# SIR C R REDDY COLLEGE FOR WOMEN

(Affiliated to AdikaviNannaya University, Rajahmahendravaram)

Vatluru (Post), Pedapadu Mandal, Elurui Dist., (A.P)

# PG ENTRANCE COACHING

# For

# M.Sc., (MATHEMATICS)

**Date:** 27-June-2022 to 21 -July-2022

**Time:** 8:30 am to 9:30 am

&

4.30pm to 5.30pm

**Organized by**

## CAREER GUIDANCE & PLACEMENT CELL

2021–2022

# INDEX

# About Programme

The Career Guidance and Placement Cell at Sir C R Reddy College for Women organized PG entrance coaching classes in Mathematics, these classes were conducted by senior faculty members who specialize in the respective subjects at the college.

**Program: PG Entrance Coaching for MATHEMATICS**

**Subjects Covered:**

- M.Sc. (Mathematics)

**Target Audience:**

- III B.Sc. students aspiring for postgraduate studies (M.Sc.)

**Duration:**

- June 27th, 2022, to July 21st, 2022 (25 days)

**Time:**

- 8:30 AM to 9:30 AM & 4.30PM to 5.30PM

**Resource Persons:**

- **S.S.L. Sabari Kumari (HOD)**
- **M.B. Rajyalakshmi**

**Organized By:**

- Career Guidance and Placement Cell at Sir C R Reddy College for Women

**Program Overview:**

- Specifically designed coaching program focusing on APPGCET 2022 for M.Sc. aspirants.
- Conducted by seasoned faculty members from Sir C R Reddy College, each specializing in Mathematics.
- Comprehensive curriculum comprising subject-specific lectures, problem-solving sessions, practice tests, and exam strategy workshops.
- Tailored content to acquaint students with the APPGCET exam pattern, syllabi, and effective preparation methodologies.

**Benefits for III B.Sc. Students:**

- Early guidance and preparation assistance for M.Sc. entrance exams.
- Exposure to exam patterns, aiding in better preparedness.
- Access to experienced faculty for subject-specific guidance and doubt resolution.

- Enhanced readiness for M.Sc. studies by initiating preparation in advance.

This coaching program aims to support B.Sc. students in their aspirations for pursuing postgraduate studies by providing structured coaching specifically aligned with the requirements of the APPGCET 2022 examination.

## Learning Objectives and Learning Outcomes

**Learning Objectives:**

1. Subject Mastery: To facilitate a comprehensive understanding of the core concepts and subject-specific knowledge required for M.Sc. entrance exams.
2. Exam Familiarity: To familiarize students with the exam pattern, question types, and syllabi specific to APPGCET 2022.
3. Problem-Solving Skills: To enhance problem-solving abilities and critical thinking necessary to tackle complex questions in the entrance exams.
4. Time Management: To equip students with effective time management strategies for the exam and optimize their performance within the stipulated time frame.
5. Exam Strategy: To provide guidance on effective exam strategies, including question selection, prioritization, and efficient answering techniques.

**Expected Outcomes:**

1. Strong Foundation: Students are expected to build a strong foundational understanding of their respective subjects, providing a basis for advanced studies.
2. Improved Performance: Enhanced problem-solving skills and a better grasp of exam patterns can result in improved performance in mock tests and the actual entrance exam.
3. Confidence: Through regular practice and guidance, students are likely to gain confidence in handling diverse questions and scenarios during the examination.
4. Effective Preparation: Students should be better prepared to face the challenges of the entrance exams by utilizing learned strategies and subject-specific knowledge.
5. Readiness for Postgraduate Studies: The coaching program aims to prepare students adequately for the rigors of postgraduate studies in their chosen fields.

# Permission Letter

## Permission Letter

20-06-2022
Eluru

To
The Principal
Sir C.R.Reddy College for Women
Eluru

**Subject: Request to grant permission to conduct P.G Entrance test Coaching Classes to final year students.**

This is to bring to your kind notice that, Career Guidance and Placement Cell is planning to conduct P.G Entrance test Coaching Classes for interested III B.Sc/B.Com students specializing life Sciences, Mathematics, Physics, Chemistry, Commerce .

The coaching classes aim is to provide additional support and guidance to our ambitious students who aspire to excel in their respective fields and we believe that providing coaching classes with in our college will not only benefit our students but also contribute to the overall academic excellence of our institution. These classes will be conducted for about 30 days i.e., from 27th June 2022 to 21st July 2022. The duration of these classes will be from 8:30 am to 9:30 am and 4:30 pm to 5:30 pm. I kindly request your approval for this initiative, as it aligns with our commitment to fostering academic excellence and preparing our students for successful futures.

Thanking you Madam,

Permitted

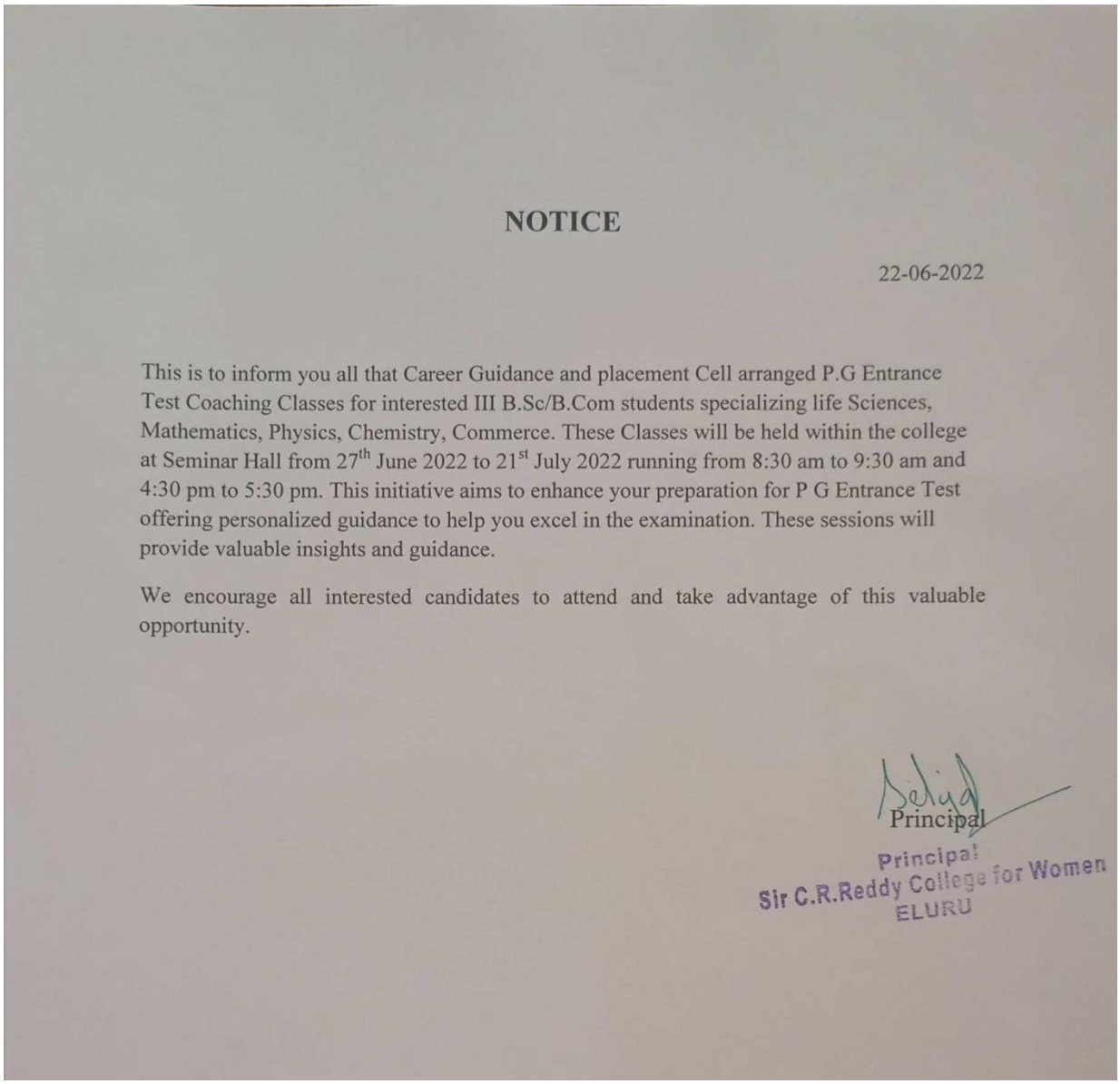
Principal
Sir C.R.Reddy College for Women
ELURU

Yours Faithfully,

(Coordinator)

Career Guidance and Placement Cell

# Notice to Students



**NOTICE**

22-06-2022

This is to inform you all that Career Guidance and placement Cell arranged P.G Entrance Test Coaching Classes for interested III B.Sc/B.Com students specializing life Sciences, Mathematics, Physics, Chemistry, Commerce. These Classes will be held within the college at Seminar Hall from 27th June 2022 to 21st July 2022 running from 8:30 am to 9:30 am and 4:30 pm to 5:30 pm. This initiative aims to enhance your preparation for P G Entrance Test offering personalized guidance to help you excel in the examination. These sessions will provide valuable insights and guidance.

We encourage all interested candidates to attend and take advantage of this valuable opportunity.

Principal

Principal
Sir C.R.Reddy College for Women
ELURU

## Course Structure

- Differential equations of first order and first degree
- Differential equations of first order but not of first degree
- Higher order linear differential equations
- Three-Dimensional Geometry
- Differentiation and Integration
- System of linear differential equations
- Groups
- Rings
- Real Numbers
- Linear Algebra
- Multiple Integral and Vector calculus

# 1. DIFFERENTIAL EQUATIONS

## STUDY MATERIAL

★ **Differential equation:** An equation involving differentials or one dependent variable and its derivatives with respect to one or more independent variables is called a differential equation.

★ **Ordinary differential equation:** A differential equation is said to be ordinary if the derivatives in the equation have reference to only a single independent variable.

***Ex:*** 1. $\left(\frac{dy}{dx}\right)^3 - 4\left(\frac{dy}{dx}\right)^2 + 7y = \cos x$

2. $\frac{d^2y}{dx^2} + 5x\left(\frac{dy}{dx}\right)^2 - 6y = \log x$

★ The general form of an ordinary differential n is

$F(x, y, \frac{dy}{dx}, \frac{d^2y}{dx^2}, \ldots\ldots \frac{d^ny}{dx^n}) = 0$

$F(x, y, y^1, y^2, \ldots\ldots y^n) = 0$

★ **Partial differential equation:** A differential equation is said to be partial if the derivatives in the equation have reference to two or more independent variables.

***Ex:*** 1. $(y+z)\frac{\partial z}{\partial x} + (z+x)\frac{\partial z}{\partial y} = x + y$

2. $4\frac{\partial^2 u}{\partial x^2} + 2\frac{\partial^2 u}{\partial x \partial y} + \frac{\partial^2 u}{\partial y^2} = x - y$

★ **Order of a differential equation:** A differential equation is said to be of order n, if the $n^{th}$ derivative is the highest derivative in that equation.

★ **Degree of a differential equation:**

Let $F(x, y, y^1, \ldots\ldots y^n) = 0$ be a differential equation of order n. If the given differential equation is a polynomial in $y^n$, then the highest degree of $y^{(n)}$ is defined as the degree of the differential equation.

***Ex:*** a $\frac{d^2y}{dx^2} = \left[1 + \left(\frac{dy}{dx}\right)^2\right]^{3/2}$

The order and degree of this equation is 2.

★ **General Solution of a differential equation:** Let $F(x, y, y^{(1)}, y^{(2)}, \ldots\ldots y^{(n)}) = 0$ be a differential equation of order n. If $\phi(x, y, c_1, c_2, \ldots c_n) = 0$ where $c_1, c_2, \ldots c_n$ are n independent arbitrary constants, is a solution of the given differential equation, then it is called the general solution of the given differential equation.

★ **Particular solution of a differential equation:** The solution obtained by giving particular values to arbitrary constants in the general solution of the differential equation $F(x, y, y^{(1)}, \ldots y^{(n)}) = 0$ is called a particular solution of given differential equation.

★ **Singular solution of a differential equation:** An equation $\psi(x,y) = 0$ is called singular solution of the differential equation $F(x, y, y^{(1)}, \ldots\ldots y^{(n)}) = 0$ if

i. $\psi(x, y) = 0$ is a solution of the given differential equation.

ii. $\psi(x, y) = 0$ does not contain arbitrary constant and

iii. $\psi(x, y) = 0$ is not obtained by giving particular values to arbitrary constants in the general solution.

★ An equation of the form $\frac{dy}{dx} = f(x,y)$ is called a differential equation of the first order and of the first degree.

★ The following four methods for solving $\frac{dy}{dx} = f(x,y)$

i. Variable separable

ii. Homogeneous equations and equations reducible to homogenous form.

iii. Exact equations and which can be made exact by the use of integrating factors

iv. Linear equations and Bernoulli's form.

★ **Existence and uniqueness theorem:** Let S denote the rectangular region defined by $|x-x_0| \le a$ and $|y-y_0| \le b$, a region with the point $(x_0, y_0)$ as its centre. If $f(x, y)$ and $\frac{\partial f}{\partial y}$ are continuous functions of x and y in a region S of the xy–plane and if $P(x_0, y_0) \in S$, then there exists one and only one function say $\phi(x)$, which in some neighbourhood of P, is

solution of the differential equation $\frac{dy}{dx}=f(x, y)$ and is such that $\phi(x_0)=y_0$.

★ **Homogeneous Factors:** A function f(x,y) is said to be a homogeneous function of degree n in x and y if $f(kx,ky)=k^n f(x,y) \forall k$, n is a constant.

★ **Homogeneous differential equation:** A differential equation $\frac{dy}{dx}=f(x,y)$ of first order and first degree is called homogeneous in x and y if the function f (x, y) is a homogeneous function of degree zero in x and y.

★ **Non–Homogeneous equation of the first degree in x and y:** The equation $\frac{dy}{dx}=f(x, y)$ can be written as $M(x, y)\,dx+N(x, y)\,dy=0$ (or) $N(x,y)\frac{dy}{dx}=M(x, y)$, if $a_1, b_1, c_1, a_2, b_2, c_2$, are constants and $c_1 \neq 0$ or $c_2 \neq 0$ then $(a_2x+b_2y+c_2)\frac{dy}{dx}=a_1x+b_1x+c_1$ is called a non-homogeneous differential equation of the first degree in x and y.

★ **Exact differential equation:**

Let $M(x, y)\,dx + N(x, y)\,dy = 0$ be a first order and first degree differential equation where M, N are real valued functions defined for some real x, y on some rectangle $R: |x-x_0| \le a, |y-y_0| \le b$. Then the equation $Mdx + Ndy = 0$ is said to be an exact differential equation if there exists a function f (x, y) having continuous first partial derivatives in R such that

$$\frac{\partial f}{\partial x}dx + \frac{\partial f}{\partial y}dy = Mdx + Ndy.$$

★ If M (x, y), N (x, y) are two real valued functions which have continuous first partial derivatives on some rectangle $R: |x - x_0| \le a, |y - y_0| \le b$, then a necessary and sufficient condition for the differential equation $Mdx + Ndy = 0$ to be exact in R, is $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$ in R.

★ **Integrating Factors:** Let $M(x,y)\,dx+N(x, y)\,dy = 0$ be not an exact differential equation. If $Mdx+Ndy= 0$ can be made exact by multiplying it with a suitable function $\mu(x, y) \neq 0$ then $\mu(x, y)$ is called an integrating factor of $Mdx + Ndy = 0$.

★ **Method to find integrating factors.**

i. $d(xy) = xdy+ydx$

ii. $d(x/y) = \frac{ydx-xdy}{y^2}$

iii. $d(y/x) = \frac{xdy-ydx}{x^2}$

iv. $d\left(\frac{x^2+y^2}{2}\right) = xdx+ydy$

v. $d\left[\log\left(\frac{y}{x}\right)\right] = \frac{xdy-ydx}{xy}$

vi. $d\left[\tan^{-1}\left(\frac{y}{x}\right)\right] = \frac{xdy-ydx}{x^2+y^2}$

vii. $d\left[\log\sqrt{x^2+y^2}\right] = \frac{xdx+ydy}{x^2+y^2}$

viii. $d\left(\frac{e^x}{y}\right) = \frac{ye^xdx-e^xdy}{y^2}$

ix. $d\left(\frac{x^2}{y}\right) = \frac{2yxdx-x^2dy}{y^2}$

x. $d(y^2/x) = \frac{2xydy-y^2dx}{x^2}$

★ $M(x, y)\,dx + N(x, y)\,dy = 0$ is a homogeneous differential equation and $Mx+Ny \neq 0$ then $\frac{1}{Mx+Ny}$ is an integrating factor of $Mdx+Ndy = 0$.

**Note:** If $M_x+N_y = 0$ then $M/N = y/x$, then the equation $mdx+ndy = 0$ reduces to $ydx - xdy = 0$ and its solutin is $x/y = c$.

★ If the equation $Mdx+Ndy = 0$ is of the form $yf(xy)\,dx+xg(xy)\,dy=0$ and $Mx-Ny \neq 0$ then $\frac{1}{Mx-Ny}$ is an integrating factor of $Mdx+Ndy=0$.

★ If there exists a continuous single variable function f(x) such that $\frac{\partial M}{\partial y}-\frac{\partial M}{\partial x}=N f(x)$ then $e^{\int f(x)\,dx}$ is an integrating factor of $Mdx+Ndy = 0$.

**Note:** 1. $\frac{1}{N}\left(\frac{\partial M}{\partial y}-\frac{\partial N}{\partial x}\right)$ is a function of x alone

2. $e^{\log f(x)} = f(x)$ and $e^{\log x^k} = x^k$ where k is constant.

★ If there exists a continuous and differential single variable function g(y) such that $\frac{\partial N}{\partial x}-\frac{\partial M}{\partial y}=Mg(y)$.

Then $e^{\int g(y)dy}$ is an integrating factor of $Mdx+Ndy=0$.

★ **Linear differential equations of first order:** An equation of the form $\frac{dy}{dx}+P(x)\,y = Q(x)$ where P(x) and Q(x) are defined over an interval I, is called a linear differential equation of first order in y.

If $Q(x) = 0$ for all x in I then the corresponding equation $\frac{dy}{dx}+P(x)y = 0$ is called a homogeneous linear equation of first order. If $Q(x) \neq 0$ for some x in I,

then $\frac{dy}{dx}+P(x)\,y = Q(x)$ is called a non homogeneous linear equation of first order.

★ If P and Q are differentiable functions of x over an interval I then $y \exp(\int P dx) = \int (Q \exp((\int P dx))\, dx + c$ is the general solution of the equation $\frac{dy}{dx} + Py = Q$.

★ **Bernoulli's equation:** An equation of the form $\frac{dy}{dx}+Py = Qy^n$ is called Bernoulli's equation if P, Q are continuous functions of x on an interval I and n is a real number.

★ **Equations reducible to first order and first degree by $p = \frac{dy}{dx}$ substitution:** Consider the differential equation $f\left(\frac{d^2y}{dx^2}, \frac{dy}{dx}, x\right) = 0$ not containing y directly.

By putting $\frac{dy}{dx} = p$ the equation can be transformed as $F\left(\frac{dp}{dx}, p, x\right) = 0$ which is of first order and first degree.

★ An equation of the form $f(x, y, p) = 0$, where p is not of first degree, is called a differential equation of first order and not of first degree. An equation of the form $p^n+p_1(x, y)\,p^{n-1}+ \ldots + p_{n-1}(x, y)\,p+p_n(x, y) = 0$ is called the general first order equation of degree n (>1).

★ **Clairaut's equation:** Differential equation of the form $y = px+\phi(p)$ is called Clairaut's equation.

★ **Orthogonal trajectory:** A curve which cuts every member of a given family of curves at a right angle is called an orthogonal trajectory of the given family.

★ The integral curves of the differential equation $F(x, y, -1/y^1) = 0$ are the orthogonal trajectories of the family or integral curves of $F(x,y,y^1) = 0$.

★ If $f(r, \theta, c) = 0$, c being the parameter is the polar equation of the family of curves, then the differential equation of the family of its orthogonal trajectories is $F\left(r, \theta, -r^2\frac{d\theta}{dr}\right) = 0$.

★ An equation of the form

$\frac{d^ny}{dx^n}+P_1(x)\frac{d^{n-1}y}{dx^{n-1}}+P_2(x)\frac{d^{n-2}y}{dx^{n-2}} + \ldots+P_n(x)\,y = Q(x)$.

Where $P_1(x)$, $P_2(x)$, .... $P_n(x)$ and $Q(x)$ are all continuous and real valued functions of x on an interval I, is called a linear differential equation of order n.

*Ex:* 1. $\frac{d^3y}{dx^3}+x^3\frac{d^2y}{dx^2}+x^2\frac{dy}{dx}+2x\,y^2 = \cos x$

★ **Differential operator:** Let the differential operator $\frac{d}{dx}$ be denoted by D and the differential operators $\frac{d^2}{dx^2}, \frac{d^3}{dx^3}, \ldots\ldots \frac{d^n}{dx^n}$ be denoted by $D^2, D^3, \ldots. D^n$ when applied on function y of x yield.

$Dy = \frac{dy}{dx}$, $D^2y = \frac{d^2y}{dx^2}$, $D^ny = \frac{d^ny}{dx^n}$.

The polynomial $D^n + P_1D^{n-1}+P_2D^{n-2}+\ldots\ldots +P_n$ in D is called a differential operator of order n and it is denoted by f (D). $f(D) = D^n+P_1D^{n-1}+P_2D^{n-2}+\ldots. +P_n$.

★ An equation of the form

$\frac{d^ny}{dx^n}+P_1\frac{d^{n-1}y}{dx^{n-1}}+ \ldots: + P_n(y) = Q(x)$.

Where $P_1, P_2, \ldots P_n$ are real constants and Q (x) is a continuous function of x defined on an interval I, is called a linear equation of order n with constant coefficients.

★ If $f(D) = D^n+P_1D^{n-1}+P_2D^{n-2} + \ldots\ldots + P_n$ where $P_1, P_2, \ldots\ldots P_n$ are real constants, then $f(D)e^{mx} = f(m)e^{mx}$ where m is a constant.

★ If $m_1$ is a root of the equation $f(m) = 0$ then $y = e^{m_1x}$ is a solution of $f(D)\,y = 0$.

★ If $f(D) \equiv D^n+P_1D^{n-1}+ \ldots\ldots P_n$ where $P_1, P_2, \ldots. P_n$ are real constants then $e^{mx}\,[f(D)y] = f(D-m)\,e^{mx}y$. Where y is a function of x.

★ **Auxillary equation of f(D)y=0:** The algebraic equation $f(m) = 0$ i.e. $m^n+P_1m^{n-1} + \ldots. + P_n = 0$. Where $P_1, P_2, \ldots\ldots P_n$ are real constants is called the auxillary equation of $f(D)\,y = 0$.

**Note:** $c_1 e^{m_1x} + c_2 e^{m_2x} + \ldots + c_n e^{m_nx}$ is the complementary functions of $f(D)\,y = Q(x)$.

★ **Inverse operator:** The operator $D^{-1}$ is called the inverse of the differential operator D.

★ If Q is a funciton of x defined on an interval I, then $\frac{1}{f(D)}Q$ is also some function of x, containing no arbitrary constant. When f(D) operates on this function, the result is the function Q.

★ If Q is any function of x defined on an interval I and $\alpha$ is a constant, then a particular value of $\frac{1}{D-\alpha}Q$ is equal to $e^{ax}\int Qe^{-ax}\,dx$.

★ If $\frac{1}{D-\beta}$, $\frac{1}{D-\alpha}$ are two inverse operators then we

# OBJECTIVE BITS

1. The degree of $\left\{\frac{d^2y}{dx^2}+\left(\frac{dy}{dx}\right)^2\right\}^{\frac{3}{2}}=\frac{d^2y}{dx^2}$

1. 3 2. 2 3. 1 4. $\frac{3}{2}$

2. The order and degree of the $\left(\frac{d^3y}{dx^3}\right)^{\frac{1}{2}}-2\left(\frac{dy}{dx}\right)^{\frac{1}{4}}+xy=0$ respectively are

1. 3, 4 2. 4, 3 3. 3, 5 4. 3, 2

3. The degree of $y=\sin\left(\frac{dy}{dx}\right)$

1. 1 2. 2
3. 3 4. not defined

4. The differential equation for the solution $y=e^x(A\cos 2x + B\sin 2x)$ is

1. $y''+y'+5y=0$ 2. $y''-2y'+5y=0$
3. $y''+2y'-5y=0$ 4. None of these

5. The degree of the differential equation which has the solution $y=Ae^x+Be^{-2x}+Ce^{3x}$

1. 1 2. 2
3. 3 4. None of these

6. The differential equation of straight lines on xy plane is

1. $\frac{d^2y}{dx^2}+\frac{dy}{dx}=0$ 2. $\frac{d^2y}{dx^2}-\frac{dy}{dx}=0$
3. $\frac{dy}{dx}=0$ 4. $\frac{d^2y}{dx^2}=0$

7. The differential equation straight lines which are passing through origin on xy plane.

1. $y=x\frac{dy}{dx}$ 2. $y=\frac{dy}{dx}$
3. $y+x\frac{dy}{dx}$ 4. None of these

8. The general solution of $\frac{dy}{dx}=\sqrt{\frac{1-y^2}{1-x^2}}$ is

1. $\sin^{-1}x-\sin^{-1}y=c$ 2. $\sin^{-1}x+\sin^{-1}y=c$
3. $\sin h^{-1}x+\sin h^{-1}y=c$ 4. $\sin h^{-1}x-\sin h^{-1}y=c$

9. The solution of $\frac{dy}{dx}=\frac{f(x)}{(x+y)^2}-1$ is

1. $(x+y)^2=3\int f(x)dx+c$ 2. $(x+y)^3=3\int f(x)dx+c$
3. $(x+y)^3=\int f(x)dx+c$ 4. None of these

10. The solution of $x\cos^2y\,dx+\tan y\,dx=0$ is

1. $-x^2+\tan^2y=c^2$ 2. $x^2-\tan^2y=c^2$
3. $x^2+\tan^2y=c^2$ 4. None of these

11. The solution of the differential equation is $\frac{dy}{dx}=(4x+y+1)^2$

1. $4x+y+1=2\tan(2x+c)$ 2. $4x+y+1=\tan(2x+c)$
3. $4x+y+1=2\tan(x+c)$ 4. None of these

12. The solution of differential equation $(2x^2+x)\frac{dy}{dx}=1+2x$ at $y=2, x=1$ is

1. $y=\log x-2$ 2. $y=\log x+4$
3. $y=\log x+3$ 4. None of these

13. The solution of $(e^y+1)\cos x\,dx+e^y\sin x\,dy=0$ is

1. $(1+e^y)\sin x=c$ 2. $(1+e^y)\cos x=c$
3. $(1-e^y)\sin x=c$ 4. $(1-e^y)\cos x=c$

14. The solution of the equation $y\frac{dy}{dx}=xe^{x^2+y^2}$

1. $e^x+e^y=c$ 2. $e^x-e^y=c$
3. $e^{x^2}+e^{y^2}$ 4. None of these

15. The degree of homogeneous function $\frac{\sqrt[3]{x}+\sqrt[3]{y}}{x+y}$ is

1. 3 2. 2 3. $-\frac{2}{3}$ 4. $-\frac{3}{2}$

16. The solution of the equation $xdy-ydx=\left(\sqrt{x^2+y^2}\right)dx$

1. $y-\sqrt{x^2+y^2}=cx$ 2. $y+\sqrt{x^2+y^2}=cx$
3. $y-\sqrt{x^2+y^2}=cx^2$ 4. $y+\sqrt{x^2+y^2}=cx^2$

17. The solution of the equation $\frac{dy}{dx}=\frac{y}{x+ye^{\frac{2x}{y}}}$

1. $\log c^2x^2=\exp(2x/y)$ 2. $2(c+\log y)=\exp(x/y)$
3. $2(c+\log y)=\exp(x/2y)$ 4. None of these

18. The solution of the equation $\frac{dy}{dx}=\frac{y}{x}+\tan\frac{y}{x}$ is

1. $e^{x/y}\log(cx+1)$ 2. $e^{y/x}\log(cx+1)=0$
3. $e^{x/y}\log(cx+1)=0$ 4. None of these

19. Substitution to solve the equation $y^2dy=x(x\,dy-y\,dx)\,e^{x/y}$ is

1. $x=vy$ 2. $y=vx$
3. 1 or 2 4. None of these

20. The nature of differential equation $(x+y-1)\frac{dy}{dx}=x-y+3$ is

1. Homogeneous equation
2. Heterogeneous equation
3. Exact equation
4. Legendre equation

# 2. THREE DIMENSIONAL GEOMETRY

## STUDY MATERIAL

★ Let P = (x, y, z) and OP (x,y,z) any two points. The length or magnitude or norm or modulus of the vector OP = |OP| = $\sqrt{x^2+y^2+z^2}$

★ Distance between two points $(x_1, y_1, z_1)$ and $(x_2, y_2, z_2)$ is $\sqrt{[(x_2-x_1)^2+(y_2-y_1)^2+(z_2-z_1)^2]}$

★ **Unit vector:** If A, B and A ≠B are points, then $\frac{AB}{|AB|}$ is the unit vector along $\overleftrightarrow{AB}$ in the direction from A to B.

★ If A = $(x_1,y_1,z_1)$, B = $(x_2,y_2,z_2)$ then the unit vector along $\overleftrightarrow{AB}$ in the direction from A to B

$$= \frac{*(x_2-x_2,y_2-y_1,z_2-z_1)}{\sqrt{[(x_2-x_1)^2+(y_2-y_1)^2+(z_2-z_1)^2]}}$$

★ If P = a = $(a_1,b_1,c_1)$, Q = b = $(a_2,b_2,c_2)$, P ≠Q ≠ 0 and $(\vec{OP}, \vec{OQ})$ = (a, b) = then

$$\cos\theta = \frac{a.b}{|a|\,|b|} = \frac{a_1a_2+b_1b_2+c_1c_2}{\sqrt{\left(a_1^2+b_1^2+c_1^2\right)}\sqrt{\left(a_2^2+b_2^2+c_2^2\right)}}$$

If a, b are parallel vectors then

$a_1 : b_1 : c_1 = a_2 : b_2 : c_2$ (or) $a_1 = b_1 : b_2 = c_1 : c_2$

If a, b are perpendicular vectors ⇔ a.b = 0

⇔ $a_1a_2 + b_1b_2 + c_1c_2 = 0$

★ Projection of b on a (≠0) is - b.e where c is $\frac{b.a}{|a|}$ the unit vector in the direction of a.

★ If a, b are two non-zero or non parallel vectors then a×b = |a| |b| in s (a, b) n where n is a unit vector perpendicular to the plane containing a, b so tht a, b, n form a right handed system.

★ If P = a = $(a_1, b_1, c_1)$ Q = b = $(a_2, b_2, c_2)$ (P ≠Q ≠0) and = $(\vec{OP}, \vec{OQ})$ = (a, b) = θ then

$$\sin\theta = \frac{|a\times b|}{|a|\,|b|} = \frac{\sqrt{(b_1c_2-b_2c_1,c_1a_2-c_2a_1,a_1b_2-a_2b_1)}}{\sqrt{(a_1^2+b_1^2+c_1^2)(a_2^2+b_2^2+c_2^2)}}$$

★ If ABC is a triangle = then the area of Δ ABC

$= \frac{1}{2}$ |AB×AC| Square units

Area of Δ ABC = 0 ⇔ A, B, C are collinear

★ A, B, C, D are coplanar points. If ABCD is a parallelogram then the area of the parallelogram

$= |AB\times AD|$ or $\frac{1}{2}$ |AC×BD| Square units

★ If ABCD is a quadrilateral Then the area of the quadilateral = $\frac{1}{2}$ |AC×BD| Square units

★ a, b, c are three non-coplanar vectors. If V is the volume of the parallelopiped with adjacent sides a, b, c then V = |(a.b.c)| cubic units. If V is the volume of the tetrahedron with adjacent sides a, b, c then V= $\frac{1}{6}$ |abc| cubic units. If any two of a, b, c are parallel (a, b, c) = 0.

★ a, b, c are three non-zero, non-parallel vectors a,b,c are coplanar ⇔ (a,b,c) = 0.

★ A, B are two distinct points. Distance of P form $\overline{AB} = \frac{|AP\times AB|}{|AB|}$

★ If A = $(x_1, y_1, z_1)$, B = $(x_2,y_2,z_2)$ and P is a point dividing the line segment AB in the ratio $\lambda_1 : \lambda_2$ $(\lambda_1 + \lambda_2 \neq 0)$ then

$$P = \left[\frac{\lambda_2x_1+\lambda_1x_2}{\lambda_1+\lambda_2}, \frac{\lambda_2y_1+\lambda_1y_2}{\lambda_1+\lambda_2}, \frac{\lambda_2z_1+\lambda_1z_2}{\lambda_1+\lambda_2}\right]$$

★ If $(x_r, y_r, z_r)$ r = 1, 2, 3 are the vertices of a triangle then its medians are concurrent and the point of concurrence trisects any median of the triangle.

★ If A = $(x_1,y_1,z_1)$, B = $(x_2,y_2,z_2)$, C = $(x_3,y_3,z_3)$, D = $(x_4,y_4,z_4)$ are the vertices of the tetrahedron. ABCD then the line segments joining the vertices to their respective centroids of opposite faces are concurrent and the point of concurrence divides each line segment in the ratio 3:1.

★ If l, m, n are d.cs. of a line, then $l^2 + m^2 + n^2 = 1$.

★ If P = $(x_1,y_1,z_1)$, Q = $(x_2,y_2,z_2)$ then $x_2-x_1$, $y_2-y_1$, $z_2-z_1$ are d.r.s of $\overleftrightarrow{PQ}$.

★ If $\vec{AB}$ is a ray with d.cs. $l$, m, n and P = $(x_1,y_1,z_1)$ Q = $(x_2,y_2,z_2)$ are two points then the projection of PQ on $\overleftrightarrow{AB}$ the direction AB is $(x_2-x_1)\,l+(y_2-y_1)\,m+(z_2-z_1)\,n$.

# OBJECTIVE BITS

**1. The direction cosines of the line joining the points (4, 3, –5) and (–2, 1, –8) are**

1. 2, 4, –13
2. 6, 2, 3
3. $\frac{6}{7}, \frac{2}{7}, \frac{3}{7}$
4. None of these

**2. The direction cosines of the normal to the plane 2x–3y+6z = 7 are**

1. $\frac{1}{3}, \frac{2}{3}, \frac{7}{3}$
2. $\frac{2}{7}, \frac{-3}{7}, \frac{6}{7}$
3. 2, –3, 6
4. None of these

**3. The angle between the planes 3x–4y+5z = 0 2x–y–2z = 5 is**

1. $\frac{\pi}{3}$
2. $\frac{\pi}{2}$
3. $\frac{\pi}{6}$
4. None

**4. The line $\frac{x-\alpha}{l} = \frac{y-\beta}{m} = \frac{z-\gamma}{0}$ is perpendicular to**

1. x–axis
2. y–axis
3. z–axis
4. None of these

**5. The line $\frac{x-2}{3} = \frac{y-3}{4} = \frac{z-4}{5}$ is**

1. Parallel to
2. Perpendicular to
3. Lying in the plane 2x+y–2z=3
4. None of these

**6. The foot of the perpendicular from (3,–1, 11) to the line $\frac{x}{2} = \frac{y-2}{3} = \frac{z-3}{4}$ is**

1. (0, 2, 3)
2. (2, 3, 4)
3. (2, 5, 7)
4. (3, 4, 7)

**7. The position vector of the ends of the diameter of a sphere are $\bar{a}$, $\bar{b}$, $\bar{r}$ is the position vector of a point on the sphere. The equation of the sphere drawn on the diameter is**

1. $(\bar{r}-\bar{a}).(\bar{r}-\bar{b}) = 0$
2. $(\bar{r}-\bar{a}) \times (\bar{r}-\bar{b}) = 0$
3. $(\bar{r}-\bar{a}) = (\bar{r}-\bar{b}) = 0$
4. $\frac{\bar{r}-\bar{a}}{\bar{r}-\bar{b}} = 0$

**8. x (x–a) + y (y–b) + z (z–c) = 0 is**

1. a pairs of planes
2. sphere
3. plane
4. Line

**9. Equation of the x–axis is**

1. x = 0
2. y+z = 0
3. y=0, z=0
4. y–z = 0

**10. ax+by+cz = 0 is parallel to**

1. x = 0
2. by = cz
3. None of (1) and (2)
4. Both (1) and (2)

**11. $x^2 + y^2 = 9 - z^2$ is a**

1. sphere
2. a pair of planes
3. None of (1) and (2)
4. both (1) & (2)

**12. The interior of the sphere $x^2+y^2+z^2 = 12$ is**

1. (4, 0, 0)
2. (1, 1, 2)
3. (1, 2, 3)
4. (2, 3, 4)

**13. by + cz + d = 0 is perpendicular to**

1. by = cz
2. x = 0
3. by + cz = 0
4. y = z

**14. The radius of the sphere $x^2+y^2+z^2-ax-by-cz=0$ is**

1. $\frac{a+b+c}{4}$
2. $\frac{\sqrt{a}}{2} + \frac{\sqrt{b}}{2} + \frac{\sqrt{c}}{2}$
3. $\frac{\sqrt{a^2+b^2+c^2}}{2}$
4. $\frac{\sqrt{a}+\sqrt{b}+\sqrt{c}}{4}$

★ $|x| \geq k \Leftrightarrow x \geq k$ or $x \leq -k$

★ If $p < a < q$ and $\delta = \min\{|a-p|, |a-q|\}$

★ **Finite and Infinite subsets of R:** A non–empty subset S of R is said to be finite if there exists a bijective function.

**Ex:** Q is considered to be a finite set. A subset of R which is not finite is called infinite set.

$Z^+$, Z, Q, R are infinite sets.

★ **Boundedness of subsets of R Aggregate:**

A non-empty subset A of R is called an aggregate.

★ **Upper Bound:** A subset S of R is said to be bounded above if there exists $k_1 \in R$, such that $x \in S \Rightarrow x \leq k_1$. The number $k_1$ is called an upper bound of S.

★ **Least upper bound or supremum:** If 'u' is an upper bound of an aggregate 'S' and any real number less than 'u' is not an upper bound of S, then 'u' is called least upper bound (or) supremum of (S) (l.u.b).

★ **Lower bound:** An aggregate S is said to be bounded below, if there exists $k_2 \in R$ such that $x \in S \Rightarrow x \geq k_2$. The number $k_2$ is called a lower bound of S.

★ **Greatest lower bound or infimum:** If 'v' is a lower bound of an aggregated 'S' and any real number greater than 'v' is not a lower bound of S, then 'v' is called greatest lower bound (g.l.b) or infimum of S.

**Note:**Supremum is defined only for the aggregates which are bounded above and infimum is defined only for the aggregates which are bounded below.

★ If an aggregate is bounded above and supremum exists, then it is unique.

★ **Boundedness:** An aggregate 'S' is said to be bounded if it is both bounded below and bounded above.

★ The aggregate S is bounded $\Leftrightarrow$ there exist u and $v \in R$ such that $v \leq x \leq u$ for all $x \in S$, or

$\Leftrightarrow$ there exists $k \in R^+$ such that $|x| < k$ for all $x \in R$.

★ The difference u–v is called oscillation of an aggregate S.

**Note:** S is bounded set $\Leftrightarrow$ there exict u, $v \in R$ so that $S \subset (v, u)$.

★ If 'v' is a lower bound and 'u' is upper bound of an aggregate S then $v \leq u$.

★ If 'u' is an upper bound of an aggregate S and $u \in S$ then $u = \sup S$.

**Note:** If 'u' is a lower bound of an aggregate S and $v \in S$ then $v = \inf S$.

★ If 'u' is the supremum of 'S' and $y < u$ then there exists $x \in S$ such that $y < x \leq u$.

**Note:** If 'v' is infimum of 'S' and $y > v$ then there exists $x \in S$ such that $y > x \geq v$.

★ **Greatest and least members of an aggregate:** If the supremum of an aggregate 'S' is a member of S, then it is called the greatest member of S.

If the infimum of an aggregate 'S' is a member of S, then it is called the least member of S.

The greatest member of an aggregate 'S' is the supremum. But the supremum of 'S' need not be the greatest member.

**Note:** i. A bounded aggregate 'S' need not have the greatest or the least member.

ii. $S = \{x: 1 \leq x < 2\}$ has no greatest member though it is bounded above.

iii. $S = \{x: 1 < x \leq 2\}$, though bounded below has no least member.

★ **The Completeness Axiom:** Every non empty set of real numbers which is bounded above has supremum (This is also called least upper bound axioms).

★ The set 'R' satisfies

i. Field axioms

ii. Order axioms

iii. Completeness axioms and hence 'R' is a complete ordered field.

★ Let A, B two non-empty subsets of 'R' such that $(a \in A \Rightarrow a \leq b \ \forall \ b \in B)$.If B has supremum then 'A' has supremum and Sup A $\leq$Sup B.

★ The set $Z^+$ of positive integers is unbounded above.

★ For every real rumber x there is a positive integer n such that $n > x$.

★ **Dedekind's theorem:** If L, U are two subsets of 'R' such that

i. $L \neq \phi$, $U \neq \psi$ (each set has atleast one element).

ii. $L \cup U = R$ (each real number is either in 'L' or in 'U')

iii. $x \in L$, $y \in U \Rightarrow x < y$ (each member of 'L' is smaller than every member of U)

Then the subset 'L' has the greatest member or the subset 'U' has the least member, there exists $\alpha \in R$ such that $x < \alpha \Rightarrow x \in L$, $y > \alpha \Rightarrow y \in U$.

★ **Archimedian property:** If $x, y \in R$ and $x > 0$, there exists $n \in Z^+$ such that $nx > y$.

★ For every $x \in R^+$, there exist $m, n \in Z$ such that $m < x < n$.

★ For every $x \in R$, there exists unique $n \in Z^+$ such that $n \leq x < n+1$, i.e, every real number lies between two consecutive integers.

# 5. VECTOR DIFFERENTIATION-VECTOR CALCULUS

## STUDY MATERIAL

★ **Intervals:**

$(a, b) = \{x \mid x \in R, a < x < b\}$

$(a, b] = \{x \mid x \in R, a < x \le b\}$

$[a, b) = \{x \mid x \in R, a \le x < b\}$

$[a, b] = \{x \mid x \in R, a \le x \le b\}$

$[a, \infty) = \{x \mid x \in R, x \ge a\}$

$(a, \infty) = \{x \mid x \in R, x > a\}$

$(-\infty, a) = \{x \mid x \in R, x < a\}$

$(-\infty, a] = \{x \mid x \in R, x \le a\}$

$(-\alpha, \alpha) = \{x \mid x \in R\}$

★ **Limit of a vector function:** Let f(t) be a vector function over the domain S and $a \in S$. If there exists a vector L such that for each $\varepsilon > 0$, if is possible to find $S > 0$ where

$0 < |t - a| < S \Rightarrow |f(t) - L| < \varepsilon$

then the vector L is called the limit of f(t) as t tends to a. This is denoted as

$$\lim_{t \to a} f(t) = L$$

★ **Continuity of vector function:** Let f be a vector function on an interval I, and $a \in I$. Then f is said to be continuous as a, if.

$$\lim_{t \to a} f(t) = f(a)$$

★ If f and g are continuous then $f \pm g$, f.g and $f \times g$ are also continuous.

★ **Derivative:** Let f be a vector function on an interval I and $a \in I$ then

$$\lim_{t \to a} \frac{f(t) - f(a)}{t - a}$$

If it exists is called the derivative of at a

★ If f is differentiable at t = a then it is continuous at t = a

If f is continuous at t = a then it need not be differentiable at that point.

If f is differentiable on an interval I and $t \in I$ then the derivative of f at t is denoted by $\frac{df}{dt}$

★ Let f be constant vector function in the interval I and $a \in I$.

Then $f^1(a) = a$

★ Let A and B be two differentiable vector functions of scalar variable t over the domain S, then

$$\frac{d}{dt}(A \pm B) = \frac{dA}{dt} \pm \frac{dB}{dt}$$

★ Let A and B be differentiable vector functions of scalar variable f over domain S, then

$$\frac{d}{dt}(A.B) = \frac{dA}{dt}.B + A.\frac{dB}{dt}$$

$$\frac{d}{dt}(A \times B) = \frac{dA}{dt} \times B + A \times \frac{dB}{dt}$$

★ Let A, B and C be three differentiable vector functions of scalar variable t over a domain S. Then.

1. $\frac{d}{dt}[ABC] = \left[\frac{dA}{dt}BC\right] + \left[A\frac{dB}{dt}C\right] + \left[AB\frac{dC}{dt}\right]$

2. $\frac{d}{dt}[A \times (B \times C)] = \frac{dA}{dt} \times (B \times C) + A \times \left(\frac{dB}{dt} \times C\right) + A \times \left(B \times \frac{dC}{dt}\right)$

★ Let f be differentiable vector fanction and $\phi$ a scalar differentiable function on a common domain S. Then $\phi$ f is differentiable on S and

$$\frac{d}{dt}(\phi f) = \phi \frac{df}{dt} + \frac{d\phi}{dt} f$$

★ If $f = f_1(t)\,i + f_2(t)\,j + f_3(t)\,k$, where $f_1(t)$, $f_2(t)$ and $f_3(t)$ are the cartesian components of the vector f, then

$$\frac{df}{dt} = \frac{df_1}{dt}i + \frac{df_2}{dt}j + \frac{df_3}{dt}k$$

★ If A is a differentiable vector function of a scalar t over a domain S, then $\frac{d}{dt}(A^2) = 2A\frac{dA}{dt}$

★ Vector with constant magnitude. The necessary and sufficient condition that f(t) is a vector of constant magnitude is f. $\frac{df}{dt} = 0$.

★ Let s be a scalar function defined over the domain S and differentiable at $t \in S$. If t is a vector function differentiable at s(t) in the range of functions then the composite function f(s) is differentiable at t and

$f'[s(t)] = f'[s(t)]S^1t$

$$\frac{df}{dt} = \frac{df}{ds}\frac{ds}{dt}$$

# 6. GROUP THEORY

## STUDY MATERIAL

★ **Natural Numbers (N):** The numbers which are starting with '1' and incremented by 1 are called as natural numbers.

$N = \{1, 2, 3, 4, -----\}$

★ **Whole numbers (W):** The numbers which are starting with '0' and incremented by '1' are called as whole numbers.

$W = \{0, 1, 2, 3, -----\}$

★ **Integers:** $Z = \{-, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, ---\}$

★ **Rational numbers (Q):**

$Q = \{\frac{p}{q}, q \neq 0, p, q \in I\}$ **Ex:** $\frac{1}{2}, \frac{3}{4}, \frac{1}{4}, \frac{2}{3}, .....$

★ **Real numbers:** The combination of surds and rational numbers are called as real numbers

**Ex:** $\frac{1}{2}, \frac{3}{4}, \frac{1}{4}, \frac{1}{5}$

★ **Complex numbers:** $C = \{a + ib; i = \sqrt{-1}; a, b \in R\}$

**Ex:** 3 + i5, 4 + i6

**Surds ($Q^1$):** The numbers which are not real numbers are called surds.

**Ex:** $\sqrt{2}, \sqrt{3}, \sqrt{5}, \sqrt{2} + \sqrt{3}$

★ **Closure Law:** o is a binary operation on a set S. If for $a, b \in S$, $a \circ b \in S$, then o is said to be closure in S.

**Ex:** (N, +), (I ,+), (R, +) and (R, *) are satisfied the closure law.

★ **Commutative Law:** o is a binary operation in a non–empty set S. If for $a, b \in S$, aob = boa then o is said to be commutative in S.

**Ex:** (N, +), (N, *), (I, +), (R, +) and (R, *) are the examples for commutative law.

★ **Associative Law:** o is a binary operation in a non-empty set S. For $a, b, c \in S$, (aob)oc = ao (boc) then o is said to be associative in S.

**Ex:** (N, +), (N,*), (R, +), (I, +) and (R, *)

★ **Algebraic structure:** A non-empty set a equipped with one or more binary operations is called an algebraic structure or an algebraic system.

**Ex:** (N, +), (Q, –), (R, +) are algebraic structures.

★ **Semi group:** An algebraic structure (S, o) is called a semigroup if the binary operation o is associative in S.

1. (N, +) and (Q,–) are the examples for semigroup.
2. (P(s), n) is a semigroup where P(s) is the power set of non-empty set S.
3. (P(s), U) is a semigroup where P(s) is the power set of a non-empty set S.

★ **Identity element:** Let S be a non-empty set and o be a binary operation on S.

i. If there exists an element $e_1 \in S$ such that $e_1 o a = a$ for $a \in S$ then $e_1$ is called a left identity of S w.r.t. the operation o.

ii. If there exists an element $e_2 \in S$ such that $a o e_2 = a$ for $a \in S$ then $e_2$ is called a right identity of S w.r.t. the operation o.

iii. If there exists an element $e \in S$ such that e is both a left and a right identity of S w.r.t. o. Then e is called an identity of S.

**e.g.** 1. In the algebraic system (Z, +), the number 0 is an identity element

**e.g:** 2. In the algebraic system (R, •), the number 1 is an identity element.

★ **Monoid:** A semigroup (S, o) with the identity element w.r.t. o is known as monoid i.e., (S, o) is a monoid if S is a non-empty set and o a binary operation in S such that o is associative and there exists an identity element w.r.t. o

**e.g:** 1. (Z, +) is a monoid with the identity 0

**e.g:** 2. (Z, •) is a monoid with the identity 1

★ **Invertible element:** Let (S, o) be an algebraic structure with the identity element e in S w.r.t. o, an element $a \in S$ is said to be left invertible or left regular if there exists an element $x \in S$ such that $xoa = e$. Then x is called a left inverse of a w.r.t. o.

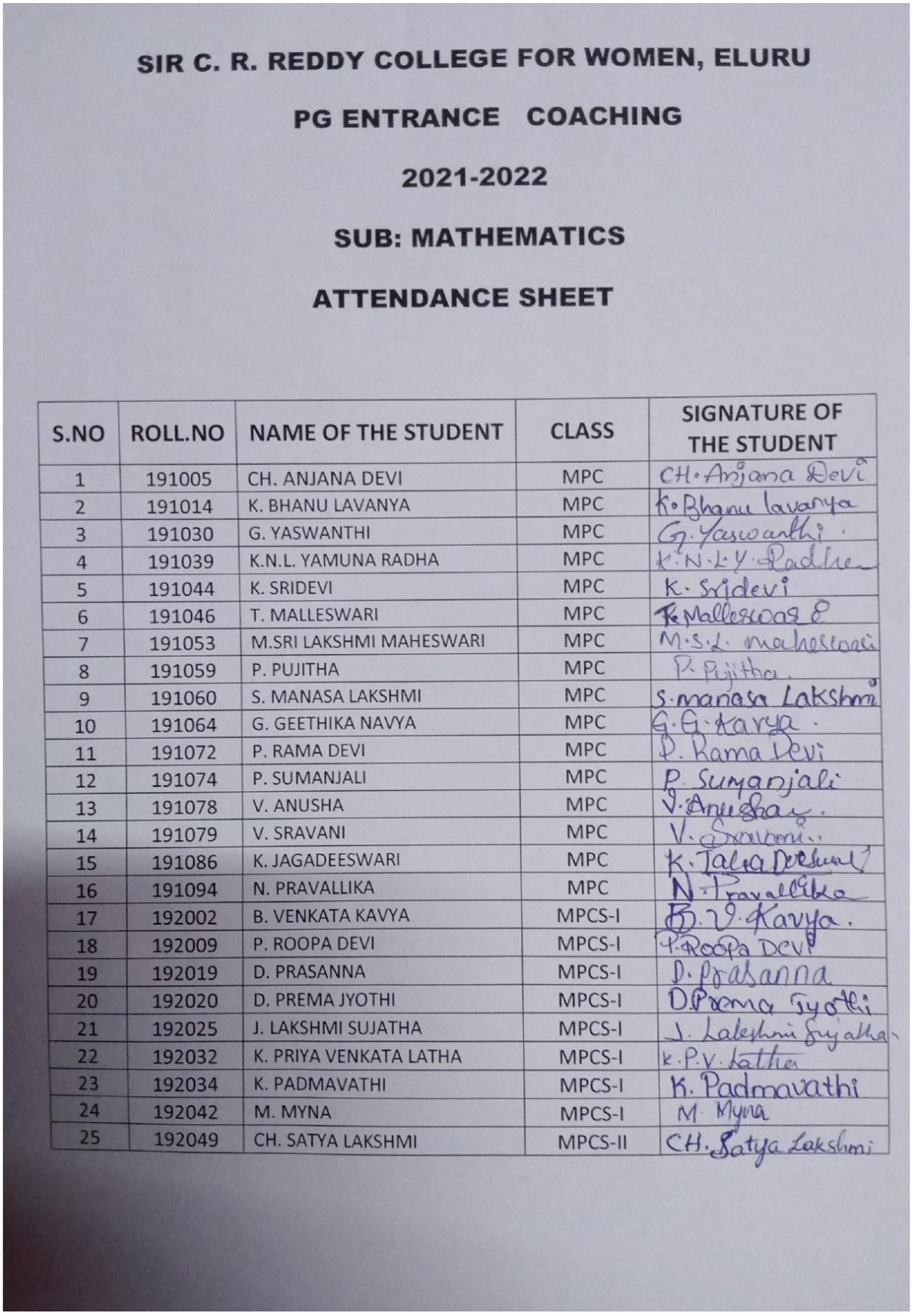
★ An element $a \in S$ is said to be right invertible or right regular if there exists an element $y \in S$ such that $aoy = e$, then y is called a right inverse of a w.r.t. o.

★ **Group:** If G is a non-empty set and o is a binary operation defined on G such that the following three laws are satisfied then (G, o) is a group.

# OBJECTIVE BITS

1. **In a group G, if o (ba $b^{-1}$) = m then 0 (a) =**
   1. m–1 2. m+1 3. m 4. None
2. **The order of cyclic (1, 2, 3 ..... (n–1), n) is**
   1. n! 2. $\frac{n!}{2}$ 3. n 4. None
3. **If G is a group and x∈G such that o(x) = 36 then 0 ($x^{10}$) is**
   1. 18 2. 10 3. 36 4. None
4. **If G = $\{0, 1, 2, 3, \ldots 2002\}_{+2003}$ then 0 (2000) is**
   1. 500 2. 1000 3. 2003 4. None
5. **If H is a subgroup of a finite group G then the Index of H in G is**
   1. 0(H) / 0(G) 2. 0(G) + 0(H)
   3. $\frac{0(G)}{0(H)}$ 4. 0(G). 0(H)
6. **If G is a group of order P (prime) then the number of generators of G is**
   1. p 2. p–1 3. p+1 4. 2
7. **If G is a group of order 2n such that a∈G, a ≠e then**
   1. $a^2 = a$ 2. $a^2 = e$ 3. $a^2 = 2n$ 4. $a^2 = 4n$
8. **If G = {±1, ±i, ±j, ±k) then 0(–i.j.k.i) = ——**
   1. 1 2. 2 3. 3 4. 4
9. **The set of permutations on n > 2 symbols is**
   1. abelian group of order n!
   2. Non-abelian group of order n!
   3. Cyclic group of order n!
   4. Non cyclic group of order n!
10. **The number of generators of an infinite cyclic group**
    1. 1 2. 2 3. 0 4. Infinite
11. **Number of generators of a cyclic group of order 5 is**
    1. 1 2. 2 3. 3 4. 4
12. **The order of i in multiplicative group {–1, 1, i, –i} is**
    1. 4 2. 3 3. 2 4. 1
13. **Klein 4 group is**
    1. abelian group 2. Non abelian group
    3. Normal subgroup 4. None of these
14. **If a finite group of order n contains an element of order n then the group must be**
    1. Cyclic group 2. Non cyclic group
    3. Quotient group 4. Non quotient group
15. **The number of elements in the alternating group $A_4$ is**
    1. 12 2. 8 3. 4 4. 5
16. **A homomorphism G→$G^1$ is an isomorphism iff the kernel consists of**
    1. The identity only 2. A normal subgroup of G
    3. A factor group of G 4. A quotient group of G

# Students List



**SIR C. R. REDDY COLLEGE FOR WOMEN, ELURU**

**PG ENTRANCE COACHING**

**2021-2022**

**SUB: MATHEMATICS**

**ATTENDANCE SHEET**

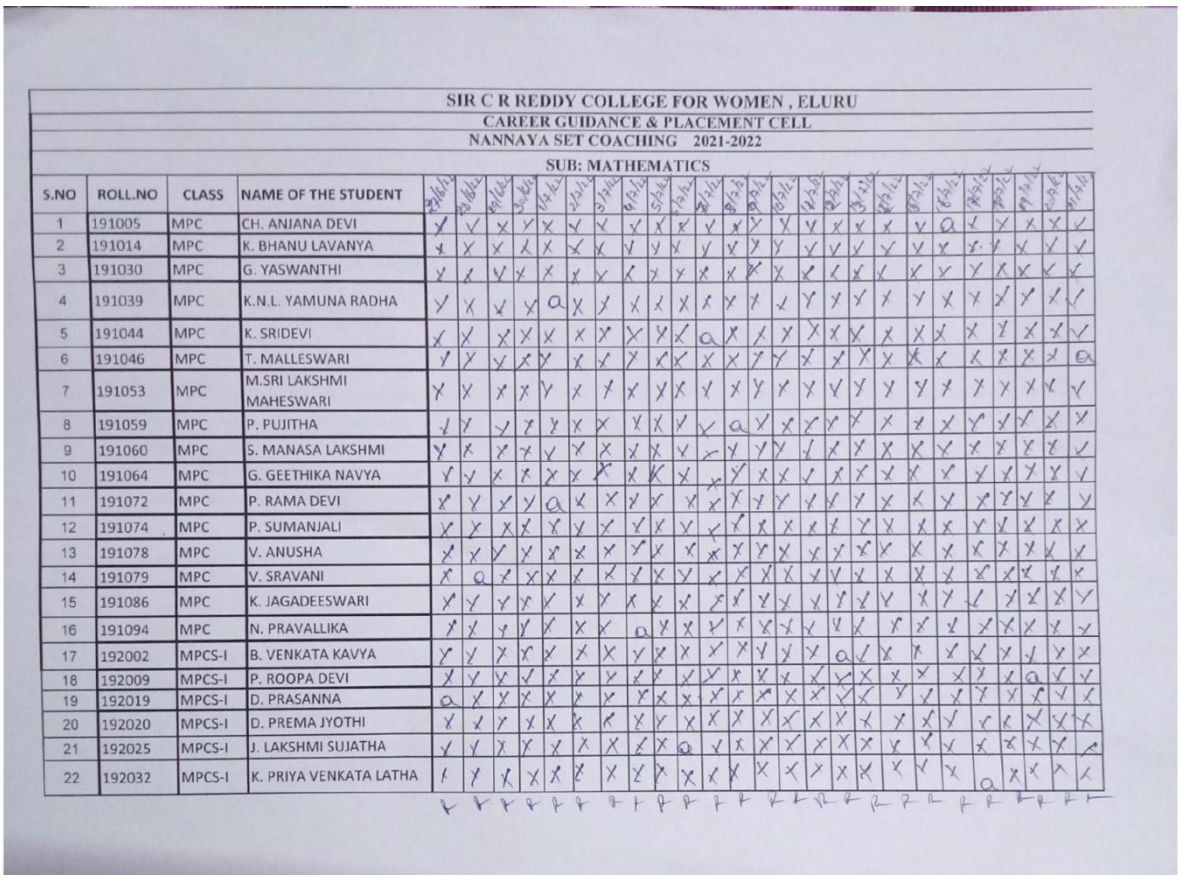
| S.NO | ROLL.NO | NAME OF THE STUDENT | CLASS | SIGNATURE OF THE STUDENT |
|---|---|---|---|---|
| 1 | 191005 | CH. ANJANA DEVI | MPC | CH. Anjana Devi |
| 2 | 191014 | K. BHANU LAVANYA | MPC | K. Bhanu lavanya |
| 3 | 191030 | G. YASWANTHI | MPC | G. Yaswanthi. |
| 4 | 191039 | K.N.L. YAMUNA RADHA | MPC | K.N.L.Y. Radha |
| 5 | 191044 | K. SRIDEVI | MPC | K. Sridevi |
| 6 | 191046 | T. MALLESWARI | MPC | T. Malleswari |
| 7 | 191053 | M.SRI LAKSHMI MAHESWARI | MPC | M.S.L. maheswari |
| 8 | 191059 | P. PUJITHA | MPC | P. Pujitha. |
| 9 | 191060 | S. MANASA LAKSHMI | MPC | S. manasa Lakshmi |
| 10 | 191064 | G. GEETHIKA NAVYA | MPC | G.G. Kavya. |
| 11 | 191072 | P. RAMA DEVI | MPC | P. Rama Devi |
| 12 | 191074 | P. SUMANJALI | MPC | P. Sumanjali |
| 13 | 191078 | V. ANUSHA | MPC | V. Anusha. |
| 14 | 191079 | V. SRAVANI | MPC | V. Sravani. |
| 15 | 191086 | K. JAGADEESWARI | MPC | K. Jagadeswari |
| 16 | 191094 | N. PRAVALLIKA | MPC | N. Pravallika |
| 17 | 192002 | B. VENKATA KAVYA | MPCS-I | B. V. Kavya. |
| 18 | 192009 | P. ROOPA DEVI | MPCS-I | P. Roopa Devi |
| 19 | 192019 | D. PRASANNA | MPCS-I | D. Prasanna |
| 20 | 192020 | D. PREMA JYOTHI | MPCS-I | D. Prema Jyothi |
| 21 | 192025 | J. LAKSHMI SUJATHA | MPCS-I | J. Lakshmi Sujatha. |
| 22 | 192032 | K. PRIYA VENKATA LATHA | MPCS-I | K.P.V. Latha |
| 23 | 192034 | K. PADMAVATHI | MPCS-I | K. Padmavathi |
| 24 | 192042 | M. MYNA | MPCS-I | M. Myna |
| 25 | 192049 | CH. SATYA LAKSHMI | MPCS-II | CH. Satya Lakshmi |

| 26 | 192055 | S. NAGA DIVYA | MPCS-II | S. Nagadivya |
|---|---|---|---|---|
| 27 | 192058 | T. CH. BHAVANI | MPCS-II | T. Ch. Bhavani |
| 28 | 192067 | A. NAGA LAKSHMI | MPCS-II | A. Naga Lakshmi |
| 29 | 192072 | P. KEERTHANA | MPCS-II | P. Keerthana |
| 30 | 192083 | R. JEEVANA JYOTHI | MPCS-II | R. Jeevana Jyothi |
| 31 | 192085 | S. SRAVANI | MPCS-II | T. Likitha Sri |
| 32 | 192089 | T. LIKITHA SRI | MPCS-II | S. Sravani |
| 33 | 192095 | V. DEVI | MPCS-II | V. Devi |
| 34 | 193049 | T. MONIKA | MSCS | T. Monika. |
| 35 | 193068 | P. JYOTHI | MSCS | P. Jyothi |
| 36 | 193072 | P. ASWINI | MSCS | P. Aswini |
| 37 | 195036 | M.HEMANI JYOTHISRI | MECS | M. Hemani Jyothisri |
| 38 | 195048 | T. JASWITHA MANORAMA | MECS | T. J. Manorama |
| 39 | 195051 | V.VENKATA RAMANA | MECS | V. Venkata Ramana |
| 40 | 196006 | G. ISWARYA | MCCS | Iswarya. G |
| 41 | 196022 | G. RAMYA | MCCS | G. Ramya |
| 42 | 196031 | K. KRISHNA TULASI | MCCS | K. Krishna Tulasi |
| 43 | 196039 | K. SOWJANYA | MCCS | K. Sowjanya. |
| 44 | 196040 | M. VARA LAKSHMI | MCCS | M. Vara lakshmi |
| 45 | 196044 | M. RUCHITHA | MCCS | M. Ruchitha. |
| 46 | 196047 | N. SWATHI | MCCS | N. Swathi |
| 47 | 196059 | S. MOUNIKA | MCCS | S. Mounika |

T. B. Rao

SIGNATURE

# Students Attendance Register



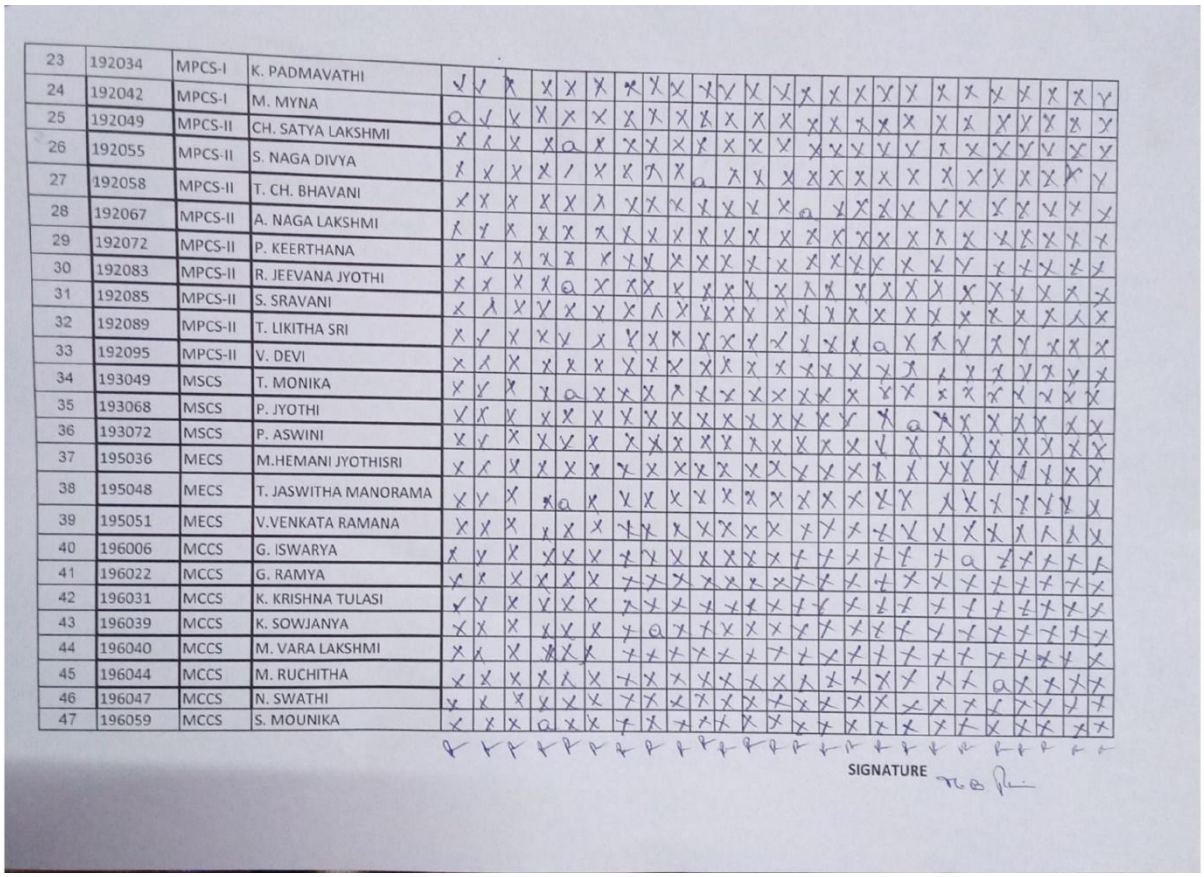
SIR C R REDDY COLLEGE FOR WOMEN , ELURU

CAREER GUIDANCE & PLACEMENT CELL

NANNAYA SET COACHING 2021-2022

SUB: MATHEMATICS

| S.NO | ROLL.NO | CLASS | NAME OF THE STUDENT |
|---|---|---|---|
| 1 | 191005 | MPC | CH. ANJANA DEVI |
| 2 | 191014 | MPC | K. BHANU LAVANYA |
| 3 | 191030 | MPC | G. YASWANTHI |
| 4 | 191039 | MPC | K.N.L. YAMUNA RADHA |
| 5 | 191044 | MPC | K. SRIDEVI |
| 6 | 191046 | MPC | T. MALLESWARI |
| 7 | 191053 | MPC | M.SRI LAKSHMI MAHESWARI |
| 8 | 191059 | MPC | P. PUJITHA |
| 9 | 191060 | MPC | S. MANASA LAKSHMI |
| 10 | 191064 | MPC | G. GEETHIKA NAVYA |
| 11 | 191072 | MPC | P. RAMA DEVI |
| 12 | 191074 | MPC | P. SUMANJALI |
| 13 | 191078 | MPC | V. ANUSHA |
| 14 | 191079 | MPC | V. SRAVANI |
| 15 | 191086 | MPC | K. JAGADEESWARI |
| 16 | 191094 | MPC | N. PRAVALLIKA |
| 17 | 192002 | MPCS-I | B. VENKATA KAVYA |
| 18 | 192009 | MPCS-I | P. ROOPA DEVI |
| 19 | 192019 | MPCS-I | D. PRASANNA |
| 20 | 192020 | MPCS-I | D. PREMA JYOTHI |
| 21 | 192025 | MPCS-I | J. LAKSHMI SUJATHA |
| 22 | 192032 | MPCS-I | K. PRIYA VENKATA LATHA |



| | | | | |
|---|---|---|---|---|
| 23 | 192034 | MPCS-I | K. PADMAVATHI | |
| 24 | 192042 | MPCS-I | M. MYNA | |
| 25 | 192049 | MPCS-II | CH. SATYA LAKSHMI | |
| 26 | 192055 | MPCS-II | S. NAGA DIVYA | |
| 27 | 192058 | MPCS-II | T. CH. BHAVANI | |
| 28 | 192067 | MPCS-II | A. NAGA LAKSHMI | |
| 29 | 192072 | MPCS-II | P. KEERTHANA | |
| 30 | 192083 | MPCS-II | R. JEEVANA JYOTHI | |
| 31 | 192085 | MPCS-II | S. SRAVANI | |
| 32 | 192089 | MPCS-II | T. LIKITHA SRI | |
| 33 | 192095 | MPCS-II | V. DEVI | |
| 34 | 193049 | MSCS | T. MONIKA | |
| 35 | 193068 | MSCS | P. JYOTHI | |
| 36 | 193072 | MSCS | P. ASWINI | |
| 37 | 195036 | MECS | M.HEMANI JYOTHISRI | |
| 38 | 195048 | MECS | T. JASWITHA MANORAMA | |
| 39 | 195051 | MECS | V.VENKATA RAMANA | |
| 40 | 196006 | MCCS | G. ISWARYA | |
| 41 | 196022 | MCCS | G. RAMYA | |
| 42 | 196031 | MCCS | K. KRISHNA TULASI | |
| 43 | 196039 | MCCS | K. SOWJANYA | |
| 44 | 196040 | MCCS | M. VARA LAKSHMI | |
| 45 | 196044 | MCCS | M. RUCHITHA | |
| 46 | 196047 | MCCS | N. SWATHI | |
| 47 | 196059 | MCCS | S. MOUNIKA | |

SIGNATURE

# REPORT

**PROGRAMME: PG Entrance COACHING FOR III B.Sc. aspirants in Mathematics subject**

In association with IQAC &In accordance with the resolution made during the meeting and documented in the minutes, it was unanimously agreed to arrange PG entrance coaching classes for interested students pursuing IIIB.Sc (Mathematics) This significant decision forms an integral part of the report on the PG entrance coaching classes in **Mathematics**subject conducted from 27-June-2022 To 21 -July-2022 from 8:30am to 09:30am & 4.30pm to 5.30pm.These classes were conducted senior and expert faculty Mrs. S. S. L.Sabari Kumari &Mrs. B. Rajya Lakshmi in Maths department.

Approximately 47 motivated students actively participated in the coaching sessions These meticulously organized classes aimed to prepare the students comprehensively for the upcoming PG entrance examinations scheduled in the month of Sep 2022. The coaching sessions were diligently conducted from 8:30 AM to 09:30 AM & 4.30PM to 5.30PM, adhering to a structured curriculum meticulously designed to equip students with the essential skills and knowledge required for success in the examination.

The outcomes of these coaching classes have been highly encouraged.09 students were qualified in the exam. Few students showcased exceptional performance, securing remarkable pg. ranks demonstrating both their commitment and the effectiveness of the coaching program.

The successful arrangement of these coaching classes aligns directly with the decision made during the meeting These sessions facilitated a conducive learning environment, significantly contributing to the preparedness and success of the students preparing for the PG entrance examination.

Their dedication has been instrumental in empowering our students for academic success.

## RANK CARDS

PM

# APPGCET-2022

Post Graduate Common Entrance Tests

(Conducted by Yogi Vemana University, Kadapa on behalf of APSCHE)

## RANK CARD

| | | |
|---|---|---|
| Hall Ticket No. | : | 30620220881 |
| Candidate's Name | : | KORADA PADMAVATHI |
| Father's Name | : | KORADA VENKATA REDDY |
| Test Code & Paper | : | 306 : Mathematical Sciences |

| Community | Date of Birth |
|---|---|
| BC-A | 13/05/2001 |

K. padmavathi

| Course Code | Course Name |
|---|---|
| PG103 | M.A./M.Sc. Mathematics |

| | | |
|---|---|---|
| Marks Obtained | : | 56 |
| Rank | : | 145 |

| Category Wise Rank | Rank |
|---|---|
| BC-A | 25 |
| Women | 105 |

Y. Nazeer Ahammed

Convener

**INSTRUCTIONS TO THE CANDIDATE**

1. The admissions into first year of various P.G. Courses (M.A., M.Com., M.Sc., MCJ, M.J.M.C., M.Lib.I.Sc., M.Ed., M.P.Ed., M.Sc.Tech. etc) in the Academic Year 2022-23 offered by Andhra Pradesh State funded Universities and their Constituent/ Affiliated [Government and Private (Aided/Unaided)] Colleges including Minority Educational Institutions in the State will be made through a centralized web counseling. Further, the schedules will be available in websites. The qualified candidates are advised to visit the websites from time to time for further admission schedules.
   Websites: www.yogivemanauniversity.ac.in (or) www.yvu.edu.in (or) https://cets.apsche.ap.gov.in
2. The eligibility of the candidates is not verified / decided at the time of application and during the entrance test. The verification will be done only during the admissions. Hence, candidates are advised to ensure that they are eligible for the course/ subject they are applying for admission.
3. The candidates called for certificate verification must have the following original certificates /documents to upload for verification.
   I. Rank Card and Hall Ticket of APPGCET - 2022.
   II. Transfer Certificate (T.C) from the institution where the candidate has last studied.
   III. Degree certificate and complete memorandum of marks or consolidated memo of qualifying examination (the downloaded memos are not allowed). The candidate should ensure that he / she has passed the qualifying examination with requisite percent of marks without which his / her admission will not be entertained.
   IV. Secondary School or 10th std. Certificate.
   V. Bonafide certificates from 9th Class onwards or Proof of Local \ Non-Local status of the candidate as per the rules in force.
   VI. Community / Caste Certificate, if applicable.
   VII. Latest Income Certificate issued by Tahsildar on or after 01.01.2022, if applicable.
   VIII. Certificates of special categories, if applicable, and when called for admission under these categories.
   IX. Aadhaar Card.
4. In addition to the above, the candidates must also upload passport size photographs that are similar to those uploaded during the online.

# APPGCET-2022

**Post Graduate Common Entrance Tests**
**(Conducted by Yogi Vemana University, Kadapa on behalf of APSCHE)**

## RANK CARD

Hall Ticket No. : **30620220939**
Candidate's Name : **KOLAGATLA BHANU LAVANYA**
Father's Name : **KOLAGATLA RAMBABU**
Test Code & Paper : **306 : Mathematical Sciences**

| Community |
|---|
| **OC** |
| Date of Birth |
| **17/02/2002** |

| Course Code | Course Name |
|---|---|
| PG103 | M.A./M.Sc. Mathematics |

Marks Obtained : **39**
Rank : **989**

| Category Wise Rank | Rank |
|---|---|
| Women | **756** |

K. Bhanu Lavanya

Y. Nazeer Ahammed
**Convener**

### INSTRUCTIONS TO THE CANDIDATE

1. The admissions into first year of various P.G. Courses (M.A., M.Com., M.Sc., MCJ, M.J.M.C., M.Lib.I.Sc., M.Ed., M.P.Ed., M.Sc.Tech. etc) in the Academic Year 2022-23 offered by Andhra Pradesh State funded Universities and their Constituent/ Affiliated [Government and Private (Aided/Unaided)] Colleges including Minority Educational Institutions in the State will be made through a centralized web counseling. Further, the schedules will be available in websites. The qualified candidates are advised to visit the websites from time to time for further admission schedules.
   Websites: **www.yogivemanauniversity.ac.in (or) www.yvu.edu.in (or) https://cets.apsche.ap.gov.in**
2. The eligibility of the candidates is not verified / decided at the time of application and during the entrance test. The verification will be done only during the admissions. Hence, candidates are advised to ensure that they are eligible for the course/ subject they are applying for admission.
3. The candidates called for certificate verification must have the following original certificates /documents to upload for verification.
   I. Rank Card and Hall Ticket of APPGCET - 2022.
   II. Transfer Certificate (T.C) from the institution where the candidate has last studied.
   III. Degree certificate and complete memorandum of marks or consolidated memo of qualifying examination (the downloaded memos are not allowed). The candidate should ensure that he / she has passed the qualifying examination with requisite percent of marks without which his / her admission will not be entertained.
   IV. Secondary School or 10th std. Certificate.
   V. Bonafide certificates from 9th Class onwards or Proof of Local \ Non-Local status of the candidate as per the rules in force.
   VI. Community / Caste Certificate, if applicable.
   VII. Latest Income Certificate issued by Tahsildar on or after 01.01.2022, if applicable.
   VIII. Certificates of special categories, if applicable, and when called for admission under these categories.
   IX. Aadhaar Card.
4. In addition to the above, the candidates must also upload passport size photographs that are similar to those uploaded during the online.

APPGCET – 2022

Post Graduation Admissions

( Conducting by Yogi Vemana University, Kadapa and APSCHE )

| | | | |
|---|---|---|---|
| Hall Ticket No | 30620220835 | Rank | 260 |
| Candidate Name | NAGA LAKSHMI ANNAM | Father's Name | VENKATA SUBBARAO ANNAM |
| Gender | Female (F) | Caste/Region | OC/AU |

PROVISIONAL ALLOTMENT ORDER( For APPGCET-2022 CANDIDATES )

This is to inform that the options exercised by the candidate have been processed based on merit, rank, local area, gender, category, Special Reservation Category (CAP/PH/NCC/SPORTS) etc and the candidate has been allotted a seat in

**Sir C R Reddy College , (CRRC), Eluru**

**in M.A./M.Sc. Mathematics, (PG103) under BC_B_CAP_GIRLS_UR Category category.**

**Tuition Fee fixed for the college/course is Rs. 19500/-.**

**Tuition fee to be paid by the candidate at the time of admission is Rs. 19500/-.**

**Instructions to Candidates :**

1. The candidate is instructed to report by clicking on Allotment letter and Self-Reporting under Forms tab from website https://sche.ap.gov.in .

2. Take print out of two copies of joining report and report to the allotted college with all original certificates. Submit a copy of joinin


SIR C R REDDY COLLEGE, ELURU
PG COURSES (Autonomous)
Re-Accredited Continuously in Quadra Cycle with "A" Grade by NAAC, Bangaluru
An ISO 9001 : 2015 Certified institute
Ph 08812-232137, 226986
www.sircrreddycollege.ac.in
2022-2202
CHIKATI ANJANADEVI
Unique Id : 2022CRP033120004
Course : M.Sc Mathematics
Regd. No. : 4220104
Father Name : Ch Sambasivarao
Mobile No. : 6302270557
Date Of Birth : 09-10-2001
PRINCIPAL


SIR C R REDDY COLLEGE, ELURU
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An ISO 9001 : 2015 Certified institute
: 08812-232137, 226986
www.sircrreddycollege.ac.
2022-'24
K N LALITHA YAMUNA RADHA
Unique Id : 2022CRP033120021
Course : M.Sc Mathematics
Regd. No. : 4220121
Father Name : K Rammohan Rao
Mobile No. : 9603525885
Date Of Birth : 10-06-2002
PRINCIPAL

**APPGCET – 2022**

**Post Graduation Admissions**

**( Conducting by Yogi Vemana University, Kadapa and APSCHE )**

| | | | |
|---|---|---|---|
| **Hall Ticket No** | *30620221030* | **Rank** | *253* |
| **Candidate Name** | *PASUMARTHI ROOPA DEVI* | **Father's Name** | *PASUMARTHI JANENDRA KUMAR* |
| **Gender** | *Female (F)* | **Caste/Region** | *OC/AU* |

**PROVISIONAL ALLOTMENT ORDER( For APPGCET-2022 CANDIDATES )**

This is to inform that the options exercised by the candidate have been processed based on merit, rank, local area, gender, category, Special Reservation Category (CAP/PH/NCC/SPORTS) etc and the candidate has been allotted a seat in

**Acharya Nagarjuna University College, (ANUC), Guntur**

**in M.A./M.Sc. Mathematics, (PG103) under EWS_GIRLS_AU category.**

**Tuition Fee fixed for the college/course is Rs. 14930/-.**

**Tuition fee to be paid by the candidate at the time of admission is Rs. 0/-.****

****Tuition fee exempted under fee reimbursement category.**

Tution fee exempted under fee reimbursement category the students belonging to SC/ST/BC/EBC/Disabled/Minority categories will be considered for Full Reimbursement of Tuition Fee under Jagananna Vidya Deevana (RTF) scheme subject to verification and eligibility criteria prescribed by State Government of Andhra Pradesh vide G.O.M.S.NO:66 dated 08/09/2010 of Social welfare (SW.EDN.2) Dept., G.O.M.S.NO:115 dated 13/11/2019 of Social Welfare (EDN) Dept.,G.O.M.S.NO:72 dated 18/l0/2O14 of social welfare(SW.EDN.2) department, G.O.Ms.No.77 Social Welfaredept.,dated 25.12.2020 and relevant instructions issued by Social Welfare and Higher Education Dept., Govt. of A.P. from time to time. In the event of the candidate found not eligible for fee reimbursement at a later date, the candidate shall have to pay the total fee as prescribed by the Competent authority.

You are eligible for tution fee reimbursement under the Jagananna Vidya Deevana Scheme. The tuition fee will be paid to your mother s bank account in four quarters. Hence, you are requested to pay the tuition fee amount within one week to the college from the date of receiving the tution fee amount from the Government.

**Instructions to Candidates :**

1. The candidate is instructed to report by clicking on Allotment letter and Self-Reporting under Forms tab from website https://sche.ap.gov.in .

2. Take print out of two copies of joining report and report to the allotted college with all original certificates. Submit a copy of joining report and obtain acknowledgment on 2nd copy from the College where you have reported and retain the same with you.

3. Both Self reporting and reporting at the allotted college is compulsory to retain the present allotment. The last date for Self reporting and reporting at the allotted College is 19.11.2022. Pay all necessary fees if any to the allotted college.

4. If you do not report through Self-reporting system and/or not reporting at the allotted college, the provisional allotment will be cancelled and you have no claim on the seat allotted.

5. The academic credentials verified if found false at a later date, your allotment will be cancelled and you are also liable for criminal prosecution.

6. All the Principals are requested to verify the original certificates viz caste,study, income and Degree/Equivalent certificates of the admitted candidates thoroughly and request to bring to the notice of the Convenor, APPGCET-2O22 Admissions for any deviation.

7. The candidate is informed that the class work shall be commenced from 18.11.2022 and direceted to attend the class work.

**CONVENOR**

**APPGCET-2022 ADMISSIONS**

*** This computer generated Provisional Allotment Order does not require any authentication. ***

## ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION
## APEdCET - 2022

| | | | |
|---|---|---|---|
| Hall Ticket Number: | 2258030137 | Rank: | 2295 |
| Candidate Name: | RUDRABOINA JEEVANA JYOTHI | Father's Name: | R RATAYYA |
| Gender / Region: | FEMALE / AU | Caste / Fee.Reimb: | BC_D / YES |

**PROVISIONAL ALLOTMENT ORDER (for EDCET Candidates) PHASE-I**

This is to inform that the options exercised by the candidate have been processed based on merit, rank, local area, sex, category, Special Reservation Category (CAP/PH/NCC/SPORTS) etc and the candidate has been allotted a seat in

**HAYAGREEVA COLLEGE OF EDUCATION (HCCW)**
in **MATHEMATICS (MAT)** , under **OC_GEN_AU** category.
**Tuition Fee fixed for the college/course is Rs.12000/-.**
**Tuition fee to be paid by the candidate at the time of admission is Rs. 0/-.****

****Tuition fee exempted under fee reimbursement category.

Tuition fee exempted under fee reimbursement category the students belonging to SC/ ST/ BC/ EBC/ Disabled/ Minority categories will be considered for Full Reimbursement of Tuition Fee under Jagananna Vidya Deevana (RTF) scheme subject to verification and eligibility criteria prescribed by State Government of Andhra Pradesh vide G.O.M.S.NO:66 dated 08/09/2010 of Social welfare (SW.EDN.2) Dept., G.O.M.S.NO:115 dated 30/11/2019 of Social Welfare (EDN) Dept., G.O.M.S.NO:72 dated 18/10/2014 of social welfare (SW.EDN.2) department, G.O.Ms.No. 77 Social Welfare dept., dated 25.12.2020 and relevant instructions issued by Social Welfare and Higher Education Dept., Govt. of A.P. from time to time . In the event of the candidate found not eligible for fee reimbursement at a later date, the candidate shall have to pay the total fee as prescribed by the Competent authority.

You are eligible for tuition fee reimbursement under the Jagananna Vidya Deevana Scheme. The tuition fee will be paid to your mother s bank account in four quarters. Hence, you are requested to pay the tuition fee amount within one week to the college from the date of receiving the tuition fee amount from the Government.

**Instructions to Candidates:**

1. The candidate is instructed to report by clicking on "Allotment letter and Self-Reporting" under "Forms" tab from website https://cets.apsche.ap.gov.in

2. Take print out of two copies of joining report and report to the allotted college with all original certificates. Submit a copy of joining report and obtain acknowledgment on 2nd copy from the College where you have reported and retain the same with you.

3. Both Self reporting and reporting at the allotted college is compulsory to retain the present allotment. The last date for Self reporting and reporting at the allotted College is on or before 01.03.2023. Pay all necessary fees if any to the allotted college

4. If you do not report through Self-reporting system and/or not reporting at the allotted college, the provisional allotment will be cancelled and you have no claim on the seat allotted.

5. The academic credentials verified if found false at a later date, your allotment will be cancelled and you are also liable for criminal prosecution.

6. All the Principals are requested to verify the original certificates viz caste, study, income and Degree/Equivalent certificates of the admitted candidates thoroughly and return all original certificates except TC and request to bring to the notice of the Convenor, APEdCET – 2022 Admissions for any deviation

7. The class work will commence from 28.02.2023.

8. Note: The college is permitted for admissions based on the interim orders of the Hon'ble High Court of Andhra Pradesh. The admission of the candidate is subject to the final outcome of the Writ Petition in W.P.No.1805/2023

CONVENER Admissions 2022 AP EDCET

**CONVENOR**
**APEDCET-2022 ADMISSIONS**

*** This computer generated Provisional Allotment Order does not require any authentication. *** 27/02/2023 09:07 PM


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An ISO 9001 : 2015 Certified institute
Ph : 08812-232137, 226986
www.sircrreddycollege.ac.in
2022-'24
THONTA CHINNABHAVANI
Unique Id : 2022CRP033120018
Course : M.Sc Mathematics
Regd. No. : 4220118
Father Name : T Satyanarayana
Mobile No. : 9618433656
Date Of Birth : 27-04-2002
PRINCIPAL

# SIR C R REDDY COLLEGE, ELURU

## PG COURSES (Autonomous)

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An ISO 9001 : 2015 Certified institute

Ph: 08812-232137, 226986 www.sircrreddycollege.ac.

2022-'24

**MACHHA VARA LAKSHMI**

| | | |
|---|---|---|
| Unique Id | : | 2022CRP033120011 |
| Course | : | M.Sc Mathematics |
| Regd. No. | : | 4220111 |
| Father Name | : | M Harichandrarao |
| Mobile No. | : | 7207045429 |
| Date Of Birth | : | 08-04-2000 |

PRINCIPAL

# Photo Gallery

## Photo Gallery


PG Entrance Coaching given by Mrs. M .B. Rajya Lakshmi