

SSR DEGREE AND PG COLLEGE(Autonomous)

Department of Mathematics

B.Sc I YEAR - Sem-I Important Questions

Unit - I (Long Questions)

1. Solve $(x^2 - y^2) dx + 2xy dy = 0$

2. Solve $(x^2 + 1) \frac{dy}{dx} + 4xy = \frac{1}{x^2 + 1}$

3. Solve $x^2 y dx - (x^3 + y^3) dy = 0$

4. Solve $(y + \frac{1}{3}y^3 + \frac{1}{2}x^2) dx + \frac{1}{4}(x + xy^2) dy = 0$

5. Solve $\frac{dx}{mx - ny} = \frac{dy}{nx - lz} = \frac{dz}{ly - mx}$

Short Questions :-

1. Solve $(1-x) dy + (1-y) dx = 0$

2. Solve $x \cdot \frac{dy}{dx} = y [\log y - \log x + 1]$

3. Solve $\frac{dx}{z^2 y} = \frac{dy}{z^2 x} = \frac{dz}{y^2 x}$

4. Solve $x dx + z dy + (y + 2z) dz = 0$

Unit - II (Long Questions)

1. Solve $x^2 p^3 + y(1 + xy^2) p^2 + y^3 p = 0$

2. Reduce $(y - px)(p - 1) = p$ to Clairaut's form and find the solution.

3. Solve $yp^2 + (x - y) \cdot p - x = 0$

4. Solve $p^2 - 7p + 12 = 0$

Short Questions :-

1. solve $p^2 - 5p + 6 = 0$
2. solve $x^2 p^2 + 3xyp + 2y^2 = 0$
3. solve $p^2 \cdot x^2 = y^2$

Unit - III (Long Questions)

1. solve $(D^2 - 3D + 2)y = 0$ and $y = 0$, $\frac{dy}{dx} = 0$ when $x = 0$.

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

4. solve $\frac{d^3 y}{dx^3} - 2 \frac{d^2 y}{dx^2} + 4 \frac{dy}{dx} - 8y = 0$

3. solve $(D^2 - 2D + 1) \cdot y = x e^x \sin x$

Short Questions

1. $(D^3 - D^2 - 6D) y = 0$
2. solve $16 \frac{d^2 y}{dx^2} + 24 \frac{dy}{dx} + 9y = 0$
3. solve $(D^3 - D^2 + D + 1) \cdot y = 0$

Unit - IV (Long Questions)

1. solve $(x^2 - y^2 - z^2) \cdot p + 2xyq = 2xz$
2. solve $(mx - ny) p + (nx - lz) q = ly - mz$
3. solve $x(z^2 - y^2) \cdot p + (x^2 - z^2) q = z(y^2 - x^2)$

Short Questions

1. solve $(yz) p + (zx) q = xy$
2. solve $\frac{\partial^2 z}{\partial x^2} + z = 0$ when $x = 0$, $z = e^{xy}$ and $\frac{\partial z}{\partial x} = 1$