PG ENTRANCE COACHING

For

M.Sc., (MATHEMATICS)

Date: 28-April-2023 to 27 -May-2023

Time: 8:30 am to 9:30 am

&

4.30pm to 5.30pm

Organized by

CAREER GUIDANCE & PLACEMENT CELL

2022–2023

INDEX

About Programme

The Career Guidance and Placement Cell at Sir C R Reddy College for Women organized PG entrance coaching classes for AP PGSET 2023 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 Subject

Subjects Covered:

- M.Sc. (Mathematics)

Target Audience:

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

Duration:

- April 28th , 2023, to May 27th , 2023 (30 days)

Time:

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

Resource Persons:

- Mrs. S.S.L.Sabari Kumari (HOD)
- Mrs. M.B.Rajya Lakshmi

Organized By:

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

Program Overview:

- Specifically designed coaching program focusing on AP PGCET 2023 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 AP PGCET 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 AP PGCET 2023 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 2023.
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

18-04-2023
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 28th April 2023 to 27th May 2023. 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

20-04-2023

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 28th April 2023 to 27th May 2023 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
- Numerical Methods
- Mathematical Special functions

Course Material

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

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

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

★ **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: $|x-x_0| \leq a, |y-y_0| \leq b$. 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: $|x - x_0| \leq a, |y - y_0| \leq b$, then a necessary and sufficient condition for the differential equation Mdx + Ndy = 0 to be exact in R, is

$$\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x} \text{ in R.}$$

★ **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 μ (x, y) $\neq 0$ then μ (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. $d\left(\frac{e^x}{y}\right) = \frac{ye^x dx-e^x dy}{y^2}$

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 $y \exp\left(\int P dx\right) = \int \{Q \exp\{(\int P dx)\}\, dx + c$ 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 $p^n+p_1(x, y)\,p^{n-1}+ \dots + p_{n-1}(x, y)\,p+p_n(x, y) = 0$ 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

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

Where $P_1(x), P_2(x), \dots P_n(x)$ 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 $\frac{d^2}{dx^2}, \frac{d^3}{dx^3}, \dots \frac{d^n}{dx^n}$ be denoted by $D^2, D^3, \dots D^n$ 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 $D^n + P_1D^{n-1}+P_2D^{n-2}+\dots+P_n$ in D is called a differential operator of order n and it is denoted by f (D). $f(D) = D^n+P_1D^{n-1}+P_2D^{n-2}+\dots+P_n$.

★ An equation of the form

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

Where $P_1, P_2, \dots P_n$ 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 $f(D) = D^n+P_1D^{n-1}+P_2D^{n-2}+\dots+P_n$ where $P_1, P_2, \dots P_n$ 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 $f(D) \equiv D^n+P_1D^{n-1}+\dots P_n$ where $P_1, P_2, \dots P_n$ 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. $m^n+P_1m^{n-1}+\dots+P_n = 0$. Where $P_1, P_2, \dots P_n$ are real constants is called the auxillary equation of f(D) y = 0.

Note: $c_1e^{m_1x}+c_2e^{m_2x}+\dots+c_ne^{m_nx}$ 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 α 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

$(\overrightarrow{OP}, \overrightarrow{OQ})$ = (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 = $(\overrightarrow{OP}, \overrightarrow{OQ})$ = (a, b) = θ then

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

★ 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×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 $\lambda_1 : \lambda_2$ ($\lambda_1 + \lambda_2$ ≠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 $\overrightarrow{AB}$ 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:**

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

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

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

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

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

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

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

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

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

★ **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 $\varepsilon > o$, if is possible to find $S > o$ where

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

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

This is denoted as

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

★ **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.

$\underset{t\to a}{Lt}\ f(t) = f(a)$

★ 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

$\underset{t\to a}{Lt}\ \dfrac{f(t) - f(a)}{t - a}$

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 $\dfrac{df}{dt}$

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

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

★ Let f be differentiable vector fanction and ϕ a scalar differentiable function on a common domain S. Then ϕ 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 $\dfrac{d}{dt}(A^2) = 2A\dfrac{dA}{dt}$

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

★ 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 ≠0, p, q ∈ 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 ∈ 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 ∈ S, a o b ∈ 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 ∈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 ∈ 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∈S such that $e_1$oa = a for a∈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 ∈S such that aoe_2 = a for a∈S then e_2 is called a right identity of S w.r.t. the operation o.

iii. If there exists an element e∈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∈S is said to be left invertible or left regular if there exists an element x∈S such that xoa = e. Then x is called a left inverse of a w.r.t. o.

★ An element a∈S is said to be right invertible or right regular if there exists an element y∈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 $x \in G$ 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, ... 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 $a \in G$, 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 $G \to G^1$ 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

APPGCET COACHING

2022-2023

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4	200155	P.RATNA KUMARI	MPC	P. Ratnakumari
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26	203704	M.SANDHYA RANI	MECS	M. Sandhya.
27	203712	A.MALLIKA	MECS	A. Mallika
28	203715	CH.JAYA MADHURI	MECS	Ch. Jaya Madhuri

29	204601	B.JAHNAVI	MCCS	
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32	204616	B.DIVYA	MCCS	B. Divya
33	204631	T.REVATHI	MCCS	T. Revathi
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SIGNATURE

Students Attendance Register

SIR C R REDDY COLLEGE FOR WOMEN , ELURU

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PG ENTRANCE COACHING 2022-2023

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9	200203	MPCS	B.HARIKA
10	20013	MPCS	A.JAYASRI
11	200250	MPCS	M.N.SWARUPA
12	200261	MPCS	M.GAYATHRI
13	200267	MPCS	M.MENAKA
14	200268	MPCS	M.KUSUMA
15	200276	MPCS	P.MANI
16	200297	MPCS	T.SYAMALA MANISAI
17	200901	MSCS	A.MOUNIKA
18	200902	MSCS	B.JAYA LAKSHMI
19	200908	MSCS	A.BHARATHI
20	200932	MSCS	G.ASHIKA
21	200936	MSCS	J.GOWRI PRASANNA
22	200939	MSCS	K.CHETHANA

23	200965	MSCS	N.RAJYA LAKSHMI
24	200983	MSCS	S.RENUKA RANI
25	203702	MECS	K.HEMALATHA
26	203704	MECS	M.SANDHYA RANI
27	203712	MECS	A.MALLIKA
28	203715	MECS	CH.JAYA MADHURI
29	204601	MCCS	B.JAHNAVI
30	204604	MCCS	G.UMADURGA
31	204606	MCCS	K.SRISAI LEKHA
32	204616	MCCS	B.DIVYA
33	204631	MCCS	T.REVATHI
34	204643	MCCS	M.P.SULOCHANA RANI
35	204647	MCCS	T.BHARGAVI SAI

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 III B.Sc. (Mathematics) This significant decision forms an integral part of the report on the PG entrance coaching classes in Mathematics subject conducted from 28-April-2023 To 27 -May-2023 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 (HOD) & Mrs M. B. Rajya Lakshmi Lecturer in Maths Department.

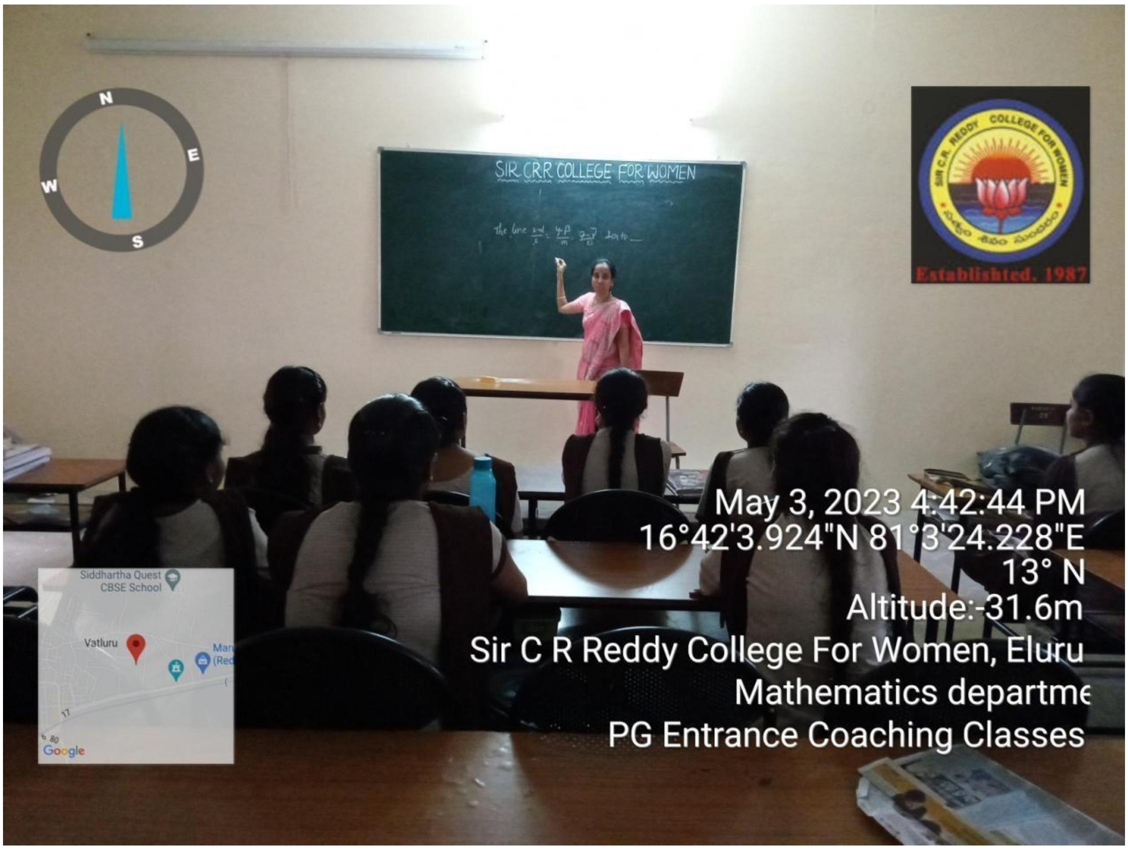
Approximately 35 motivated students actively participated in the coaching sessions these meticulously organized classes aimed to prepare the students comprehensively for the upcoming PG entrance examinations scheduled in the month of June 2023. The coaching sessions were diligently conducted from 8:30 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 encouraging. 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.

Photo Gallery



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