

SSR DEGREE COLLEGE (AUTONOMOUS)
SEMESTER-I
Unit Wise Important Questions
MATHEMATICS

Unit – I

Short Questions (4Marks)

1. Solve $(3e^x + any) dx + (1 - e^x) \sec^2 y dy = 0$
2. Solve $(2x + y - 3) dy = (x + 2y - 3) dx$
3. Solve $\frac{dy}{dx} = \frac{x - y + 3}{2x - 2y + 5}$
4. Solve $y dx - x dy + \log x dx = 0$
5. Solve $\frac{dy}{dx} = \frac{y}{x} = y^2 \sin x$
6. Solve $(1 + e^{x/y}) dx + e^{x/y} (1 - \frac{x}{y}) dy = 0$
7. Solve $(XY + 2X^2Y^2) y dx + (xy - X^2Y^2) x dy = 0$
8. Solve $(X^2 + Y^2) dx - 2xy dy = 0$
9. Solve $(Y + \frac{1}{3} Y^2 + \frac{1}{3} X^2) dx + \frac{1}{4} (x + xy^2) dy = 0$
10. Solve $(1 - X^2) \frac{dy}{dx} + xy - xy^2$
11. Solve $(X^2Y) dx - (X^3 + Y^3) dy = 0$
12. Solve $(X^2Y^2 + XY + 1) dx + (X^2Y^2 - XY + 1) X dy = 0$

Unit II

1. Solve $P^2 - 7P + 10 = 0$
2. Solve $(X + Y P^2) = (1 - XY) P$
3. Solve $x = y + a \log p$
4. Solve $Y^2 \log y = Xpy + P^2$
5. Solve $y + Px = P^2 X^4$
6. Solve $Xp^2 - 2py + ax = 0$
7. Solve $P = \log (P X - Y)$ using Clariuts
8. Solve $(Y - XP) (P - 1) P$

Unit III

1. Find the complementary function of $(D^3 - D^2 - 6D) y = 0$
2. Solve $(D^2 + 4) Y = 0$
3. Solve $\frac{d^3y}{dx^3} + y = 0$
4. Solve $(D^2 - 2D + 5) y = e^x$
5. Solve $y^{ii} - y^i - 2y = ex$
6. Solve $(D^3 + 1) y = \cos 2x$
7. Solve $(D^2 + 4) y = \cos 2x$
8. Solve $\frac{d^2y}{dx^2} - y = \cos x$
9. Solve $(D^2 - 4) y = X^2$
10. Solve $(D^2 + 2D + 1) y = x^2$
11. Solve $(D^2 + 2D + 1) ex x^2$
12. Solve $(D^2 - 4D + 3) y = x^2$
13. Solve $(D^2 - 2D + 1) y = xe^x \sin x$

14. Solve $(D^2 + 2D + 5) y = 12e^x - 3 \sin 2x$ Using Method of undetermined co – efficient
15. Solve $(D^2 - 2D + 8) y = 9xe^2 + 10 e^x$ by using method of undetermined co – efficient
16. Solve $(D^2 - 3D + 2) y = 2x^2 + 3e^{2x}$ using method of undetermined coefficient

Unit IV 1

1. Solve $(D^2 - 4D + 4) y = 3xe^x$ By using method of variation of parameter
2. Solve $y^{11} - 2y^1 + y = e^x \log x$ By using method of variation of parameter
3. Solve $x^2 \frac{d^2x}{dx^2} + \frac{dy}{dx} - 4y = x^2$
4. BY elimating constant obtain the partial differential equation form the relation $2Z = \frac{x^2}{a^2} + \frac{y^2}{b^2}$
5. Solve $x^2 y^{11} - xy^1 = 0$ Given $y_1 = x$ as a Solution
6. Solve $\frac{dx}{x(y^2 - z^2)} = \frac{dy}{-y(z^2 + x^2)} = \frac{dz}{z(x^2 + y^2)}$
7. Solve $\frac{dx}{y - zx} = \frac{dy}{z - x} = \frac{dz}{x^2 + y^2}$
8. Solve $(mz - ny) P + (nx - lz) Q = ly - m$
9. Solve $\frac{d^2y}{dx^2} = x^2 \sin x$