 2021 to 28 Nov 2021 Training topic: Soft Skills Trainer Name: T. MADHU BABU

College Name and district: SRR & CVR GOVT DEGREE COLLEGE, MACHAVARAM, VIJAYAWADA.

Note: Feedback may be given on the scale of 1 – 5; 1 – Poor, 2 – Below Average, 3 – Average, 4 – Good, 5 – Very Good

S.No	REG NO	FIRST NAME	MIDDLE NAME	LAST NAME	Topic Covered	Doubt Claification	Student Interaction	Subject Knowledge	Teachin g ability	Overall Feedback
1	20101003	Bunavathu	Vamsi		5	5	5	5	5	5
2	20101027	yadithya	Anjaneyulu		5	5	5	5	5	5
3	20101205	Baddigam Narendera	Narendera		5	5	5	5	5	5
4	20101013	Kanakapudi	/aswathy		5	5	5	5	5	5
5	20101204	Arvula	Jallaiiah		5	5	5	5	5	5
6	20101203	ARAVAPALLI	RAJA SEKHAR		5	5	5	5	5	5
7	20101401	KATIKALA	MAHESH		5	5	5	5	5	5
8	20101218	Jagga	Rishi	Sri Harsha	5	5	5	5	5	5
9	20101005	Budala	Karnal	Kiran	5	5	5	5	5	5
10	20101226	Madiki	Nagendra		5	5	5	5	5	5
11	20101227	Malapati	Srinu		5	5	5	4	5	5
12	20205204	Guddepogu Guravaiiah	Guravaiiah		5	5	5	5	5	5
13	20202268	ROJA	Meduri		5	5	5	5	5	5

Feedback on the Trainer for the training conducted by Andhra Pradesh Information Technology Academy

Training dates: 23 Nov 2021 to 28 Nov 2021

Training topic: Soft Skills

Trainer Name: T. MADHU

ABU

College Name and district: SRR & CVR GOVT DEGREE COLLEGE, MACHAVARAM, VIJAYAWADA.

Note: Feedback may be given on the scale of 1 - 5; 1 - Poor, 2 - Below Average, 3 - Average, 4 - Good, 5 - Very Good

S.No	REG NO	FIRST NAME	MIDDLE NAME	LAST NAME	Topic Covered	Doubt Claification	Student Interaction	Subject Knowledge	Teachin g ability	Overall Feedback
1.	20205211	Pedasingu	Durga	Bhalani	5	5	5	5	5	5
2.	20101223	KURRA	Anusha	.	5	5	5	5	5	5
3.	20102009	Kanulla	Veera Naga	Durga	5	5	5	5	5	5
4.	20205215	Siva Koteswaro Moparthi	Siva.	Koteswaro	5	5	5	5	5	5

Feedback on the Trainer for the training conducted by Andhra Pradesh Information Technology Academy

Training dates: 23 Nov 2021 to 28 Nov 2021

Training topic: Soft Skills

Trainer Name: T. MADHU

ABU

College Name and district: SRR & CVR GOVT DEGREE COLLEGE, MACHAVARAM, VIJAYAWADA.

Note: Feedback may be given on the scale of 1 - 5; 1 - Poor, 2 - Below Average, 3 - Average, 4 - Good, 5 - Very Good

S.No	REG NO H.T. No	FIRST NAME	MIDDLE NAME	LAST NAME	Topic Covered	Doubt Claification	Student Interaction	Subject Knowledge	Teachin g ability	Overall Feedback
1	20102015	TEJAVATHU	RAMA KOTI		5	5	5	5	5	5
2	20102004	GEDELA	HEMANTH ASHOK	KUMAR	5	5	5	5	5	5
3.	20205207	JARJANA	ANANKUMAR		5	5	5	5	5	5
4	20205206	HUMANI	Sushma		5	5	5	5	5	5
5	20101220	KAKUMANI	MAHESH	BABU	5	5	5	5	5	5
6	20101023	RENTAPALLI	PRASANTH	KUMAR	5	5	5	5	5	5
7	20101011	JALASUTRAM	VENKATA.	NAVEEN	5	5	5	5	5	5
8	20106009	JALLU	VENKATA	RAMANA	5	5	5	5	5	5
9	20101004	BANDARU	VAMSI	KRISHNA	5	5	5	5	5	5
10	20102007	ISLANATHU	OINESH	NAIK	5	5	5	5	5	5
11	2010404	MOPARTHY	SUNNY		5	5	5	5	5	5
12	20101213	DUDEKULA	ANEEF		5	5	5	5	5	5
13	20205208	KAKARLAMURI	AKHIL		5	5	5	5	5	5

Feedback on the Trainer for the training conducted by Andhra Pradesh Information Technology Academy

Training dates: 23 Nov 2021 to 29 Nov 2021

Training topic: Soft Skills

Trainer Name: *Praveen S.V*

College Name and district: SRR & CVR GOVT DEGREE COLLEGE, MACHAVARAM, VIJAYAWADA.

Note: Feedback may be given on the scale of 1 - 5; 1 - Poor, 2 - Below Average, 3 - Average, 4 - Good, 5 - Very Good

S.No	REG NO	FIRST NAME	MIDDLE NAME	LAST NAME	Topic Covered	Doubt Claification	Student Interaction	Subject Knowledge	Teachin g ability	Overall Feedback
27	20202234	GATTEM	NAGAMANI	-	yes	5	5	5	5	5
28	20202273	Matta	Gajjathri	-	yes	5	5	5	5	5
29	20202236	Gidukonda	Hemalatha	-	Yes	5	5	5	5	5
30	20202262	Madhu	M. KUSUMAHAR	-	yes	5	5	5	5	5
31	20202225	Devula Palli	Debanani Sreja	-	yes	5	5	5	5	5
32	20202254	KOMIRI	RAJESH	-	yes	5	5	5	5	5
33	20202238	Ganta	Srinivas Babu	-	Yes	5	5	5	5	5

Feedback on the Trainer for the training conducted by Andhra Pradesh Information Technology Academy

Training dates: 23 Nov 2021 to 29 Nov 2021

Training topic: Soft Skills

Trainer Name: *Praveen S.V*

College Name and district: SRR & CVR GOVT DEGREE COLLEGE, MACHAVARAM, VIJAYAWADA.

Note: Feedback may be given on the scale of 1 - 5; 1 - Poor, 2 - Below Average, 3 - Average, 4 - Good, 5 - Very Good

S.No	REG NO	FIRST NAME	MIDDLE NAME	LAST NAME	Topic Covered	Doubt Claification	Student Interaction	Subject Knowledge	Teachin g ability	Overall Feedback
1	20202228	Doguparthi	Uali	-	Yes	5	5	5	5	5
2	20202266	Masimakku	Umasi	-	yes	5	5	5	5	5
3	20202308	Vempudapu	Ramya	sree	Yes	5	5	5	5	5
4	20202279	PUTTA	Gowri	Sankara	yes	5	5	5	5	5
5	20202263	Hajjavathi	Nani	-	yes	5	5	5	5	5
6	20202219	Bunni	Lakshmi	-	yes	5	5	5	5	5
7	20202255	Kommu	Anusha	-	yes	5	5	5	5	5
8	20202251	Kannipogu	Vasanthi	-	Yes	5	5	5	5	5
9	20202283	Ravuthu	Sai	kumar	Yes	5	5	5	5	5
10	20202208	Basetti	Bindhu madhavi	-	Yes	5	5	5	5	5
11	20202304	Vanukudu	Sabala	-	Yes	5	5	5	5	5
12	20202232	Bhanu	Ganji	-	Yes	5	5	5	5	5
13	20202205	Aravathi	Jayasree	-	Yes	5	5	5	5	5

Feedback on the Trainer for the training conducted by Andhra Pradesh Information Technology Academy

Training dates: 23Nov 2021 to 29 Nov 2021

Training topic: Soft Skills

Trainer Name: P. V. R. S. R.

College Name and district: SRR & CVR GOVT DEGREE COLLEGE, MACHAVARAM, VIJAYAWADA.

Note: Feedback may be given on the scale of 1 - 5; 1 - Poor, 2 - Below Average, 3 - Average, 4 - Good, 5 - Very Good

S.No	REG NO	FIRST NAME	MIDDLE NAME	LAST NAME	Topic Covered	Doubt Claification	Student Interaction	Subject Knowledge	Teachin g ability	Overall Feedback
14	20202250	Kandupothu	Durga	Reddy	Yes	5	5	5	5	5
15	202022305	Vasipalli	Anitha	-	Yes	5	5	5	5	5
16	202022230	Spandana	Spandana	-	Yes	5	5	5	5	5
17	20202247	Kachaka	Mounika	-	Yes	5	5	5	5	5
18	20202256	Kozuru	Leela	Chakradhar	Yes	5	5	5	5	5
19	20202286	Sasita	Naga	Babu	Yes	5	5	5	5	5
20	20202212	Ghonam	manoj	kumar	Yes	5	5	5	5	5
21	20202292	Shaik	Nazeer	-	Yes	5	5	5	5	5
22	20202282	Rambethu	Nara	Prasad	Yes	5	5	5	5	5
23	20202231	Galavilli	Siva	-	Yes	5	5	5	5	5
24	20202213	Aravind	Aravind	Kumar	Yes	5	5	5	5	5
25	20202275	Patnala	Durga	Prasanna	Yes	5	5	5	5	5
26	20202278	Posturi	Suresh	-	Yes	5	5	5	5	5

Feedback on the Trainer for the training conducted by Andhra Pradesh Information Technology Academy

Training dates: 23Nov 2021 to 29 Nov 2021

Training topic: Soft Skills

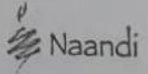
Trainer Name: P. V. R. S. R.

College Name and district: SRR & CVR GOVT DEGREE COLLEGE, MACHAVARAM, VIJAYAWADA.

Note: Feedback may be given on the scale of 1 - 5; 1 - Poor, 2 - Below Average, 3 - Average, 4 - Good, 5 - Very Good

S.No	REG NO	FIRST NAME	MIDDLE NAME	LAST NAME	Topic Covered	Doubt Claification	Student Interaction	Subject Knowledge	Teachin g ability	Overall Feedback
1	20203275	M. Chandrababu	Chandrababu	Chandrababu	Yes	5	5	5	5	5
2	20203220	Md. Fazlullah	Fazlullah	-	Yes	5	5	5	4	4
3	20203208	Ede. Abhishek	Abhishek	-	Yes	5	4	5	4	5
4	20203210	G. Nandini	G. Nandini	-	Yes	4	5	5	4	5
5	20203217	Shalini	Shalini	-	Yes	5	4	5	4	5
6	20203231	Rajya	Rajya	-	Yes	4	5	4	5	4
7	20203215	K. Rami	Rami	-	Yes	5	4	4	5	5
8	20203232	Riya	Riya	-	Yes	4	5	5	5	5
9	20203205	D. Koteswara	Koteswara	-	Yes	5	4	5	4	4
10	20203204	B. Koushik	Koushik	-	Yes	4	5	5	4	5
11	20203239	V. Sanjay	Sanjay	-	Yes	5	4	5	5	5
12	20203213	K. Prashanth	Prashanth	-	Yes	4	5	5	4	5
13	20203221	M. Keerthi	Keerthi	-	Yes	5	5	4	5	5

Trainers Attendance



MPC "Andhra Pradesh State" - Trainers Attendance Sheet (Offline)



College Name		SRR & CVR Degree College, Vijayawada																		
College Category		Arts and Science																		
State		AP																		
S.No	Trainers Name	Date (DD.MM.YYYY)	23-11-21	24-11-21	25-11-21	26-11-21	27-11-21	29-11-21										No of Days	Hours Per Day	Total No of Hours
		Timing (From & To)																		
		Department / Trade	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN	FN	AN				
1	T MADHU BABU	Phd Dept	P	-	P	P	P	P	P	P	P	P	P	P	P	P		6		
2	FEROZE	B.com, BBA	P	-	P	P	P	P	P	P	P	P	P	P	P	P		6		
3																				
4																				
5																				
6																				
7																				
8																				
		Total No of Hours																		

A. Rosalind
CO-ORDINATOR
SHAR KNOWLEDGE CENTRE
C.V.R. Govt. Degree College
VIJAYAWADA - 4.

P. S. Sivan
College Authority Seal & Signature
PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)
Machavaram, VIJAYAWADA - 520004

Certificates Issued



JKC

²
Training in Soft Skill Development Course.

APITA in association with Naandi Foundation

S.No	Name of the student	Class	Hall Tie NO	Signature
1	A.V.S.N.S Jayasree	B.Com (CA)	20202205	A. Jayasree.
2	B. Ananth kumar	B.com (CA)	20202213	B. Ananth Kumar
3	D. Jalp	B.com (CA)	20202228	D. Jalp
4	K. Mounika.	B.com (CA)	20202247.	K. Mounika
5	E. Spandana	B.com (CA)	20202230	E. Spandana.
6	R. Sai kumari	B.com (CA)	20202223	R. Sai kumari
7	B. Zaphanya	B.com (CA)	20202219	B. Zaphanya,
8	V. Anitha	B.com (CA)	20202305	V. Anitha.
9	G. Siva	B.com (CA)	20202231	G. Siva
10	Y. Sumanth	B.com (CA)	20202307	Y. Sumanth
11	P. Gowri Sankarao	B.com (CA)	20202279	P. Gowri Sankarao
12	B. Manoj kumar	B.com (CA)	20202212	B. Manoj kumar
13	P. Durga prasanth	B.com (CA)	20202275	P. Durga prasanth
14	K. Vasanthi	B.com (CA)	20202251	K. Vasanthi
15	G. Hemalatha.	B.com (CA)	20202236	G. Hemalatha

S.NO	Name of the student	Class	Hall Tie NO	Signature
16	G. Blance	B.COM(CA)	20202223	G. Blance
17	V. Ramya Sree	B.com (CA)	20202308	V. Ramya Sree
18	V. Sarala	B.com (CA)	20202304	V. Sarala
19	S. S. S. S.	B.Com (CA)	20202292	S. S. S. S.
20	N. Gayathri	B.COM(CA)	20202273	N. Gayathri
21	M. ROJA	B.com(CA)	20202268	M. Roja
22	K. Anusha	B.com (CA)	20202255	K. Anusha
23	G. Nandini	B.B.B 2nd	20203210	G. Nandini
24	K. Shalini	B.B.B 2nd	20203217	K. Shalini
25	Dr. Raviya Rishi	B.B.A II nd	20203231	Dr. Raviya
26	Syed Riya	BBA II nd	20203232	Syed Riya
27	Sr. Deval Meera	B.B.A II nd	20203229	Sr. Deval Meera
28	M. Jahan Abhishek Paul	BBA II nd	20203213	M. Jahan Abhishek Paul
29	M. Keerthi	BBA	20203221	M. Keerthi
30	K. Ravi	BBA	20203215	K. Ravi

SNo	Name of the student	Class	Hall Tie No	Signature
31	E. Abhigna	BBA II	20203208	Abhigna
32	Md. Raizullah	BBA-II	20203220	Md. Raizullah
33	M.VAMSI	B.COM(CA)	20202266	M.Vamsi
34	P. Nageswararao	B.com(CA)	20202284	Nageswararao P.
35	R. Vana Prasad	B.com(CA)	20202282	R. Vana Prasad
36	B. Bindhu madhavi	B(com)CA	20202208	B. Bindhu madhavi
37	K. Leela chakradhar	B(com)CA	20202256	K.L. chakradhar
38	K. Durgarao	B(COM)CA	20202250	K. Durgarao
39	P. Samuel	B(com)CA	20202278	P. Samuel
40	K. Rajul	B(com)CA	20202254	K. Rajul
41	D. Janani Sripriya	B.(com)CA	20202225	D. Janani Sripriya
42	G. Naga Hari	B(com)CA	20202234	G. Naga Hari
43	P. Sanku	B.A (EHP)UM	20101405	P. Sanku
44	SK. ASMATHUNNISA	B.A (EHP)UM	20101409	SK. Asmathunna
45	K. MAHESH	B.A. EHP um	20101401	K. Mahesh

S. NO	name of the student	class	Hall TIC NO	Signature
46	SK. fathi munnisa	BA ^{II} nd EHP UM	20101410	SK. fathimunnisa
47	SK. Rukhsana	BA ^{II} nd EHP UM	20101415	SK. Rukhsana
48	Shaik Noorzi	BA ^{II} nd EHP UM	20101414	SK. Noorzi
49	Shaik Munnisa	BA ^{II} nd EHP UM	20101412	SK Munnisa
50	Shaik. Zeenath	BA ^{II} nd EHP UM	20101417	SK Zeenath
51	M. Sunny	BA EHP UM	20101404	M. Sunny
52	V. Sanjay Kumar	B.B.A ^{II} nd year	20203239	V. Sanjay Kumar
53	D. Koteswara Rao	B.B.A ^{II} nd year	20203205	D. Koteswara Rao
54	B. Kaleshi Vasudhan	B.B.A ^{II} nd year	20203204	B. Kaleshi Vasudhan
55	K. Jyoti babu	B.B.A ^{II} nd year	20203213	K. Jyoti babu
56				
57				
58				
59				
60				

Thank you

S.R.R. & C.V.R. Government Degree College (A)

An Autonomous & ISO 9001: 2015 Certified Institution:: Ranked by NIRF in 101-150 band at NIRF-2020 & 151-200 band in NIRF 2019 NAAC accredited Institution with grade B+ with C.G.P.A 2.6 during March, 2017

Machavaram, Vijayawada, Krishna District, AP-520 004

SCHOOL TO LAB -28.2.2022



DEPARTMENT OF BOTANY

SRR & CVR Government Degree College

An Autonomous & ISO 9001: 2015 Certified Institution:: Ranked by NIRF in 101-150 band at NIRF-2020 & 151-200 band in NIRF 2019 NAAC accredited Institution with grade B+ with C.G.P.A 2.6 during March, 2017
Machavaram, Vijayawada, Krishna District, AP-520 004



DEPARTMENT OF BOTANY

Dates	28.2.2022
Conducted through (DRC/JKC/ELF/NCC/NSS/ Departments etc.	Department
Nature of activity (seminar/Workshop/Extn. Lecture etc.	Extension activity
Title of the Activity	School to Lab
Name of the Department/Committee	Department of Botany
Details of Resource Persons (Name , Designation etc.,)	Department of Botany Faculty
No of students participated	250
Name of the Lecturers who planned & conducted the activity	Planned and Organized by Ms G.Swapna, Lecturer In Charge Mrs V.N.Padmavathi, Lecturer in Botany Dr Ch.Srinivasa Reddy, Lecturer in Botany Mrs I.Prasanthi, Lecturer in Botany
Remarks	This activity successfully conducted and reached its objectives

Department of Botany SRR & CVR Govt Degree College Organized School to Lab , an extension activity on National Science day.

Motive of this program:

- To provide scientific exposure to school students
- To enhance subject matter and Develop scientific reasoning.
- For school students exploring college Laboratory experiences may enhance student understanding of specific scientific facts and concepts .
- Laboratory experiences may promote a school student's ability to identify questions and concepts that guide scientifically
- Cultivating interest in science and interest in learning science.

Report of the activity :

SRR and CVR Govt Degree College Dept of Botany Organized National Science Day on 28.2.2022 . Faculty members contacted Government Schools namely “tamiri mallikarjuna rao chandramathi Nagara Palaka samstha unnatha patashala from Machavaram area and requested School Headmasters to send the school students to visit laboratories in our college to increase scientific awareness in students .

Head of the Institutions of Schools accepted the request and sent nearly 250 students of VIII, IX and X Class Students by 10.30 am to College.

Principal Madam Dr k.Bhagya Lakshmi Garu addressed the school students initially and explained to them about the Significance of National Science Day . She explained to them about the importance of Science, Discoveries and the Role of Science in Day to Day Human Life .

In this event various Science Departments like Botany , Zoology, Physics, Chemistry, Biochemistry Participated . Concerned Department incharges and Lecturers explained about their subject significance , Important scientific contributions , Scientists to High school students .

Later all 250 students from schools formed into batches class wise and visited all Department laboratories one by one accompanied by their teachers .



250 School students with their Teachers gathered at Auditorium



Principal Dr K. Bhagya Lakshmi Garu addressing the High school students on National Science Day “ School to Lab” Program



Principal Dr K. Bhagya Lakshmi garu inaugurating the science exhibition at Botany Lab



High School students observing Plant Anatomy and Embryology Slides in the Botany Lab . They Observed all the Scientific Equipment in Botany Labs.

Department of Botany Faculty explained to the students about the working mechanism and significance of Laboratory equipment



Students in batches after visiting the Scientific Laboratories along with their teachers were asked to share their experiences . They Share their experiences on what they learnt and their overall experience on this Program. Teachers also gave their valuable feedback .

Principal and Various Science Departments Faculty addressing the High school students



SRR & CVR Government Degree College
An Autonomous & Affiliated to Sri Venkateswara University, Tirumala, Tirumala Hills, Sri Venkateswara District, Andhra Pradesh, India
Kothavaram, Vijayawada District, AP-520 004



DEPARTMENT OF BOTANY

SRR & CVR Govt. Degree college,
Dept. of Botany

మాచవరం,
28.02.2022.

జాతీయ సెన్టి దినోత్సవాన్ని పురస్కరించుకొని

స్థానం SRR & CVR ప్రభుత్వ కళాశాల లో

"పాఠశాల నుంచి ప్రయోగశాలకు" అనే కార్యక్రమం జరిగింది.

ఈ కార్యక్రమాన్ని కళాశాల డైరెక్టర్ శ్రీమతి కె. భాగ్యలక్ష్మి గారు

ప్రొఫెసర్ శాస్త్రి విభాగంలో రిబ్బను కుత్తిరెంటి యారంభించి సెన్టి

దినోత్సవ ప్రాముఖ్యతను, ద్రినందిన జీవితంలో సెన్టి ప్రాముఖ్యతను

సవివరంగా వివరించారు. ఈ కార్యక్రమంలో ఊటనీ, జువాలజీ,

ఫీజీ, కెమిస్ట్రీ బయోకెమిస్ట్రీ విభాగాల పాల్గొన్నారు. ఆయా ప్రయోగశాలల్లోని

పరికరాలు, యాంటి ప్రాముఖ్యతను కళాశాల అధ్యాపకులు, అధ్యాపకులు

పాఠశాల అధ్యాపకులు వివరించారు. శ్రీమతి మల్లభార్య న రావు -

చంద్రమతి నగరపాలక సంస్థ కున్నత పాఠశాల, మాచవరం, విజయ-

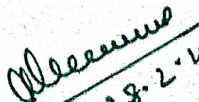
వాడకు చెందిన 8,9 తరగతులకు చెందిన సుమారు 250 మంది

అధ్యాపకులు పాల్గొని ప్రయోగశాలలోని వివిధ పరికరాలను, నమూనాలను

గురించి ప్రశ్నలకు తెలుసుకున్నారు. ఈ కార్యక్రమంలో కళాశాల ప్రెసిడెంట్ శ్రీమతి

శ్రీమతి P. కైలశ, ఇతర విభాగాధిపతులు, అధ్యాపకులు పాల్గొన్నారు.

కార్యక్రమం విజయవంతంగా ముగిసింది.


28.2.2022

PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)
Machavaram, VIJAYAWADA - 520 004.

Department of Botany Faculty explained to the students about the working mechanism and significance of Laboratory equipment



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Principal and Various Science Departments Faculty addressing the High school students



SRR & CVR Government Degree College



Deven
PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)
Mechavaram, VIJAYAWADA-520 004

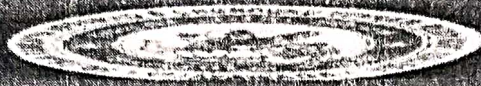
Gape
LECTURER IN CHARGE
Dept. of Botany
SRR & CVR GOVT. DEGREE COLLEGE
VIJAYAWADA-4, Krishna Dist.



STUDENT SIGNATURES AND FEEDBACK

S.No	Date	Class	Roll no/ Reg no	Signature	Remarks
1.	28/2/22	8 th class	2131	T.M. Rudra Angi	Beneficial
2.	28/2/22	7 th class	2.	K. Mani	useful
3	28/2	10 th class	21317212	P. V. V. V. V.	Good.
4	28/2/22	4 th class	21317201	P. Sankar	very useful
5	28/2/22	8 th class		P. Siddhu	Useful
6	28/2/22	8 th class		G. Praveen	very useful
7	28/2/22	8 th class		T. Gayatri	good
8	28/2/22	9 th class		K. Sneha	Beneficial
9	28/2/22	7 th class		S. K. Sony	very useful
10	28/2/22	10 th class		P. Sanja	Good
11	28/2/22	7 th class		K. Rohit	Good
12	28/2/22	8 th class		K. Ratna	satisfactory
13	28/2/22	9 th class		M. Akhila	very good
14	28/2/22	10 th class		B. Prasad	useful
15	28/2/22	9 th class		S. Sunitha	Good
16	28/2/22	10 th class		V. Hasthavin	Good





STUDENT SIGNATURES AND FEEDBACK

S.No	Date	Class	Roll no/ Reg no	Signature	Remarks
17	28/2/22	10 th class		K. Prathibha	useful
18	28/2/22	9 th class		S. Pavani	good
19	28/2/22	8 th class		M. Priya	Beneficial
20	28/2/22	7 th class		L. Reemika	useful
21	28/2/22	7 th class		P. Pritha	Good
22	28/2/22	10 th class		G. Venkat	very useful
23	28/2/22	9 th class		E. Tharun	Good
24	28/2/22	7 th class		M. Damesh	useful
25	28/2/22	10 th class		V. Abhishek	Beneficial
26	28/2/22	9 th class		L. Senthilsh	very good
27	28/2/22	10 th class		V. Romya	Good
28	28/2/22	7 th class		D. Bhanu	useful
29	28/2/22	8 th class		S. Vishnu	Beneficial
30	28/2/22	9 th class		K. Venkatesh	good
31	28/2/22	8 th class		K. Nandini	very useful
32	28/2/22	9 th class		K. Bhavani	useful



STUDENT SIGNATURES AND FEEDBACK

S.No	Date	Class	Roll no/ Reg no	Signature	Remarks
17.	28/2/22	7 class		S. Jayasudha	Good
18.	28/2/22	7 class		K. Durgamma	Very good
19.	28/2/22	7 class		N. Vallisri	Useful
20.	28/2/22	8 class		K. Radharani	Very helpful
21.	28/2/22	10 class		M. Asha jyothi	Satisfaction
22.	28/2/22	10 class		S.K. Reshma	Good
23.	28/2/22	10 class		P. Mrudhul	Very Good
24.	28/2/22	9 class		G. Uday kishan	Useful
25.	28/2/22	10 class		K. Sudheer	Very helpful
26.	28/2/22	9 class		S.K. Ayasha	Good
27.	28/2/22	7 class		M. Prashant	Very helpful
28.	28/2/22	8 class		K. Rameshbabu	Very helpful
29.	28/2/22	7 class		A. Rakesh	Good
30.	28/2/22	8 class		B. Rajkumar	Not good
31.	28/2/22	10 class		K. Hemu	Useful
32.	28/2/22	10 class		S.K. Subani	Good



STUDENT SIGNATURES AND FEEDBACK

S.No	Date	Class	Roll no/ Reg no	Signature	Remarks
1	28/2/22	8 class		S.K. Hafiza	Beneficial
2	28/2/22	7 class		P. Pujitha	Good
3	28/2/22	7 class		M. Krishnaveni	useful
4	28/2/22	8 class		N. Preeti	Good
5	28/2/22	7 class		G. Adharsa	Beneficial
6	28/2/22	9 class		S. Praveen	Not bad
7	28/2/22	7 class		M. Thrisha	helpful
8	28/2/22	10 class		K. Kiran	Very Good
9	28/2/22	10 class		G. Srija	Beneficial
10	28/2/22	10 class		S. Siva	useful
11	28/2/22	9 class		M. Sujatha	Very Good
12	28/2/22	8 class		K. Suresha	Beneficial
13	28/2/22	9 class		M. Jyothi	Good
14	28/2/22	7 class		K. Kalavathi	Beneficial
15	28/2/22	8 class		P. Monika	Very Good
16	28/2/22	10 class		P. Baii	Good





**SRR & CVR GOVERNMENT DEGREE COLLEGE (A)
MACHAVARAM, VIJAYAWADA, KRISHNA DISTRICT**



Jawahar Knowledge Center

Creating Opportunities

Developing Skills

Unleashing Potential

JKC-Calligraphy Training Report 2021-2022



**SRR & CVR GOVT. DEGREE COLLEGE
(AUTONOMOUS)**

PHONE NO : 0866-2430060

FAX NO : 0866-2441092

NAAC : B+ (III CYCLE WITH CGPA : 2.60) - ESTD: 1937

WEBSITE : www.srrcvr.org

EMAIL : srrandcvr@gmail.com



SRR & CVR GOVERNMENT DEGREE COLLEGE (A) VIJAYAWADA: ANDHRA PRADESH
JKC-calligraphy training
2021-2022

Concept:

Handwriting is important and legible handwriting reflects clarity of mind. Students with neat and clear handwriting skills are fast learners and use learning opportunities around them and improve academically. Now, most employment situations will involve at least some handwriting and many require the communication of critical information (e.g. analysis, assessments, medical notes, prescriptions).

Quotes on Handwriting:

I saw that bad handwriting should be regarded as a sign of an imperfect education.

Mahatma Gandhi

Hand writing causes thinking - the repetition of writing your goal everyday will increase your awareness. The true purpose of a goal is to help you grow.

Bob Proctor

Objectives:

To encourage students to write neatly

To develop clarity in expression and presentation skills

To help students understand the importance of written forms of communication

Focus areas:

Holding the Pencil Correctly. Teaching the correct posture

Handwriting exercises

Writing legibly. Focus on writing that can be read, to communicate a message to the reader

Resource Persons:

1. Smt.Veerla Kanaka Durga

2.Smt.Kasibhotla Radha

The members of the JKC committee under the chairmanship of the Principal discussed and approved the follow agenda point related to calligraphy training to students.

1. Introduction of training in calligraphy to all students.

Discussed the importance of improving handwriting in students and welcomed the idea of professional trainers providing training to students free of cost.

Resolution :-

- 1) It is resolved to permit Limea Rural Development Society Regd No 84/2010 (Non Govt. Organization) to conduct free training in calligraphy to all students of this college in batches of 30 per batch with the help of two trainers Smt Veerla Kanak Durga and Kasibhatla Radha. from 2.3.2022 onwards.

2. Resolved to start the training for final year students first and continue the training for 2nd year and 1st year students.

3. Resolved to request the Limea Rural Development

Society to provide certificates to students after conducting exam at the end of the 30th course.

4. The guidelines and expenditure details of certificates will be discussed with Limra in the next meeting.

JKC chairman :-

JKC coordinator

JKC Committee:

1. Dr. D. Ch. Appa Rao
Dept of Commerce

2. Sri Ajay, Baby
Dept of History.

3. Smt. Uma Lakshmi
Dept of Physics

4. Smt. Saevani
Dept of Computer Science

Alexander
23/10/22
PRINCIPAL
SRR & CVR GOVT. DEGREE COLLEGE
(Autonomous)

Machavaram, VIJAYAWADA - 520 004.

A. Rosalind
CO-ORDINATOR
JAWAHAR KNOWLEDGE CENTRE
S.R.R. & C.V.R. Govt. Degree College (A)
VIJAYAWADA-4.

[Signature]
2/3/22

[Signature]
2/3/22

[Signature]
2/3/22

N. S. Saevani
2/05/2022

LIMRA

Rural Development Society
Regd No. : 84/2010
(Non Government Organization)

Chairman & CEO

Shaik Karimulla, M.A., B.Ed., Calligrapher (Govt of India)

Cell : 8019292425, 9866025252

Address : D.No.12-17-10,
Prakash Nagar, Opp : Town Hall,
NARASARAOPET - 522 601.
Email : limrardos@gmail.com

Ref :

Date.....

Date: 02.03.2022.

To

**The Principal,
SRR & CVR Govt. Degree College,
Karl Marx Road, Machavaram,
Vijayawada,
Andhra Pradesh - 522 004, India.**

**Sub: Request to accept our trainee person in your Calligraphy
Training Centre - Reg.**

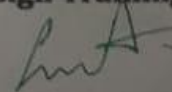
Respected Sir,

I, Sk. Karimulla from the Calligraphy and Graphici Designing Training Center. I am pleased to accept my student for starting the caligraphy training with your college from date 02.03.2022.

Thank you for the opportunity for accepting Calligraphy Training in our college. I am sending student **Veerla Kanaka Durga** to your college for giving the trainng. Please accept her as Calligraphy trainer in your college.

If thre is any future inforamton or paper work you need me to complete, please let me know and I will arrange it soon as possible.

**(SK. KARIMULLA)
Calligraphy and
Graphic Design Training Centre**



CENTRE INCHARGE
N.C.P.U.L.'S
CALLIGRAPHY & GRAPHIC DESIGN
TRAINING CENTRE
Ministry of H.R.D. Dept. Govt of India
Limra Rural Development Society
Narasaraopet - 522 601, A.P

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NARASARAOPET - 522 601.
Email : limrardos@gmail.com

Ref :

Date.....

Date: 02.03.2022

Dear Veerla Kanaka Durga,

Sub: Appointment for the post of Trainee Calligrapher

Dear Veerla Kanaka Durga,

This letter is to advice you that the following Institute official has been appointment to serve as our Calligraphy trainer. We are pleased to offer you the position of Trainee Calligrapher with Calligraphy and training center on the following terms and conditions

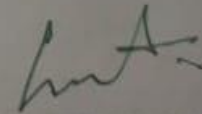
Your employment will be effective, as of (02.03.2022)

Your job title will be Trainee Calligrapher and you will be reporting to Mrs. Bindu, Senior Calligrapher and to Head of the Institute Sk. Karimulla.

You will be posted at Vijayawada. You may however be required to work at any place of training which the company has, or may later acquire.

We congratulate you on your appointment and wish you a long career with us. We assure you have a great journey and get our full support for your professional growth and development Calligraphy and Graphic Designing Training Center.

**Calligraphy and
Graphic Designing Training Center**



CENTRE INCHARGE
N.C.P.U.L.'S
CALLIGRAPHY & GRAPHIC DESIGN
TRAINING CENTRE
Ministry of H.R.D. Govt of India
Limra, Rural Development Society
Narasaraopet - 522 601 - A.P

LIMRA

Rural Development Society
Regd No. : 84/2010
(Non Government Organization)

Chairman & CEO

Shaik Karimulla, M.A., B.Ed., Calligrapher (Govt of India)

Cell : 8019292425, 9866025252

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Prakash Nagar,Opp : Town Hall,

NARASARAOPET - 522 601.

Email : limrardos@gmail.com

Ref :

Date.....

Date: 02.03.2022.

To

**The Principal,
SRR & CVR Govt. Degree College,
Karl Marx Road, Machavaram,
Vijayawada,
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**Sub: Request to accept our trainee person in your Calligraphy
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If there is any future information or paper work you need me to complete, please let me know and I will arrange it soon as possible.

(SK. KARIMULLA)
**Calligraphy and
Graphic Design Training Centre**


CENTRE INCHARGE
N.C.P.U.L.'S
CALLIGRAPHY & GRAPHIC DESIGN
TRAINING CENTRE
Ministry of H.R.D. Dept. of E. Govt. of India
Limra Rural Development Society
Narasaraopet - 522 001, A.P.

LIMRA

Rural Development Society
Regd No. : 84/2010
(Non Government Organization)

Chairman & CEO

Shaik Karimulla, M.A., B.Ed., Calligrapher (Govt of India)

Cell : 8019292425, 9866025252

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NARASARAOPET - 522 601.
Email : limrardos@gmail.com

Ref :

Date.....

Date: 02.03.20-22

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Dear Kasibhotla Radha,

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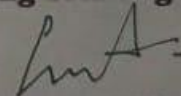
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**Calligraphy and
Graphic Designing Training Center**



CENTRE INCHARGE
N.C.P.U.L.'S
CALLIGRAPHY & GRAPHIC DESIGN
TRAINING CENTRE
Ministry of H.R.D. Dept of H.E. Govt of India
Limra Rural Development Society
Narasaraopet - 522 601. A.P

Syllabus:

a b c d e f g
h i j k l m n o p
q r s t u v w x y
z

abcdefghijklmnopqrstuvwxyz

a - archaeology, appointment

b - better, blouse, broderie

c - clarification, classroom

d - drawing, debit, down

e - effective, ethos, establishment

f - frances, flamingo, flash

g - grow, glamour, grammar

h - habit, happy, horse

i - imagine, illustrate, india

j - jack, jackson, jockey

k - killing, kilometer, koria

l - loyalty, liberty, lister

m - medium, mango, media

n - narrative, narrow, net

o - openness, orange, operate

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Y

Z

A - Anesthesia , Alphabet

B - Bonemarrow , Buccal-Cavity

C - Clavicle , Camphore

D - Diclofinac , Doctorate

E - Elegant , Enema

F - Ferustin , Ferric

G - Germophobia , Global

H - Hormones , Homocide

I - Intestine , Iliace

J - Jersey , Jaundice

K - Ketones , Keyboard

L - Lymphona , Lungs

- M - Malaria, Meningitis
- N - Norovirus, Neonates
- O - Organs, Origami
- P - Psychosis, Psychology
- Q - Quackiceps, Quantum
- R - Romantic-fever, Romania
- S - Schizophrenia, Stomach
- T - Tumour, Tuberculosis
- U - Urology, Ulcer
- V - Venom, Vericosis
- W - Will's disease, Women
- X - Xanthoma, Xaviar
- Y - Yelksack, Yack
- Z - Zomato, Zerodol

Cognitive Behavioral Therapy is a form of talking therapy which can be used to treat people with a wide range of mental health problems. CBT is based on idea that how we think (Cognition), how we feel (Emotions) and how we act (Behavior) all interact together. Aims to help people become aware of when they make negative interpretations, and of behaviors which reinforce the distorted the thinking. CBT helps people to develop alternate ways of thinking and behaving which aim to reduce their psychological distress. Two of the earliest forms of Cognitive Behavioral Therapy were "REBT" and Cognitive Therapy.

SRR AND CVR Government Degree College(A), Vijayawada

Central Inst. For calligraphy and Graphic Design

01	Company		Registered	Completed
	Central Inst. For calligraphy and Graphic Design	calligraphy	All Final years	60

B.Sc MPCS Students

S No	Student Name	Roll No	Course
1	Ampolu Lavanya	19302209	3 rd B.Sc(MPCS)
2	Kaza Rajeswari	19302250	3 rd B.Sc(MPCS)
3	M. Pushpa Latha	19302264	3 rd B.Sc(MPCS)
4	M.Sweety	19302208	3 rd B.Sc(MPCS)
5	B. Hema Latha	19302273	3 rd B.Sc(MPCS)
6	N.PremChand	19302234	3 rd B.Sc(MPCS)
7	Dubbaku Keerthi	19302240	3 rd B.Sc(MPCS)
8	D. Krishna Veni	19302222	3 rd B.Sc(MPCS)
9	MD. Shahin	19302242	3 rd B.Sc(MPCS)

BA EPJ Students

S No	Student Name	Roll No	Course
1	K Sai Ramya	19103205	3 rd BA (EPJ)
2	N.S.S.R Krishna	19103242	3 rd BA (EPJ)
3	Kolli Pujitha	19103225	3 rd BA (EPJ)
4	A.Magadevi	19103203	3 rd BA (EPJ)
5	S.Sujatha	19103211	3 rd BA (EPJ)
6	Shaik. Sharmi	19103240	3 rd BA (EPJ)
7	J.Vijay Madhuri	19103238	3 rd BA (EPJ)
8	Rentalala Ajay kumar	19103230	3 rd BA (EPJ)
9	Gampa Hema Latha	19103204	3 rd BA (EPJ)
10	Namagiri Bhanu	19103207	3 rd BA (EPJ)
11	Y.S.P Akhilandeswari	19103223	3 rd BA (EPJ)
12	T N Vasantha	19103202	3 rd BA (EPJ)
13	T Renu Sri	19103218	3 rd BA (EPJ)
14	G Siva	19103208	3 rd BA (EPJ)
15	Y Ejhwarvyas	19103243	3 rd BA (EPJ)
16	E Ruthu	19103212	3 rd BA (EPJ)
17	P Sravya	19103201	3 rd BA (EPJ)
18	P Suguna	19103213	3 rd BA (EPJ)
19	T.V.P Sai kishore	19103222	3 rd BA (EPJ)

B.com CA Section A

S No	Student Name	Roll No	Course
1	M Naga Haritha	19202241	3 rd B.com CA
2	K Anitha	19202209	3 rd B.com CA
3	Md. Haseena	19202225	3 rd B.com CA
4	P Leela Ratna Mani	19202230	3 rd B.com CA
5	Katta Jagadish	19202229	3 rd B.com CA
6	K suguna	19202254	3 rd B.com CA
7	Shaik Iliyaz	19202251	3 rd B.com CA
8	K Srinivasa rao	19202232	3 rd B.com CA
9	P Durga Bhavani	19202226	3 rd B.com CA
10	R Lokesh	19202239	3 rd B.com CA
11	L Rakesh		3 rd B.com CA
12	K Raghu Nadh	19202238	3 rd B.com CA
13	P Ramya	19202205	3 rd B.com CA
14	Gampa Srinu	19202217	3 rd B.com CA
15	K Hema Bhargavi	19202234	3 rd B.com CA
16	D Venkatesh	19202220	3 rd B.com CA
17	L Ajay krishna	19202228	3 rd B.com CA
18	T Lokesh Reddy	19202213	3 rd B.com CA
19	Dasari Yaswanth Paul	19202221	3 rd B.com CA
20	R Sirisha	19202249	3 rd B.com CA
21	U Sravani	19202224	3 rd B.com CA
22	SK Baji	19202231	3 rd B.com CA
23	P Adilakshmi	19202201	3 rd B.com CA
24	V Sruthi	19202237	3 rd B.com CA
25	D Harileela	19202248	3 rd B.com CA

B.com CA Section B

S No	Student Name	Roll No	Course
1	Jyothirmai	19202312	3 rd B.com CA
2	P Prem Sagar	19202307	3 rd B.com CA
3	Ch Eswari	19202308	3 rd B.com CA
4	P Rama Krishna	19202288	3 rd B.com CA
5	Rajeswari	19202327	3 rd B.com CA
6	K Manasa	19202315	3 rd B.com CA
7	V Krupa Indu	19202285	3 rd B.com CA
8	Sayyad Habiba	19202282	3 rd B.com CA

Attendance:

S.R.R. & C.V.R. GOVT. DEGREE COLLEGE, Vijayawada

III B.A (EPJ) Sp1 Eng

Month: March-2023

S.No.	Name of the Student	1	2	3	4	5	6	7	8	9	10	11	12
1.	T. Vasantha.	x	x	x	x	x		x		x	x	x	
2.	A. Mahadevi.	x	x	x	x	x		x		x	x	x	
3.	G. Hemalatha.	x	a	x	x	x		x		x	x	a	
4.	K. Ramya.	x	x	x	x	a		a		x	x	x	
5.	N. Bhanu.	x	x	x	x	x		x	S	x	x	x	
6.	G. Siva.	a	x	x	x	x		a	S	x	x	x	
7.	S. Sujatha.	x	x	x	x	x		x	T	x	x	x	
8.	F. Ruthu.	a	x	a	x	x		x	T	x	x	a	
9.	T. Renu Sri	x	x	x	x	x		x	T	x	x	x	
10.	T. Kishore.	x	x	x	x	x		x	A	x	x	x	
11.	Y Akhila.	x	x	x	a	x	Y	x	B	x	x	x	
12.	K. Pujitha.	x	a	x	x	a	Y	x	R	x	x	x	
13.	R. Ajay Kumar.	x	x	x	x	x	S	x	E	x	x	x	
14.	J.V. Madhuri	x	x	x	x	x	S	x	C	x	x	x	
15.	SK. Sharmi	x	x	x	x	x	S	x	E	x	x	x	
16.	N. Sai Siva Rama Krishna.	x	x	a	x	x	S	x	C	x	x	x	
17.	Y. Eshwar Vyas.	x	x	x	x	x		x	Y	x	x	x	
IV B.Sc (MPCs)													
18.	M. Sweety.	x	x	x	x	x		x	S	x	x	x	
19.	A. Lavanya.	x	x	a	x	x		x	S	x	x	x	
20.	D. Krishnaveni.	x	x	x	x	x		x	M	x	x	x	
21.	N. Premachend.	x	x	x	a	x		x	E	x	x	a	
22.	D. Keerthi.	x	x	x	x	x		x	W	x	x	x	
23.	Md. Shahin.	x	x	x	x	x		x	W	x	x	x	
24.	K. Rajeswari	a	x	x	x	x		x	W	x	x	x	
25.	M. Pushpa Latha.	x	x	a	x	x		x		x	x	x	
26.	B. Hemalatha.	x	x	x	x	x		x		x	x	x	
27.	K. S. Bhavitha.	x	x	x	x	a		x		x	x	x	

S.R.R. & C.V.R. GOVT. DEGREE COLLEGE, Vijayawada

(III B. Comm (A & B Sec.))

Month: March-2022

S.No.	Name of the Student	1	2	3	4	5	6	7	8	9	10	11	12
28.	K. Raghunadh.	x	x	a	x	x		x		x	x	a	
29.	K. Srinivas.	x	x	x	x	x		x		x	x	x	
30.	D. Venkatesh	x	x	x	x	x		x		x	a	x	
31.	SK. Iliyaz	a	x	x	x	x		x		x	x	x	
32.	L. Rakesh.	x	x	x	x	a		x	S	x	x	x	
33.	SK. Baji.	x	x	x	x	x		x	IONS	x	x	x	
34.	L. Ajay Krishna.	x	x	x	a	x		x	IONS	x	x	x	
35.	D. Yaswanth.	x	x	x	x	x		x	IONS	x	x	x	
36.	K. Hema Bhargavi.	x	x	x	x	x		x	ATIONS	x	x	x	
37.	K. Anitha.	x	a	x	x	x		x	ATIONS	a	x	x	
38.	P. Adi Lakshmi.	x	x	x	x	a	DAY	x	ATIONS	x	x	x	
39.	Lokesh.	a	x	x	x	x	DAY	x	ATIONS	x	x	x	
40.	P. Leela Ratna Mani.	x	x	x	x	x	DAY	x	ATIONS	x	x	x	
41.	P. Durga Bhavani.	x	x	a	x	x	SUNDAY	x	ATIONS	a	x	x	
42.	V. Sruthi.	x	x	x	x	x	SUNDAY	x	ATIONS	x	x	x	
43.	U. Sravani.	x	x	x	x	x	SUNDAY	x	ATIONS	x	x	x	
44.	M. Naga Haritha.	x	x	x	x	x		x	ATIONS	x	x	x	
45.	D. Hari Leela.	x	a	x	x	x		x	ATIONS	x	a	x	
46.	K. Jagadish.	x	x	x	x	x		x	ATIONS	x	x	x	
47.	P. Ramya.	x	x	x	x	x		x	ATIONS	x	x	x	
48.	R. Sirisha.	x	x	x	x	x		x	ATIONS	x	x	x	
49.	G. Srinu.	x	x	x	a	x		x	ATIONS	x	x	x	
50.	K. Suguna.	x	x	x	x	x		a	ATIONS	x	x	x	
51.	Haseena.	x	x	x	x	x		x	ATIONS	x	x	x	
52.	R. Lokesh.	x	x	x	x	x		x	ATIONS	x	x	x	
53.	B. Rajeswari.	x	x	x	x	x		x	ATIONS	x	x	x	
54.	Sd. Habiba.	x	a	x	x	x		x	ATIONS	x	x	x	
55.	Ch. Eswari	x	x	x	x	x		a	ATIONS	x	x	x	
56.	J. Tyothirmai.	x	x	x	x	x		x	ATIONS	x	x	a	

S.R.R. & C.V.R. GOVT. DEGREE COLLEGE, Vijayawada

Month: April - 2022

III B.A (EPJ) Spl Eng.

S.No.	Name of the Student	1	2	3	4	5	6	7	8	9	10	11	12
1.	T. Vasantha.	X			X	X	X	X	X	X		X	
2.	A. Mahadevi.	X			X	X	X	X	X	X		X	
3.	G. Hemalatha.	X			X	a	X	X	X	X		X	
4.	K. Ramya.	X			X	X	X	X	X	X		X	
5.	N. Bhanu.	X			X	X	X	X	X	X		X	
6.	G. Siva.	X			a	X	X	X	X	X		X	
7.	S. Sujatha.	X			X	X	X	X	X	a		X	
8.	E. Ruthu.	a			X	X	X	X	X	X		X	
9.	T. Renu Sri.	X			X	X	X	X	X	X		X	
10.	T. Kishore.	X			a	X	X	X	X	X		X	
11.	Y. Akhila.	X			X	X	X	X	X	X		X	
12.	K. Pujitha.	X		X	X	X	X	X	X	X		X	
13.	R. Ajay Kumar.	X	I	A	X	X	X	a	X	X		A	X
14.	J.V. Madhuri.	X	D	D	X	X	X	X	X	X		D	X
15.	Sk. Sharmi.	X	A	N	X	X	X	X	X	X		N	X
16.	N. Sai Siva Rama Krishna.	X	G	J	X	X	X	X	X	X		J	X
17.	Y. Eshwar Vyas.	X	U	S	X	X	X	X	X	X		S	X
<u>III B.Sc (MPes)</u>													
18.	M. Sweety.	X			X	X	X	X	X	X		a	X
19.	A. Lavanya.	X			X	X	X	X	X	X		X	
20.	D. Krishnaveni.	X			X	X	a	X	X	X		X	
21.	N. Premachend	X			X	X	X	a	X	X		X	
22.	D. Keerthi.	X			a	X	X	X	X	a		X	
23.	Md. Shahin.	X			X	a	X	X	X	X		X	
24.	K. Rajeswari.	X			X	X	X	X	X	X		X	
25.	M. Pushpa Latha.	X			X	X	X	X	X	X		X	
26.	B. Hemalatha.	X			X	X	X	X	X	X		X	
27.	S. Bhavitha.	X			X	a	X	X	X	X		X	

S.R.R. & C.V.R. GOVT. DEGREE COLLEGE, Vijayawada

Month : April-2022

W B - Govt (A x B Fee)

S.No.	Name of the Student	1	2	3	4	5	6	7	8	9	10	11	12
28.	K. Raghunadh.	a			x	x	x	x	x	x		x	x
29.	K. Srinivas.	x			x	x	x	x	x	x		x	x
30.	D. Venkatesh.	x			x	x	a	x	x	x		x	x
31.	SK. Iliyaz	x			x	x	x	a	x	x		x	x
32.	L. Rakesh.	x			x	a	x	x	x	x		x	x
33.	SK. Baji	x			x	x	x	x	x	x		x	x
34.	L. Ajay Krishna.	x			x	x	x	x	x	x		x	x
35.	D. Yaswanth.	x			x	x	x	x	a	x		x	x
36.	K. Hema Bhargavi.	x			x	x	x	x	x	x		x	x
37.	K. Anitha.	x			x	x	x	x	x	x		x	x
38.	P. Adi Lakshmi.	x			x	x	x	x	x	x		x	x
39.	. Lokesh.	x			x	x	x	x	x	x		x	x
40.	P. Leela Ratna Mani.	x			x	x	x	x	x	x		x	x
41.	P. Durga Bhavani.	x			x	x	x	x	x	x		x	x
42.	V. Sruthi.	x			x	x	x	x	x	x		x	x
43.	U. Sravani.	x			x	x	x	x	x	x		x	x
44.	M. Naga Haritha.	x			x	x	x	x	a	x		x	x
45.	D. Hari Leela.	x			x	x	x	x	x	x		x	x
46.	K. Jagadish.	x			x	x	x	x	a	x		x	x
47.	P. Ramya.	x			x	x	x	x	x	x		x	x
48.	R. Sirisha.	x			x	x	x	x	x	x		x	a
49.	G. Srinu.	x			x	x	x	x	x	x		x	x
50.	K. Suguna.	x			x	x	x	x	x	x		x	x
51.	. Haseena.	x			x	x	x	x	x	x		x	x
52.	R. Lokesh.	x			x	x	x	x	x	x		x	x
53.	B. Rajeswari	x			x	x	x	x	x	x		a	x
54.	Sd. Habiba.	x			x	x	x	x	x	x		x	a
55.	Ch. Eswari.	x			x	x	x	x	x	x		x	x
56.	J. Jyothirmai.	x			x	x	x	x	x	a		x	x

Exam

DATE: 23-06-2022

TELEUGU

FATHER NAME: Kotiah-katta

Calligraphy

K. Jagadish
IIIrd B Com (A)
A SECTION

Exam HALL TICKET NO: 19202229

ఉపాంత ప్రతిష్ఠాపన రటును అనే నిర్వచించుము ధర
సూత్రం యొక్క పాముఖ్యతను విశ్లేషించుము క్షిణ
పాముఖ్యతను విశ్లేషించుము వింత తరహాననురించి ఏ
అంతర్గత ఆదాలకు గల కారణాలను పరిశీలించుము
వివరించుము ప్రకృతి పరంగా ఉచితంగా సుష్ట ధర
లేనప్పుడు వస్తువులు ఉచిత పైవన్నియు సాధారణం
విషయంలో మరియు వస్తువు డిమాండ్ మధ్య ధర
ఏ సంబంధం ఉంటుంది ధనాత్మక రుణాత్మక పై
రెండు వేవి కావు ప్రకృతి పరంగా ఉచితంగా వేవి
చేయుబడి ధర లేనటువంటి క్రింది విధంగా అంటారు
ప్రైవేటు ధర ఉచిత వస్తువులు సాధారణ వస్తువు
డిమాండ్ పరిమాణం ఏ మధ్య రేఖ యొక్క
యాల మూలానికి వూటాకారంగా ఉంటుంది
అక్షానికి సమాంతరంగా ఉంటుంది లంబంగా ఏ
ఉంటుంది తరహాననుసరించిన ఈ అనుబంధం.

There was a village near a jungle. Village cows used to go upto the jungle in search of food.

In the forest there lived a wicked lion. He used to kill a cow in now and then and her. This was happening for quite sometime. The cows were frightened. One day all the cows held a meeting. An old cow said, "Listen everybody the lion eats one of us only because go into jungle our seperately, from now on we all together. All chased him away."

Hall Ticket NO:- 19202241

M. Naga Haritha (A-~~P~~)
B. Com III year (C.A)

When I had the pleasure of my
One never can find one to compare us
With mother for true loving and caring.
Mother is only personally who love and
Care to her child's without a single or
Hidden personal intention. A child is a
Actual property for a mother. She teach
Us unique methods of life to pass if
Through hard time. She bear heard for us.
She bear with us and listen us where as
We say good or bad. She don't make any
Boundaries to restrict us but she always
Teach in soft and sweet manner. Her
Motivations are enough for us to make
Different good and bad things.

A lion was once sleeping in the jungle when a mouse started running upon and down his back just for fun. This disturbed the lion's sleep, and so he woke up quite angry. He was about to eat the mouse when the mouse desperately requested the lion to set him free. "I promise you, one day I will be of great help to you if you save me." The lion laughed at the mouse's confidence and let him go. One day, a few hunters came into the forest and they took the lion with them. They tied him up against a tree. The lion was struggling to get out and started.

23/06/22

Calligraphy exam

(A-sec)

R. Sirisha.

19202249

B.Com (CA) IIIrd Year

Ability of an organisation to prosper arises for its competitive advantage over the other organisation operating its market sector.

The ability of the organisation to be survive requires that its competitive position is not significantly less than to the other firms operating the market sector. Cost leadership is simple to be able to sell the goods or provide the it service at a price that is lower than to that of the competing products even by though the competition may have a some lower price. Information and communication technologies can have a considerable part to play in competitive strategy. ability.

Date: 21-6-2022

Calligraphy exam

Shaik. Hiyaz

IIIrd Bcom Computers (A section)

19202251

Decides grain of wheat in the express
the idea that, before a seed can grow
into a new plant, it must first dry
out and sacrifice its own life. grains
uses flashbacks through the novel's
present event. In the beginning the
kenyans welcomed the British but they
became suspicious when they saw how
much of their land was being taken
from them and started registered them
leading to kenyan independence. Thomson
drops at the party represents kenya.

Dok: 22-6-2022

Calligraphy exam

Shaik Fayaz

IIIrd B.Com Computers (A section)

19202251

Decides grain of wheat in the express
the idea that, before a seed can grow
into a new plant, it must first lay
out and sacrifice its own life. Quins
uses flashbacks through the novel's
present event. In the beginning the
kenyans welcomed the British but they
became suspicious when they saw how
much of their land was being taken
from them and started registered them
leading to kenyan independence. Thomson
drops at the party represents kenya

Nature is the creation of natural material and physical world on earth independent of human activity. The beauty and richness of nature is diverse and massive.

Nature provides us with several and delicacies to enjoy and is our life support system. Our basic needs like food, shelter, water and air are of the gifts from nature. Humans have a strong connection and interrelation with nature. Escaping away in the best nature heals the mind and body and soothes our soul and mind.

30/6/22

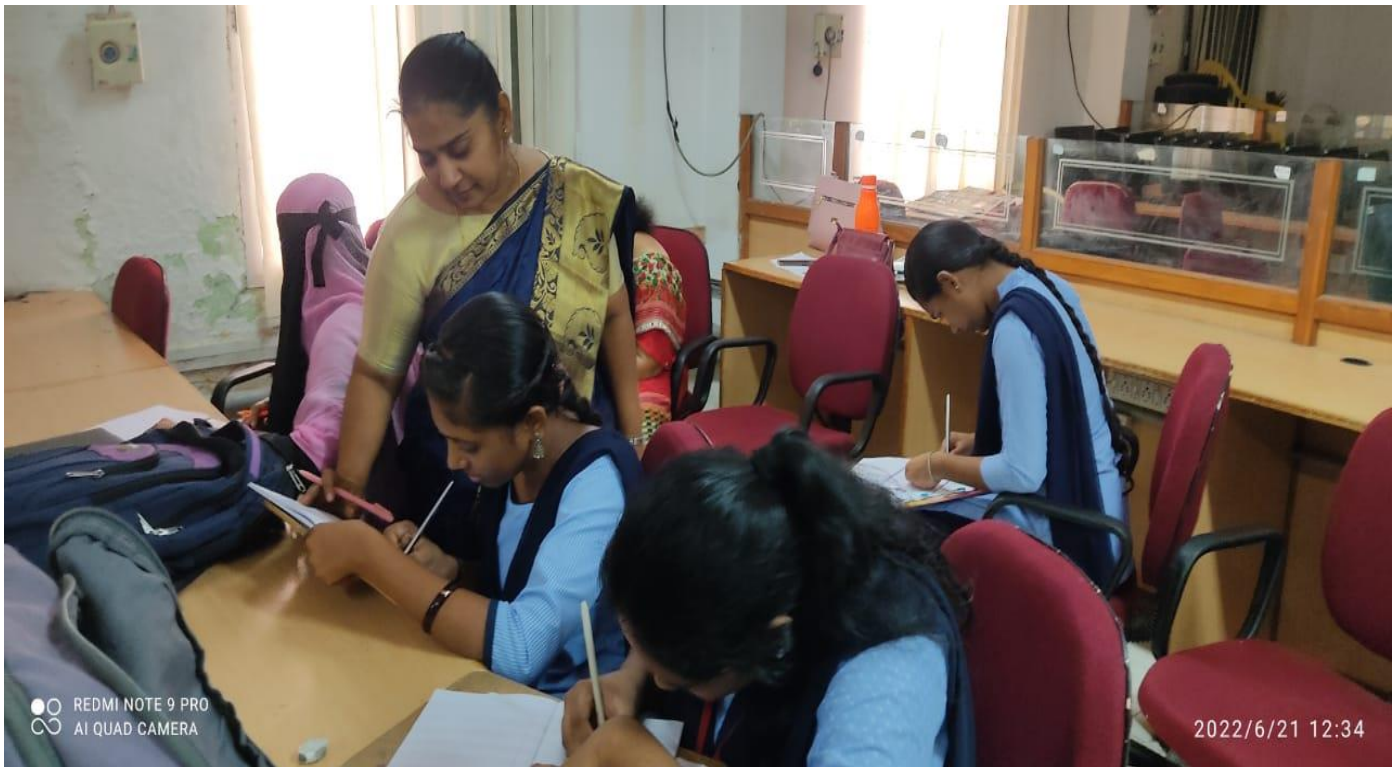
Nature is the creation of natural material and physical world on earth independent of human activity. The beauty and richness of nature is diverse and massive.

Nature provides us with several delicacies to enjoy and our life is supported by its system. Our basic needs like food, shelter, water and air are gifts from nature. Humans have a strong connection and interrelation with nature. Escaping away in the best nature heals the mind and body and soothes our soul and mind.

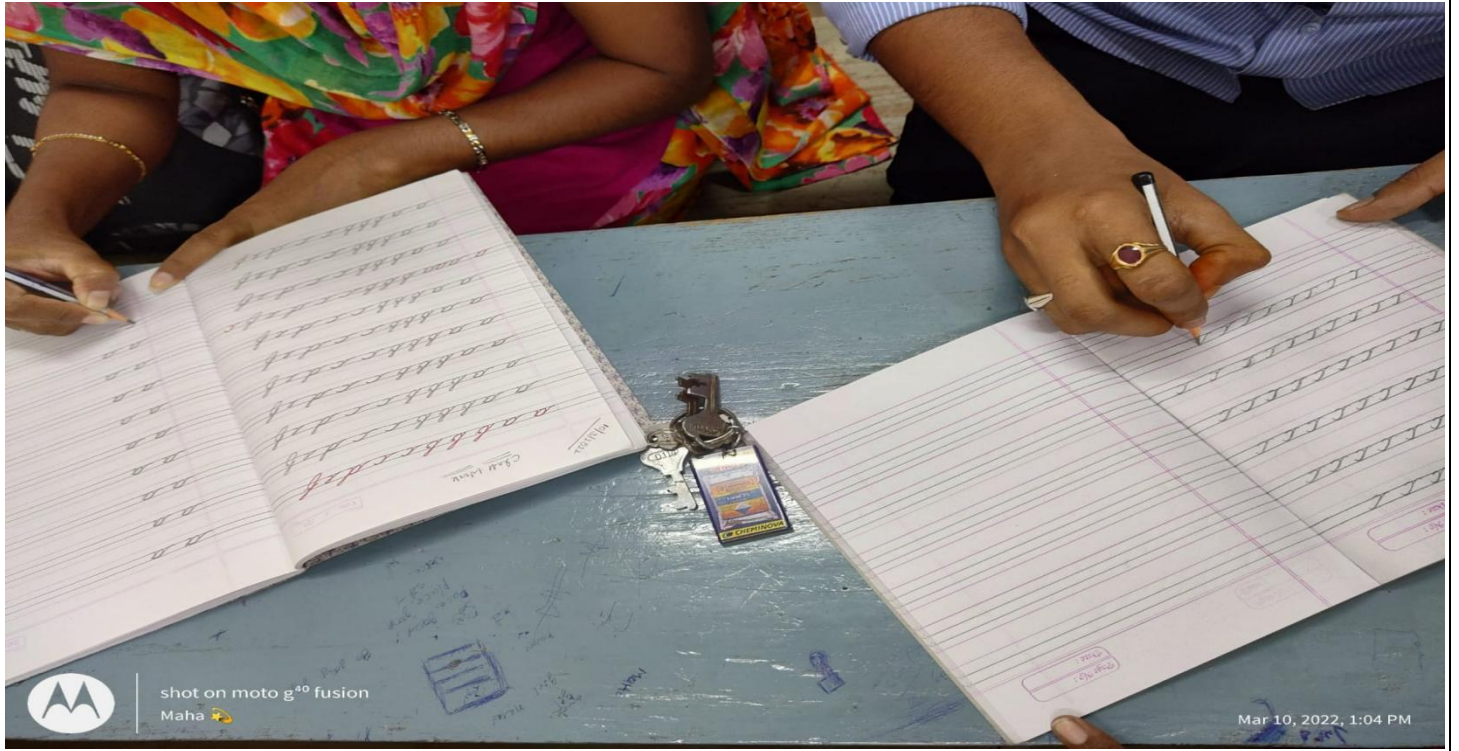
Class Work Photos

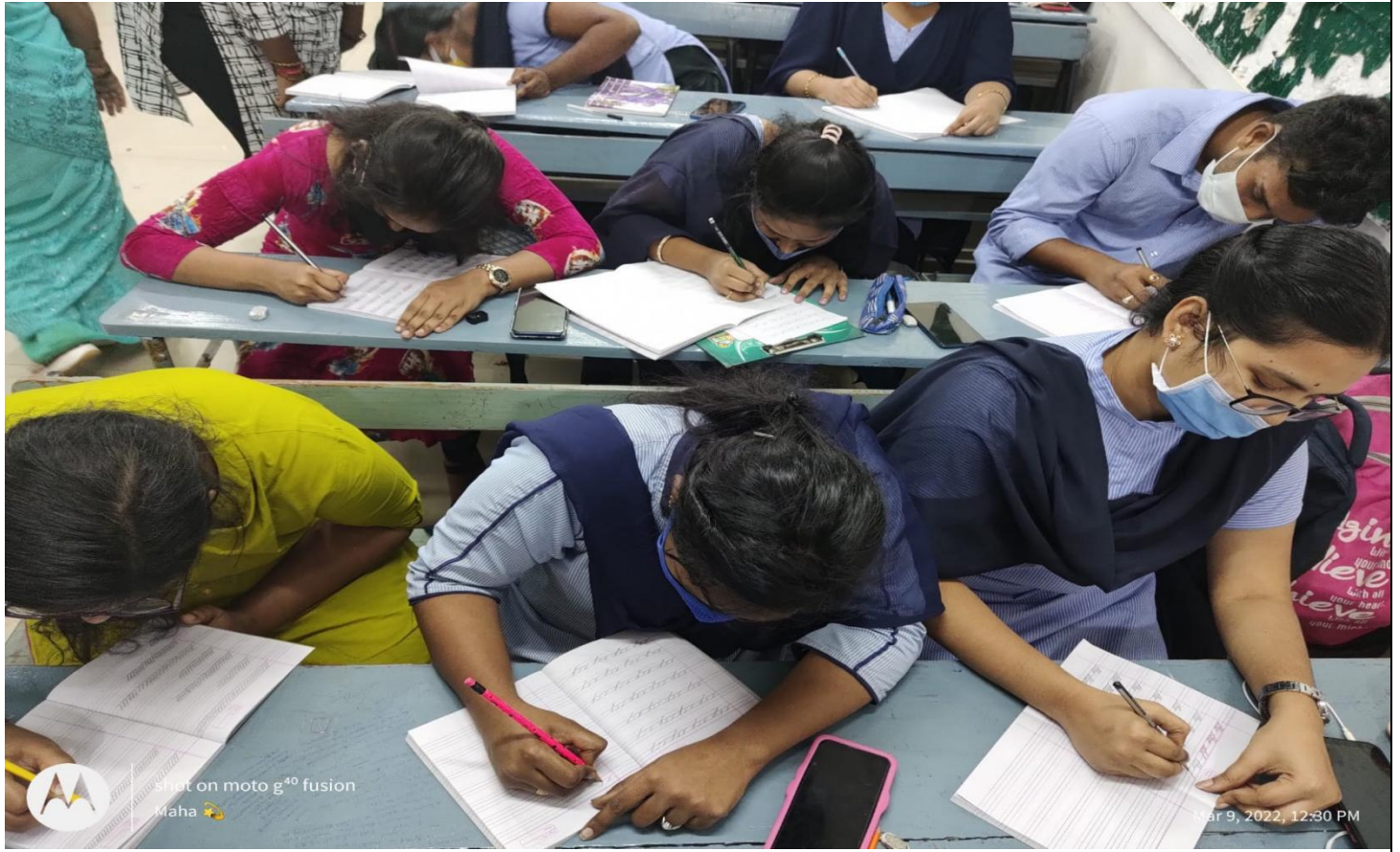








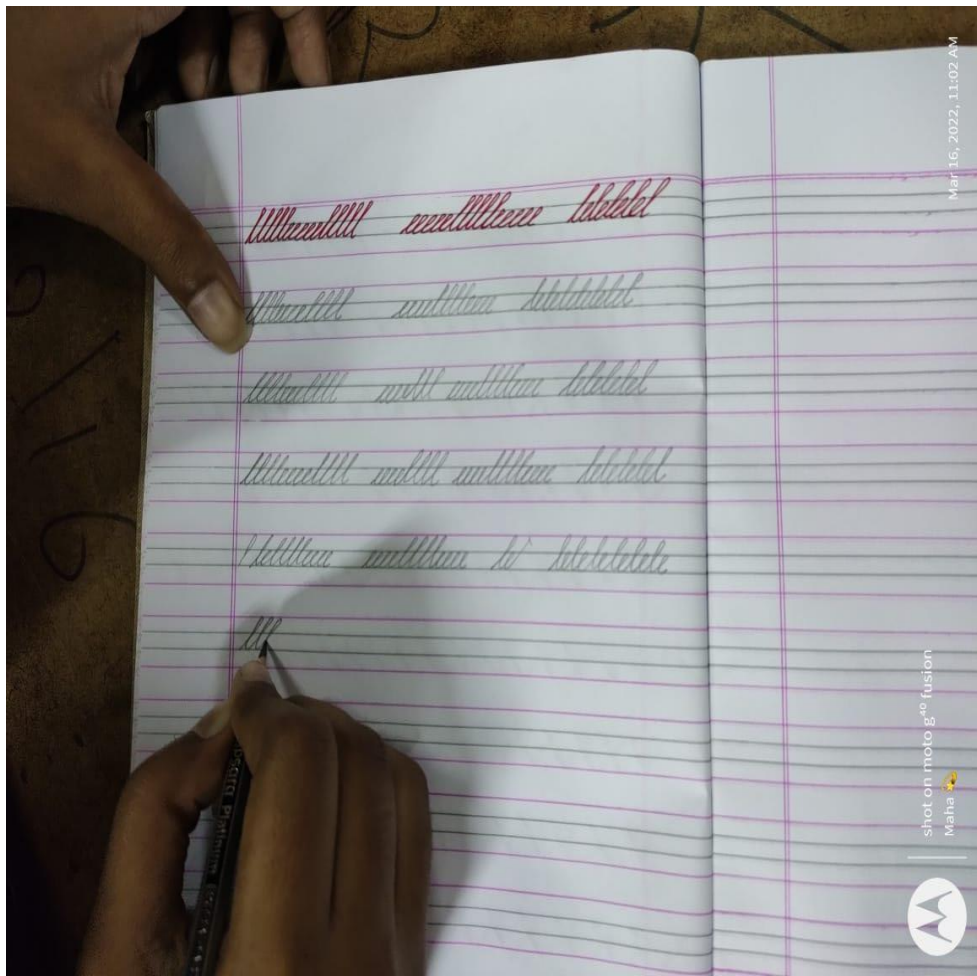






shot on moto g⁴⁰ fusion
Maha 🇮🇳

Mar 11, 2022, 1:02 PM



shot on moto g⁴⁰ fusion
Maha 🇮🇳

Mar 16, 2022, 11:02 AM



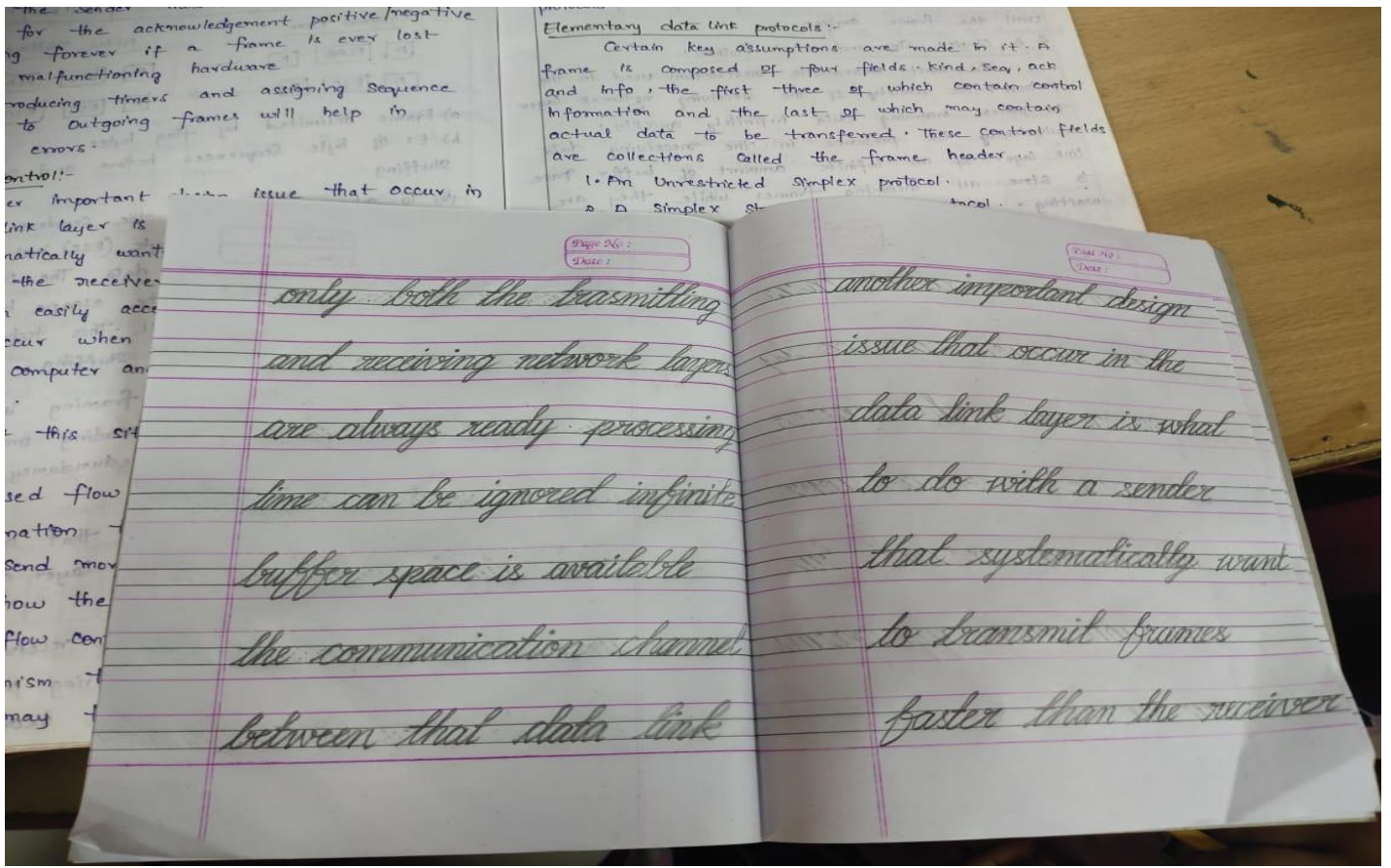
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Maha 🇮🇳

Mar 16, 2022, 10:59 AM



shot on moto g⁴⁰ fusion
Maha 🇮🇳

Mar 25, 2022, 12:13 PM





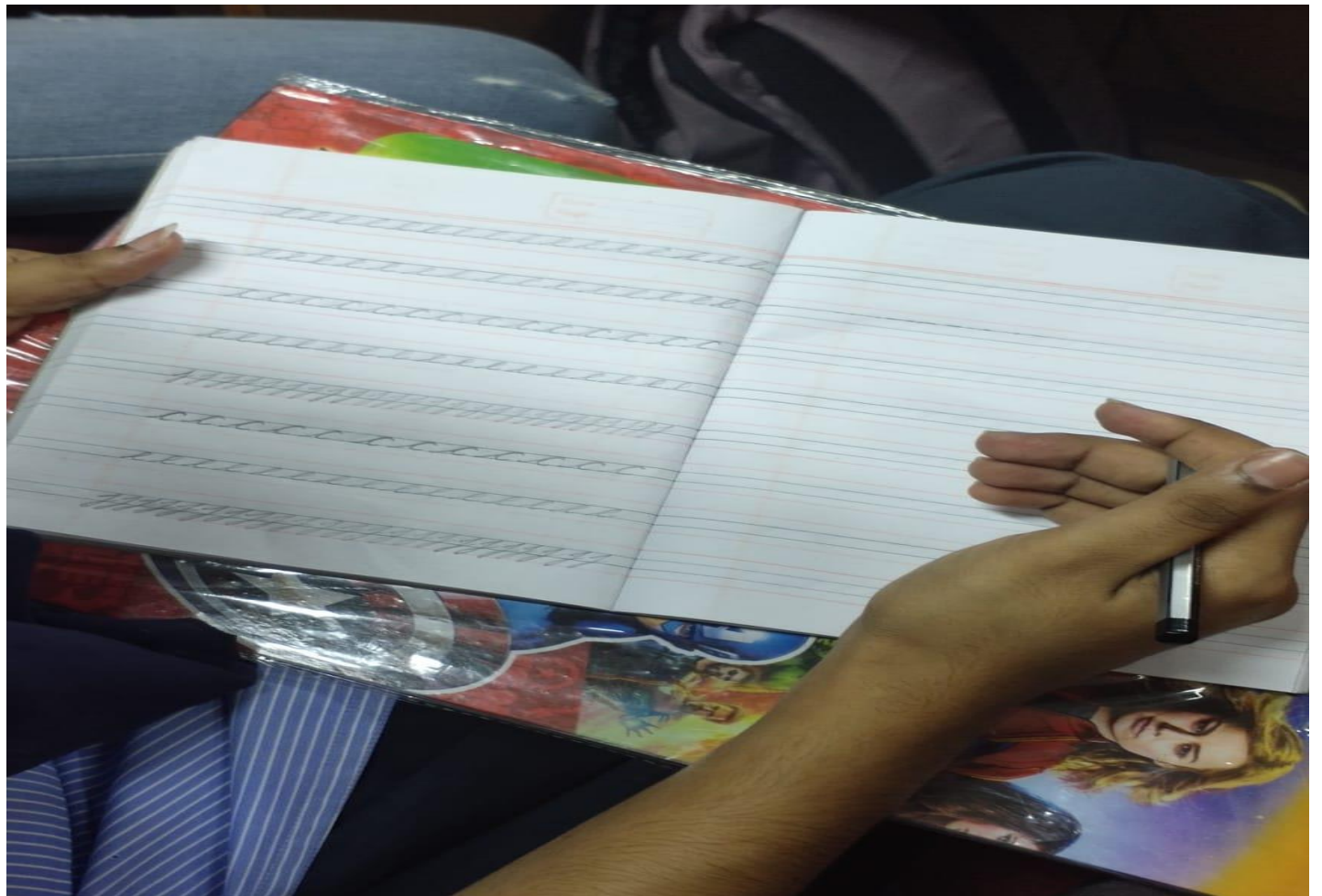
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Maha 🇮🇳

Mar 17, 2022, 1:06 PM



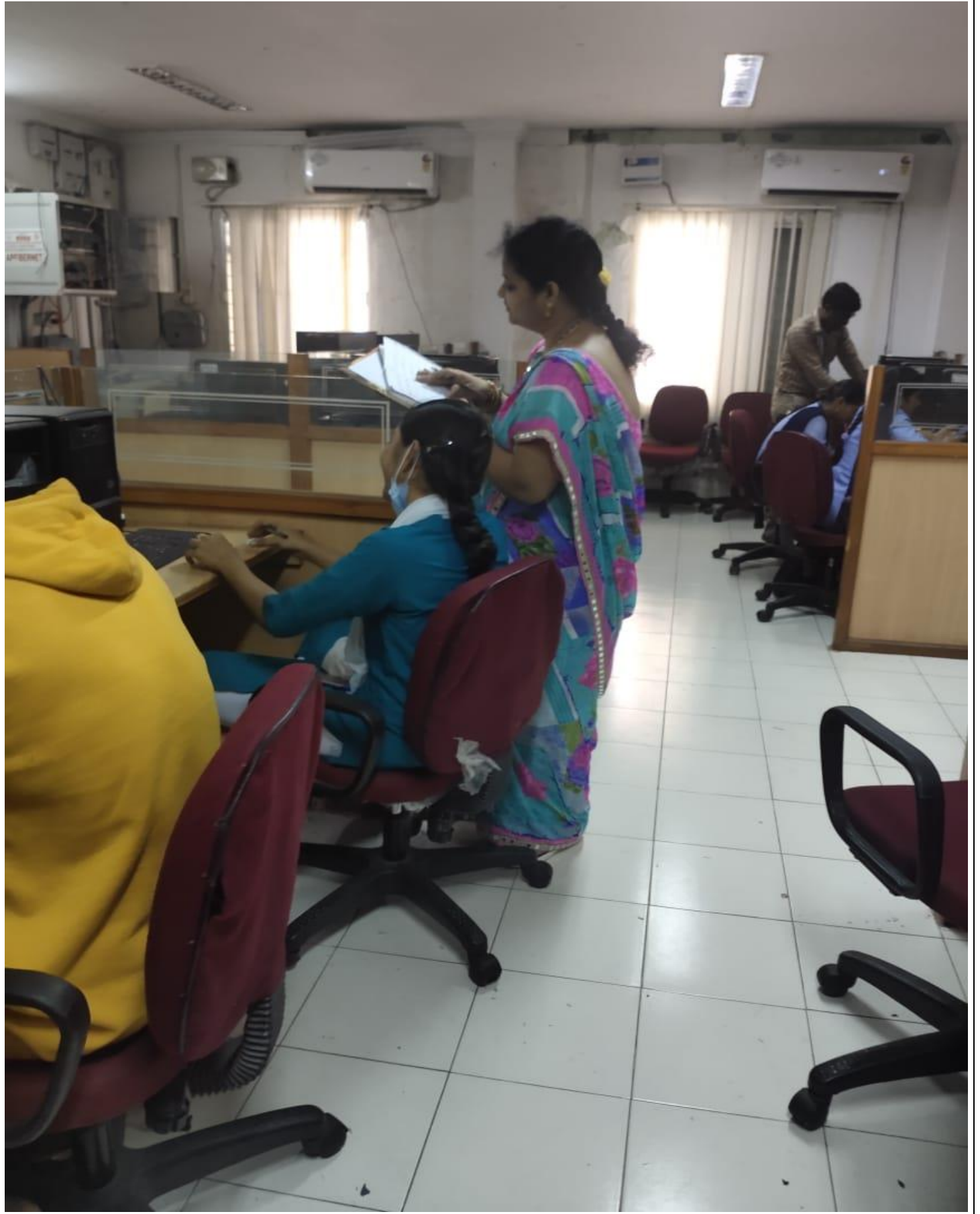
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Maha 🇮🇳

Mar 17, 2022, 1:04 PM

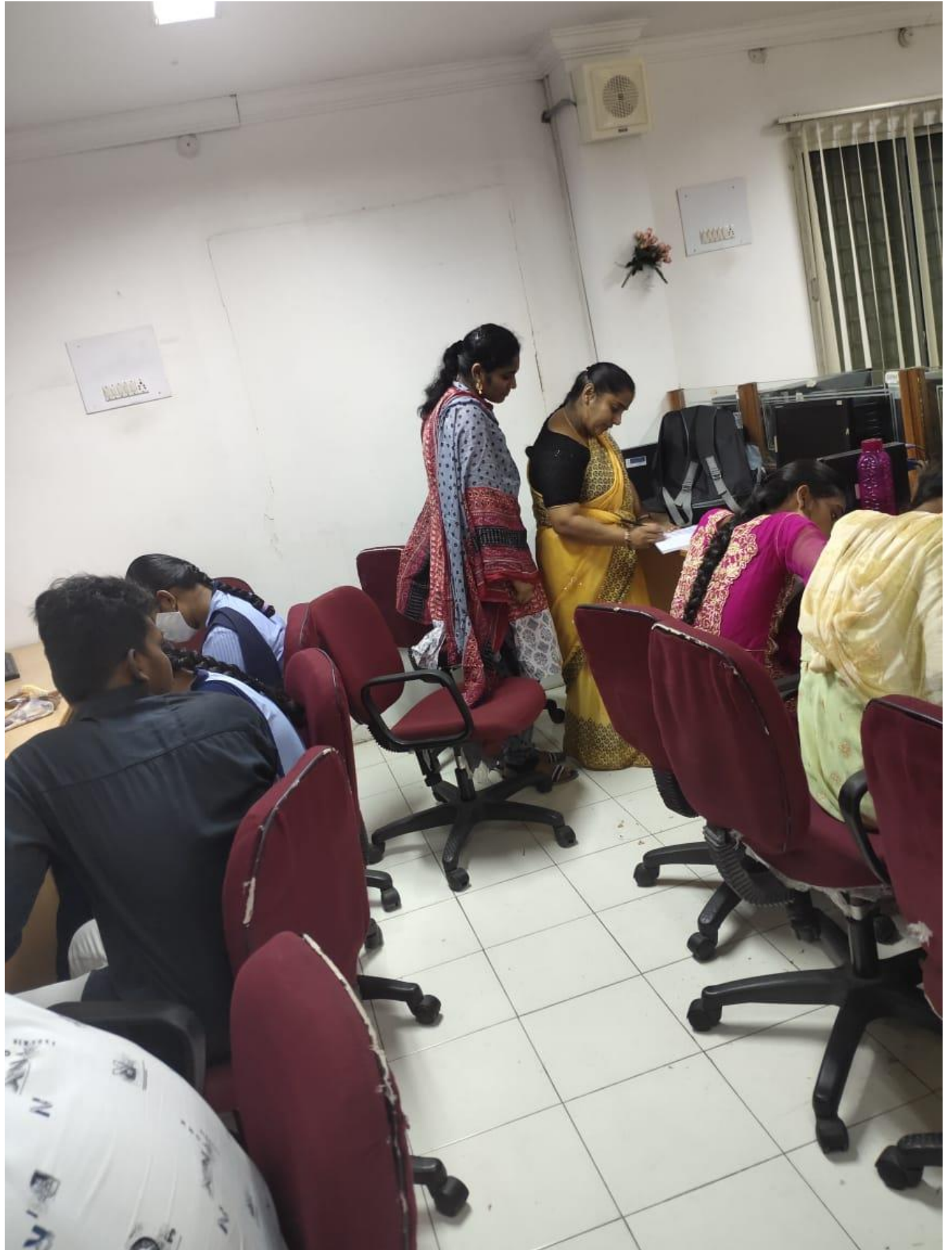


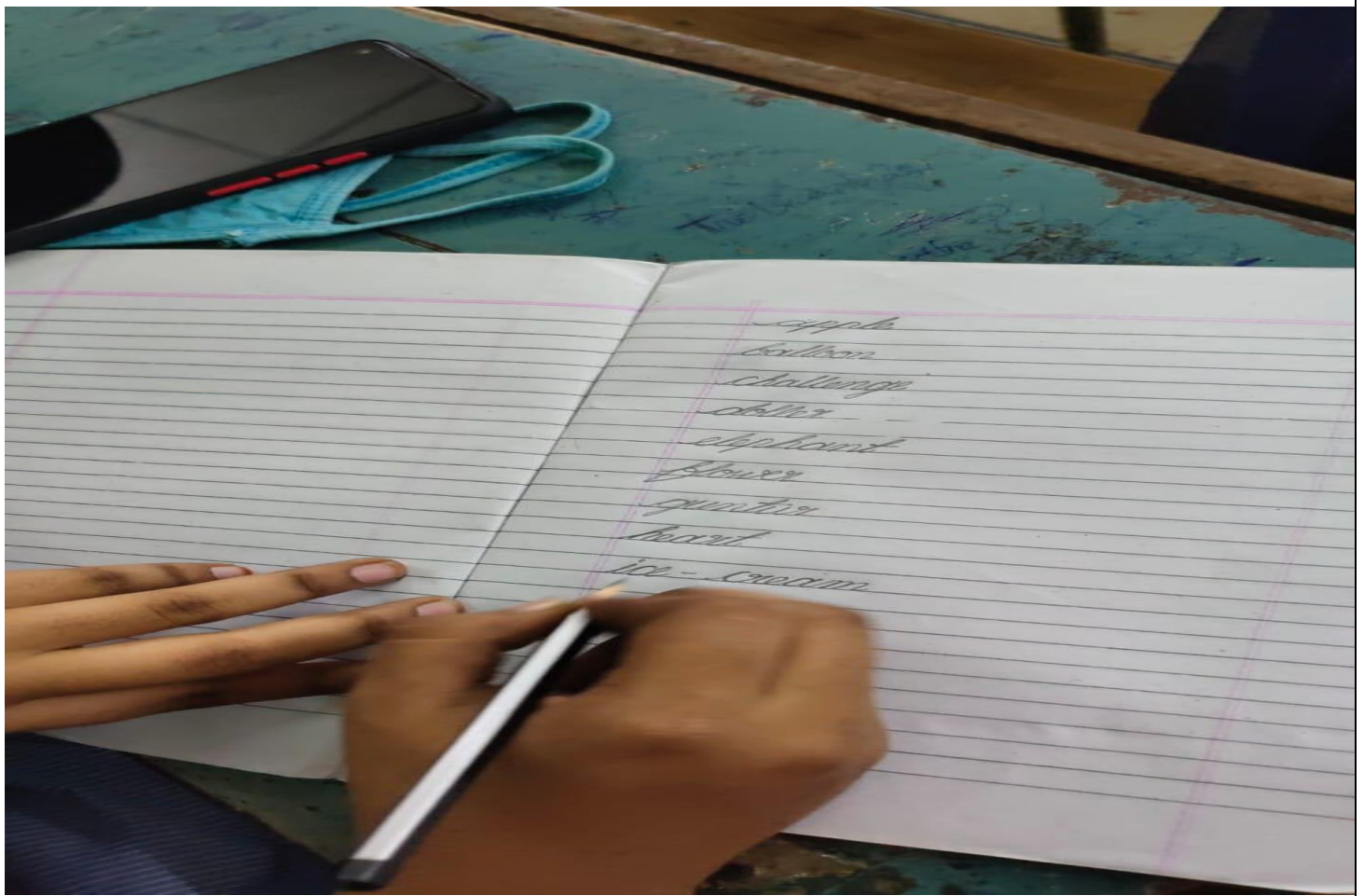










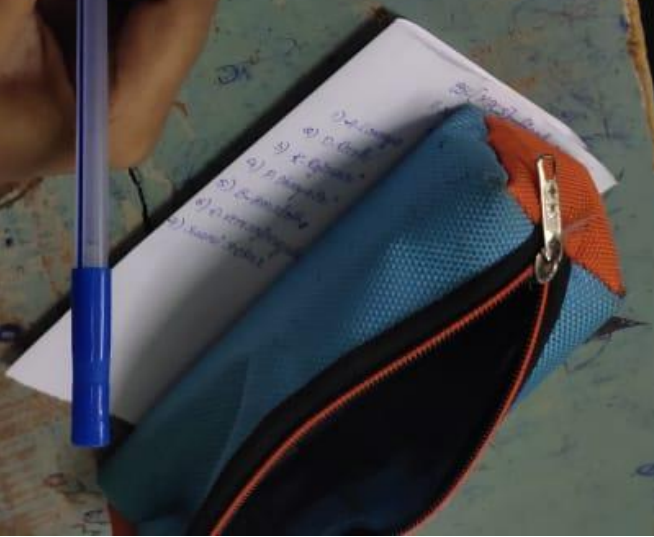
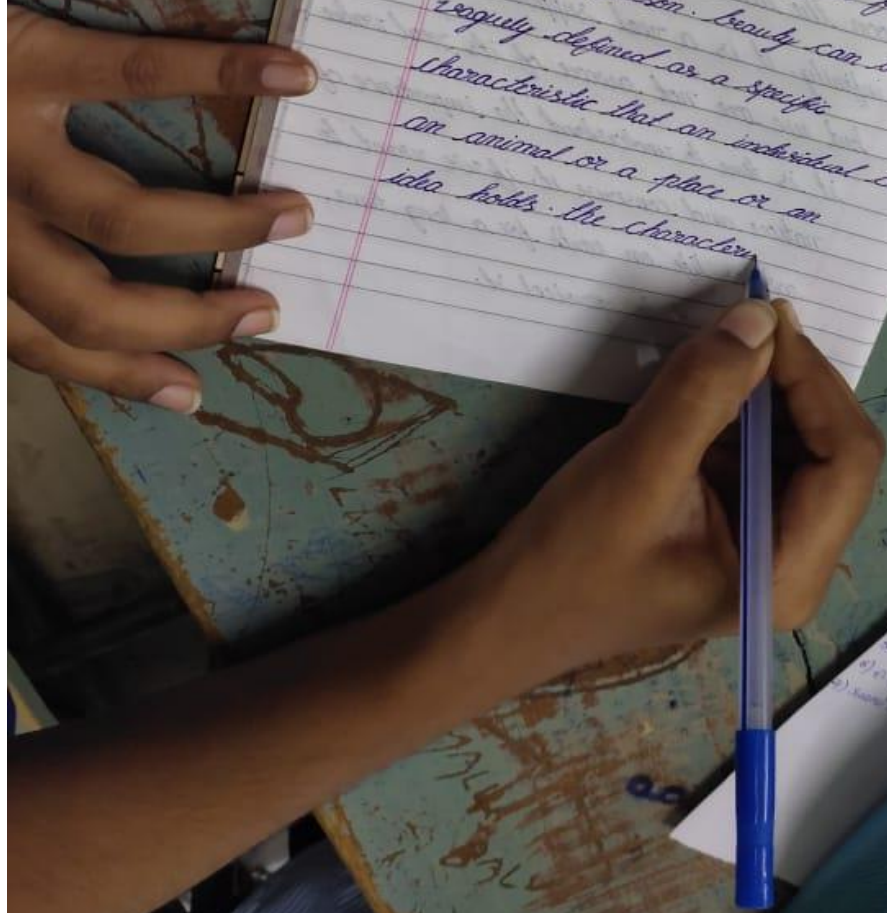
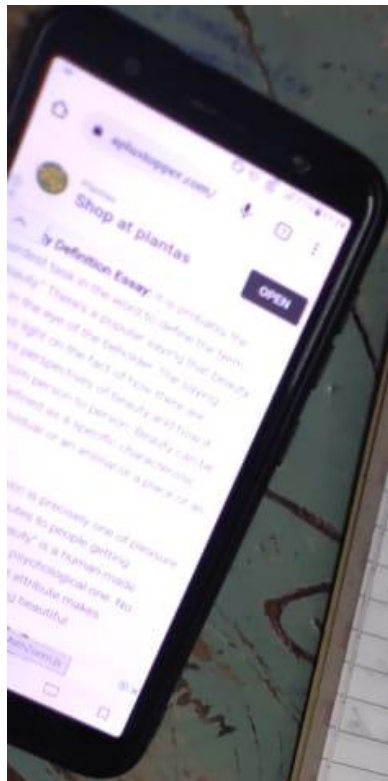


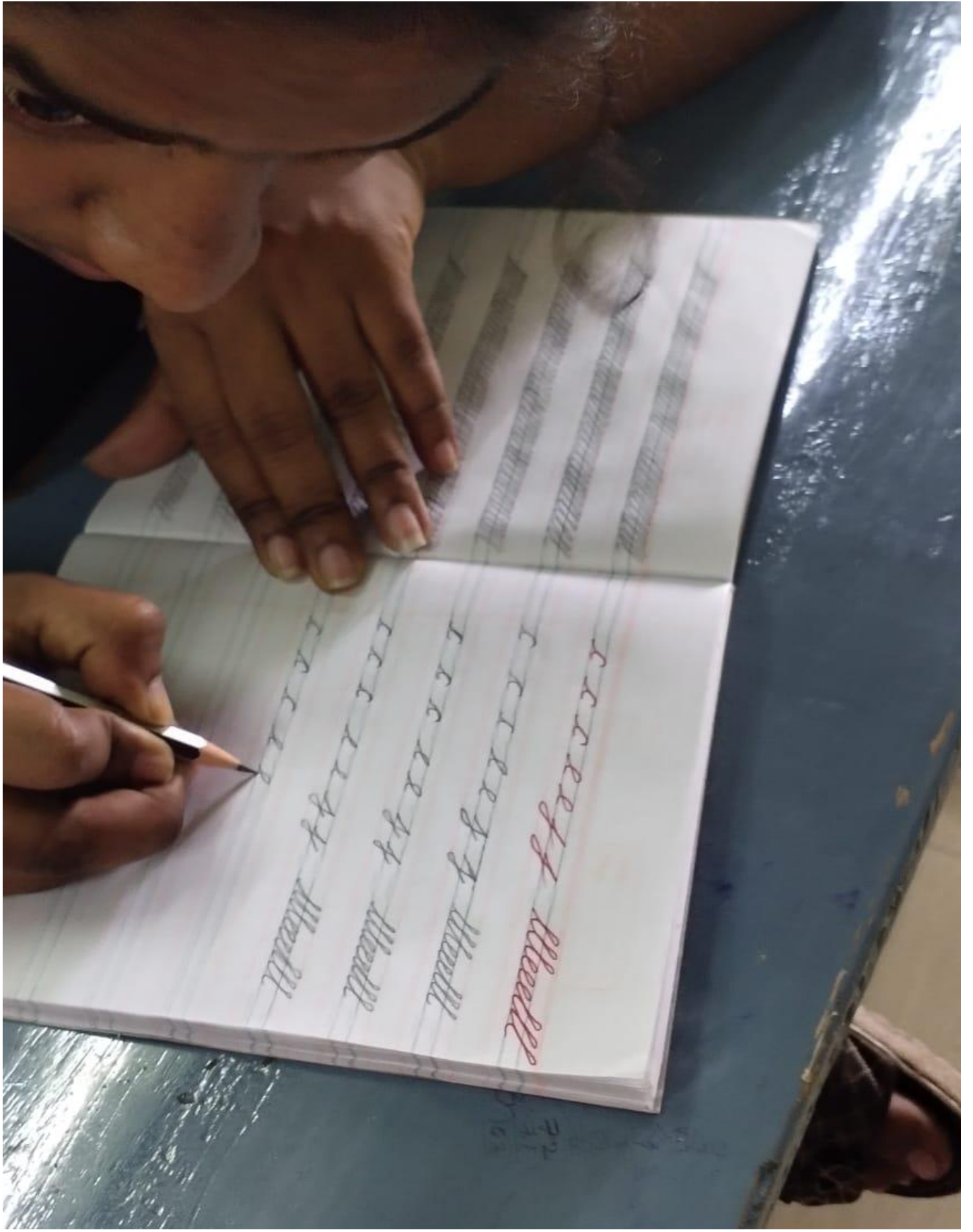


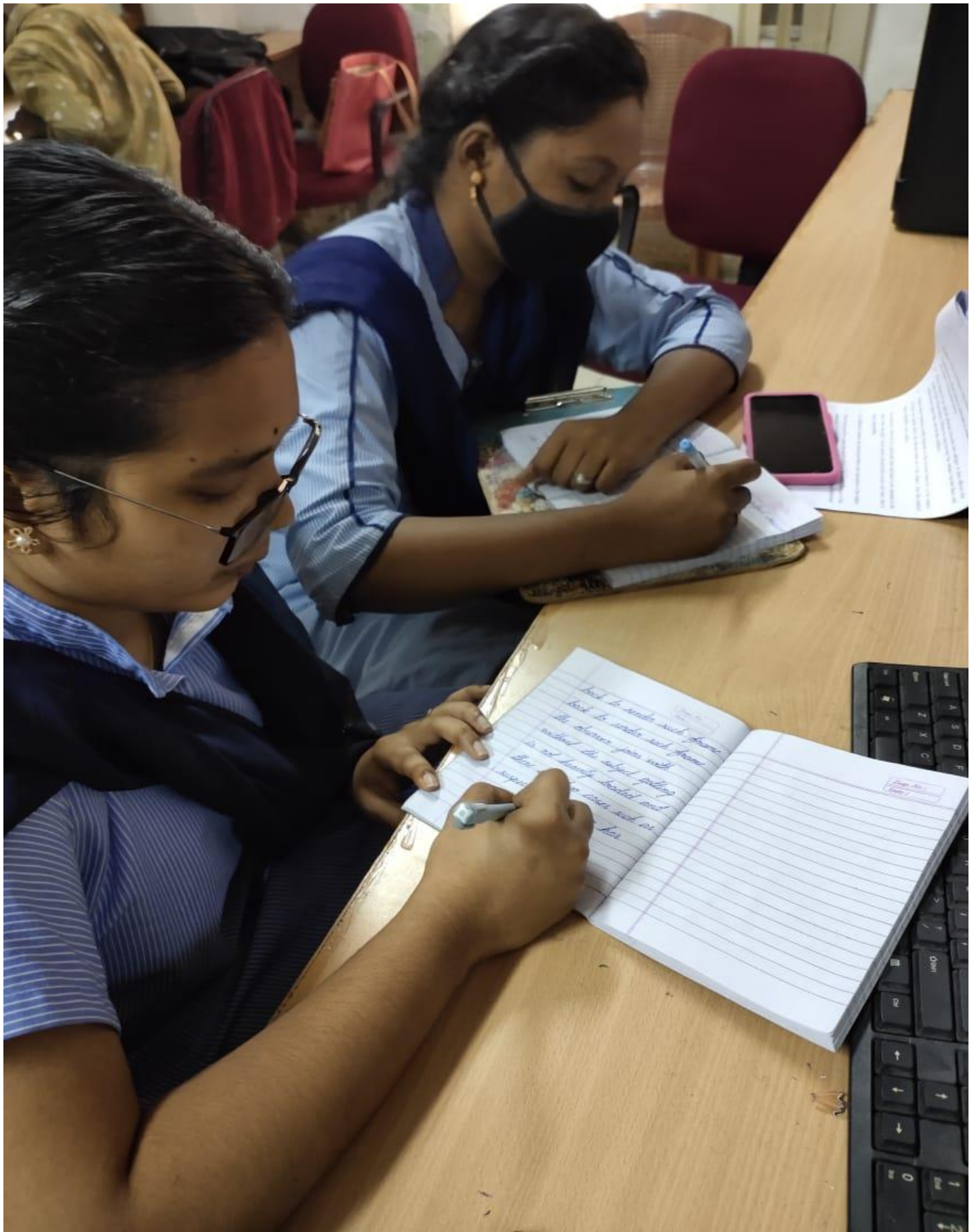
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C.W

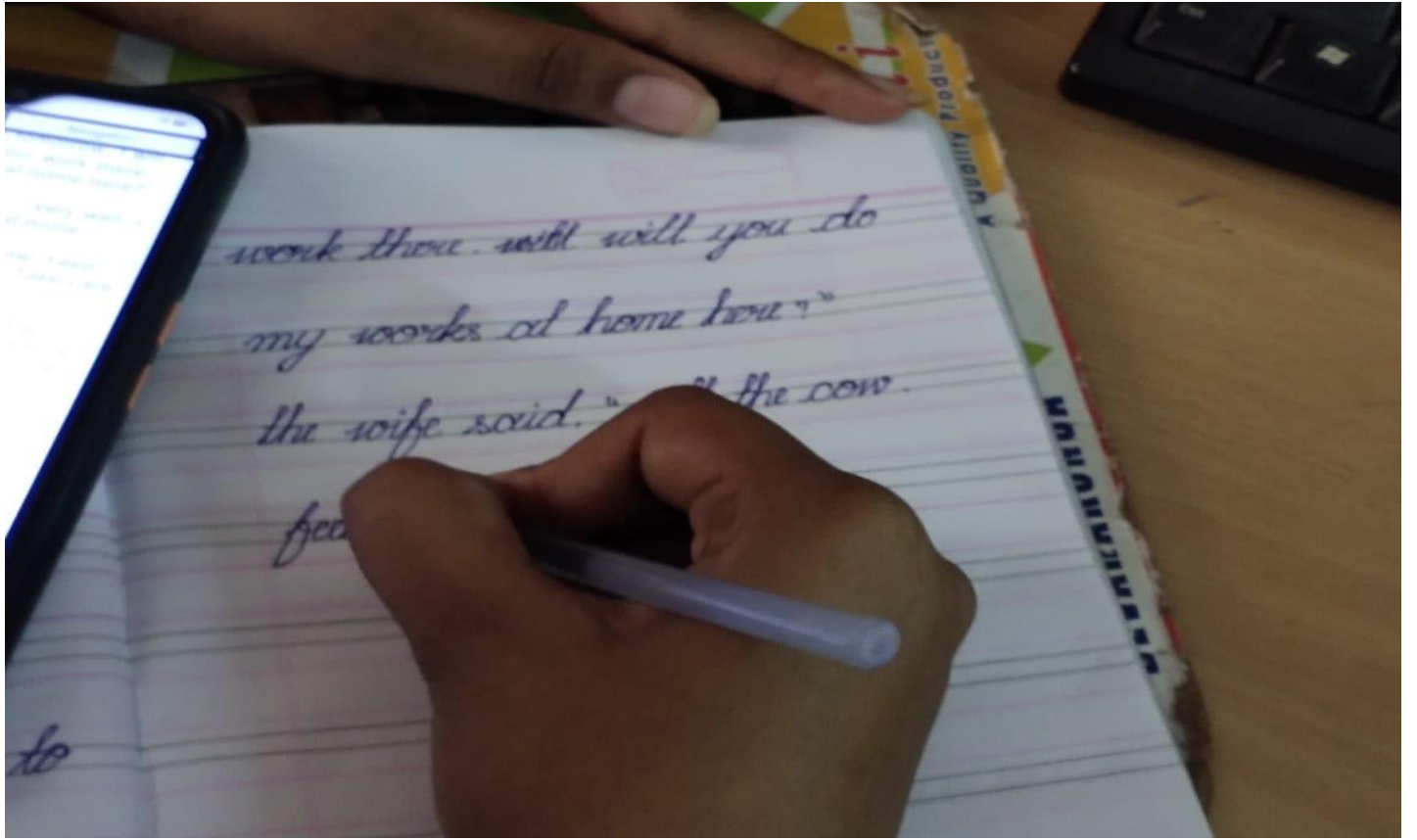
it is probably the hardest task in the world to define the term beauty. There's a popular saying that beauty lies in the eye of the beholder. The saying throws light on the fact of how there are different perspectives of beauty and how it differs from person to person. Beauty can be vaguely defined as a specific characteristic that an individual or an animal or a place or an idea holds. The character







the following maps the flowchart
into a corresponding flow graph
in the flow graph each circle
called a (flow) flow graph
node represented one or more
procedural statements.







Calligraphy Exhibition on August 15/2022







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S/o, D/o... Rentala Madhu Babu.....has successfully completed

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This is certificate that Ms./Mrs./Mr...Alla...Mahadevi.....

S/o, D/o...Alla...Srinivasa Reddy...has successfully completed

Hand Writing course during the Academic

Student Class III..B.A [EPJ]

Year ...2022.....

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Hand Writing**

This is certificate that Ms./Mrs./Mr. Bhanu Namagiri.....

S/o, D/o Namagiri V. Satyanarayana has successfully completed

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Year 2022.....

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Malladi.....Sweety.....

S/o, D/o...Malladi...Sankara Rao.....has successfully completed

Hand Writing course during the Academic

Student Class III. B.S.C [MPCS]

Year2022.....

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Hand Writing

This is certificate that Ms./Mrs./Mr. X.Sri.Pujitha Akhilandeswari.

S/o, D/o. Yerragadda Srinath.....has successfully completed

Hand Writing course during the Academic

Student Class III..B.A [EPJ].

Year2022.....

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**Certificate course in
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This is certificate that Ms./Mrs./Mr. Tenneti. Sai Kishore.....

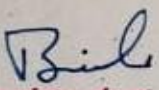
S/o, D/o. Tenneti. Srinivas Rao..... has successfully completed


Hand Writing course during the Academic

Student Class .III. B:A [EP]

Year2022.....

SRR&CVR Government Degree College [A], Vijayawada.


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This is certificate that Ms./Mrs./Mr. Gampa Hemalathar.....

S/o, D/o. Gampa Subba Rao..... has successfully completed

Hand Writing course during the Academic

Student Class III...B.A [EPJ]

Year ..2022.....

SRR & CVR Government Degree College [A] Vijayawada

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This is certificate that Ms./Mrs./Mr. Byneedu Rajeswari.....

S/o, D/o Byneedu Venkateswara Rao has successfully completed

Hand Writing course during the Academic

Student Class III...B..Com. Computer Applications.

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This is certificate that Ms./Mrs./Mr. Rowthu Sirisha.....

S/o, D/o. Rowthu Ramana..... has successfully completed

Hand Writing course during the Academic

Student Class III. B.Com. Computer Application.

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Certificate course in
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This is certificate that Ms./Mrs./Mr. Salluri: Sujatha.....

S/o, D/o: Salluri: Venkatapathi..... has successfully completed

Hand Writing course during the Academic

Student Class III..B.A. [EPJ]

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This is certificate that Ms./Mrs./Mr. Maroju. Naga Haritha.....

S/o, D/o. M. Gnanana Parvathi Kumar has successfully completed

Hand Writing course during the Academic

Student Class III. B. Com. Computer Applications.

Year ...2022.....

SRRECVR Government Degree College [A], Vijayawada.

Bini
Instructor - Calligraphy

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Nallathoti. Premchend.....

S/o, D/o. Nallathoti. Srinivas.....has successfully completed

Hand Writing course during the Academic

Student Class III. B.S.C. [MPCS]

Year2022.....

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This is certificate that Ms./Mrs./Mr. Manikyam. Pushpa. Latha.....

S/o, D/o... Manikyam. Pushpa Raju... has successfully completed

Hand Writing course during the Academic

Student Class III. B.S.C [MPCS]

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This is certificate that Ms./Mrs./Mr. Dubbaku... Keerthi.....

S/o, D/o.. Dubbaku.. Adiramudu..... has successfully completed

Hand Writing course during the Academic

Student Class III. B.Sc [MPCs]

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Instructor - Calligraphy

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**Certificate course in
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This is certificate that Ms./Mrs./Mr. Kaza... Rajeswari.....

S/o, D/o... Kaza... Siva Sankara Rao... has successfully completed

Hand Writing course during the Academic

Student Class III.B.Sc [MPCs]

Year 2022.....

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Instructor - Calligraphy

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This is certificate that Ms./Mrs./Mr. Ampolu... Lavanya.....

S/o, D/o.. Ampolu... Appala Naidu..... has successfully completed

Hand Writing course during the Academic

Student Class III. B.Sc [MPC]

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This is certificate that Ms./Mrs./Mr. Kommuri.. Sai Ramya.....

S/o, D/o.. Kommuri.. Narasimha Rao has successfully completed

Hand Writing course during the Academic

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**Certificate course in
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This is certificate that Ms./Mrs./Mr. Mohammad..Shahin.....

S/o, D/o.. Mohammad..Basheer..... has successfully completed

Hand Writing course during the Academic

Student Class III.B.Sc [MPCs]

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This is certificate that Ms./Mrs./Mr. Sampara.. Bhavitha.....

S/o, D/o... Sampara... Satyanarayana has successfully completed

Hand Writing course during the Academic

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Year...2022.....

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This is certificate that Ms./Mrs./Mr. Bonu Hemalatha.....

S/o, D/o... Bonu Chinnaiah..... has successfully completed

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This is certificate that Ms./Mrs./Mr. Shaik. Iliyaz.....

S/o, D/o. Shaik. Ismail..... has successfully completed

Hand Writing course during the Academic

Student Class III. B. Com. Computer Applications.

Year 2022.....

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Bilal
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**Certificate course in
Hand Writing**

This is certificate that Ms./Mrs./Mr. Kotti...Manasa.....

S/o, D/o...Kotti...Ravindra Kumar has successfully completed

Hand Writing course during the Academic

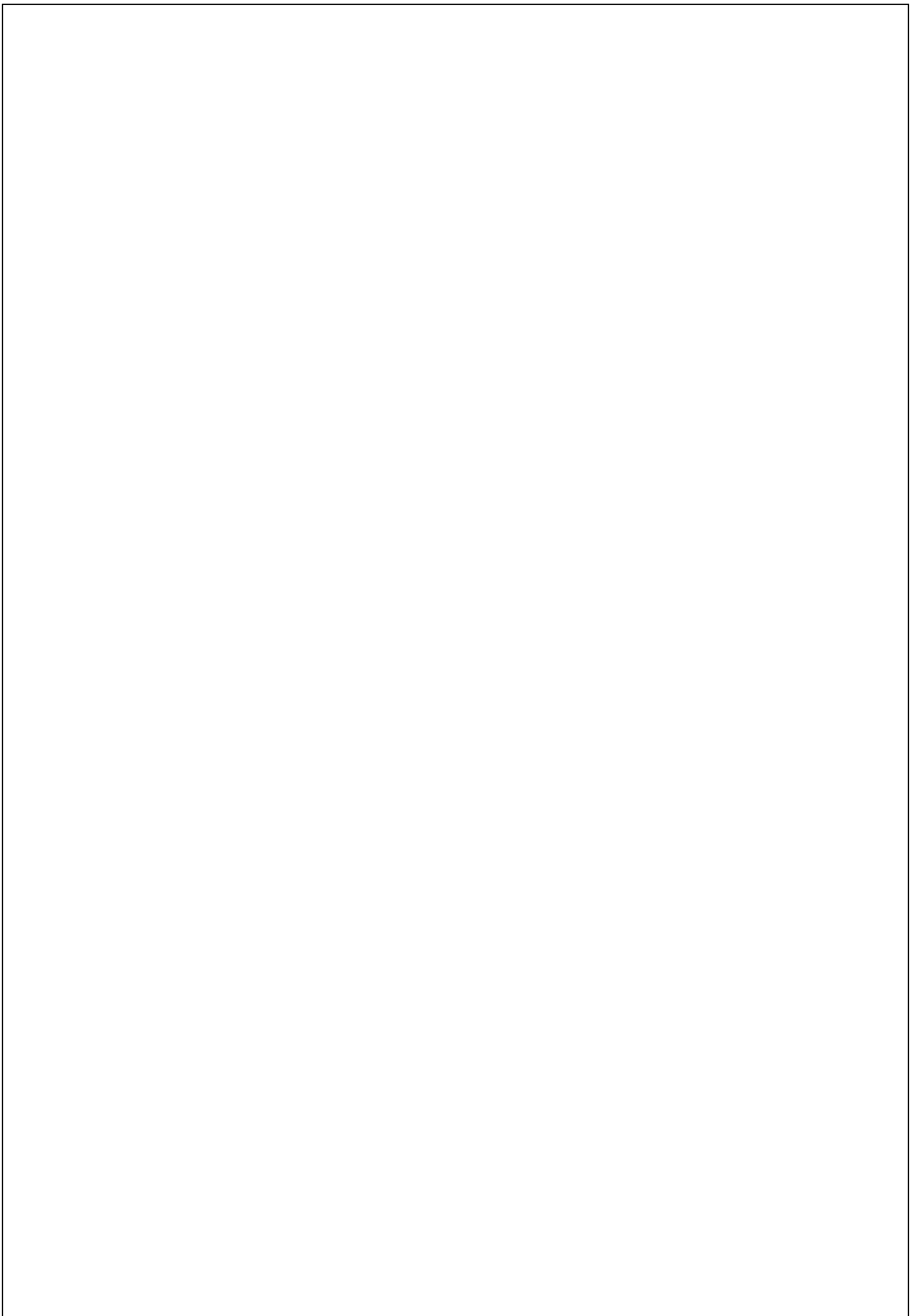
Student Class III..B..Com. Computer Applications.

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Bil
Instructor - Calligraphy

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Daggupati..Harileela..

S/o, D/o...Daggupati..Guruwardhan has successfully completed
Rao.

Hand Writing course during the Academic
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Biel
Instructor - Calligraphy

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This is certificate that Ms./Mrs./Mr. Dulla...Venkatesh.....

S/o, D/o...Dulla...Srinu.....has successfully completed

Hand Writing course during the Academic

Student Class III...B.Com. Computer Applications.

Year2022.....

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr Nandi: Sai Siva Rama Krishna.

S/o, D/o Nandi: Srinivas Rao..... has successfully completed

Hand Writing course during the Academic

Student Class III B.A [EPS]

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This is certificate that Ms./Mrs./Mr. Jamandlamudi. Vijaya Madhuri

S/o, D/o. Jamandlamudi. Kumar. Vijay.....has successfully completed

Hand Writing course during the Academic

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This is certificate that Ms./Mrs./Mr. Shaik. Sharmi.....

S/o, D/o. Shaik. Babji..... has successfully completed

Hand Writing course during the Academic

Student Class III. B.A. [EPJ]

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr... Kundeti - Anitha.....

S/o, D/o... Kundeti Venkata Ratnam has successfully completed

Hand Writing course during the Academic

Student Class III... B.Com. Computer Applications.

Year ... 2022.....

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Hand Writing

This is certificate that Ms./Mrs./Mr. Mohammed Haseena.....

S/o, D/o. Mohammed Haneef..... has successfully completed

Hand Writing course during the Academic

Student Class III..B..Com Computer Applications.

Year2022.....

SRRECVR Government Degree College [A], Vijayawada.

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**Certificate course in
Hand Writing**

This is certificate that Ms./Mrs./Mr. Kodali Raghunadh.....

S/o, D/o. K. Venkata Satyanarayana.... has successfully completed

Hand Writing course during the Academic

Student Class III... B. Com. Computer Applications.

Year .. 2022

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Prithvi
Instructor - Calligraphy

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This is certificate that Ms./Mrs./Mr... Korada Suguna.....

S/o, D/o... Korada Ramu..... has successfully completed

Hand Writing course during the Academic

Student Class III.B.Com Computer Applications.

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This is certificate that Ms./Mrs./Mr. Katta Jagadish.....

S/o, D/o. Katta. Kostaiah.....has successfully completed

Hand Writing course during the Academic

Student Class III..B..Com Computer Applications.

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Hand Writing**

*This is certificate that Ms./Mrs./Mr. P. Rama Krishna Reddy.
S/o, D/o...P. Janardhana Reddy..has successfully completed*

*Hand Writing course during the Academic
Student Class III..B..Com - Computer Applications.
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**Certificate course in
Hand Writing**

This is certificate that Ms./Mrs./Mr. *Tampani..Tyothirmai.....*

S/o, D/o.. *Tampani..Srinivas.....* has successfully completed

Hand Writing course during the Academic

Student Class *III..B..Com* Computer Applications

Year *...2022.....*

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This is certificate that Ms./Mrs./Mr... Chevuri : Eswari.....

S/o, D/o... Chevuri : Apparao..... has successfully completed

Hand Writing course during the Academic

Student Class III... B.Com - Computer Applications.

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Hand Writing

This is certificate that Ms./Mrs./Mr. Sayyad Habiba.....

S/o, D/o. Sayyad Hussain..... has successfully completed

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Student Class III. B. Com. Computer Applications.

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Certificate course in
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This is certificate that Ms./Mrs./Mr...Tummuru Lokesh Reddy.

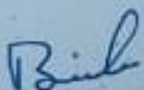
S/o, D/o...Tummuru Siva Satyanarayana has successfully completed

Hand Writing course during the Academic

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Certificate course in
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This is certificate that Ms./Mrs./Mr. Yarasi... Eshwar... Vyas.....

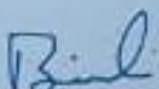
S/o, D/o... Yarasi... Haripathuluru..... has successfully completed

Hand Writing course during the Academic

Student Class III... B.A. [EPJ]

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Uriviti. Sravana Lakshmi.

S/o, D/o. Uriviti. Srinivas Rao.....has successfully completed

Hand Writing course during the Academic

Student Class III. B.Com. Computer Applications.

Year ...2022.....

SRR&CVR Government Degree College [A], Vijayawada

Basil
Instructor - Calligraphy

Director
LINDA INSTITUTE OF CALLIGRAPHY
& GRAPHIC DESIGN TRAINING CENTRE
HYDRABAD 500 012.

Calligraphy and Graphic Design
Training Centre - New Delhi

Regd.No.: 418 / 2016

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Year ...2022.....

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Bail
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[Signature]
LIMPA INSTITUTE OF CALLIGRAPHY
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Director

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Uriviti. Sravana Lakshmi.

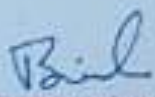
S/o, D/o. Uriviti. Srinivas. Rao..... has successfully completed

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Student Class III. B.Com. Computer Applications.

Year ...2022.....

SRR&CVR Government Degree College [A], Vijayawada


Instructor - Calligraphy


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HYDRABAD - 500 012.
Director

Calligraphy and Graphic Design
Training Centre - New Delhi

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. K. Hema Bhargavi.....

S/o, D/o. K. Adi Narayan.....has successfully completed

Hand Writing course during the Academic

Student Class III B.Com - Computer Applications.

Year..2022.....

SRR&CVR Government Degree College [A], Vijayawada

Bil
Instructor - Calligraphy

Director
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& GRAPHIC DESIGN TRAINING CENTRE
HYDERABAD - 500 012.

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Training Centre - New Delhi

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Velupukonda Krupa Indu...
S/o, D/o... Velupukonda Veerachari... has successfully completed
Hand Writing course during the Academic
Student Class III..B..Com, Computer Applications.
Year2022.....

SRR & CVR Government Degree College [A], Vijayawada

Bill
Instructor - Calligraphy

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& GRAPHIC DESIGN TRAINING CENTRE
HYD Director 012.

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Training Centre - New Delhi

Regd.No.: 418 / 2016

ISO 9001 : 2008 Certified Organization

Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Gentela : Siva.....

S/o, D/o. Gentela : Venkatesh..... has successfully completed

Hand Writing course during the Academic

Student Class III... B.A [EPJ]

Year ... 2022.....

SRR&CVR Government Degree College [A], Vijayawada.

Bil
Instructor - Calligraphy

[Signature]
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& GRAPHIC DESIGN TRAINING CENTRE
HYDERABAD - 500 012
Director

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Training Centre - New Delhi

Regd.No.: 418 / 2016

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Routhu: Lokesh.....

S/o, D/o: Routhu: Chinni.....has successfully completed

Hand Writing course during the Academic

Student Class III B.Com. Computer Applications.

Year ..2022.....

SRR & CVR Government Degree College [A] Vijayawada

Basil
Instructor - Calligraphy

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HYDERABAD - 500 012.
Director

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Training Centre - New Delhi

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Pothureddy..... Ramya.....

S/o, D/o..... P. Malleswara Rao..... has successfully completed

Hand Writing course during the Academic

Student Class III... B.Com. Computer Applications.

Year .. 2022.....

SRR & CVR Government Degree College [A], Vijayawada

B. S. Reddy
Instructor - Calligraphy

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HYDERABAD - 500 012.
Director

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Training Centre - New Delhi

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Pilleli. Adilakshmi.....

S/o, D/o.....Pilleli.....ArjunaRao.....has successfully completed

Hand Writing course during the Academic

Student Class III...B.Com. Computer Applications.

Year ...2022.....

SRR&CVR Government Degree College(A), Vijayawada.

Pil
Instructor - Calligraphy

[Signature]
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& GRAPHIC DESIGN TRAINING CENTRE
HYDERABAD - 500 012
Director

**Calligraphy and Graphic Design
Training Centre - New Delhi**

Regd.No.: 418 / 2016

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**Certificate course in
Hand Writing**

This is certificate that Ms./Mrs./Mr. P. Leela Ratna Mani.....

S/o, D/o. Peddi Reddy Raghava..... has successfully completed

Hand Writing course during the Academic

Student Class III..B..Com Computer Applications.

Year ...2022.....

SRRECVR Government Degree College[A], Vijayawada

Bail
Instructor - Calligraphy

Director
**LIMRA INSTITUTE OF CALLIGRAPHY
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Training Centre - New Delhi

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Lingapagu Rakesh.....

S/o, D/o...L. Rajini Kanth.....has successfully completed

Hand Writing course during the Academic

Student Class III B. Com. Computer Applications.

Year ...2022.....

SRR & CVR Government Degree College [A], Vijayanwada

Bill
Instructor - Calligraphy

Director
LIMRA INSTITUTE OF CALLIGRAPHY
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Training Centre - New Delhi

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Tenke Naga Vasantha.....

S/o, D/o.....Tenke.....Satyanarayana....has successfully completed

Hand Writing course during the Academic

Student Class III B:A [EPJ].

Year ...2022.....

SRR & CVR Government Degree College [A], Vijayawada.

Bini
Instructor - Calligraphy

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Director

Calligraphy and Graphic Design
Training Centre - New Delhi

Regd.No.: 418 / 2016

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Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Shaik. Baji.....

S/o, D/o. Shaik. Meeravali..... has successfully completed

Hand Writing course during the Academic

Student Class III B.Com Computer Applications.

Year ...2022.....

SRR & CVR Government Degree College [A], Vijayawada.

Bil
Instructor - Calligraphy

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HYDRABAD 500 012.

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Regd.No.: 418 / 2016

ISO 9001 : 2008 Certified Organization

Certificate course in
Hand Writing

This is certificate that Ms./Mrs./Mr. Depalli, Krishna Veni.....

S/o, D/o..Depalli...Krishna.....has successfully completed

Hand Writing course during the Academic

Student Class .III..B:Sc [MPCs]

Year2022.....

SRR & CVR Government Degree College(A), Vijayawada.

Bail
Instructor - Calligraphy

Director
LIMRA INSTITUTE OF CALLIGRAPHY
& GRAPHIC DESIGN TRAINING CENTRE
HYDRABAD 5012.

THANK YOU