Govt. College (Autonomous), Rajamahendravaram

TIME: $2\frac{1}{2}$ HRS.   Total Marks: 50

PART – A

Answer any **Five** questions. Each question carries 3 marks. 5X3= 15M

Question	Topics	Nature	Marks
1,2	Unit – I	Theorem or problem	3,3
3,4	Unit – II	Theorem or problem	3,3
5,6	Unit – III	Theorem or problem	3,3
7	Unit – IV	Theorem or problem	3
8	Unit-V	Theorem or problem	3

PART – B

Answer All Questions. Each question carries 7 marks   5X 7 = 35 M

Question	Topic	Nature	Marks
9 or 10	Unit-I	Theorem or Problem	7
11 or 12	Unit-II	Theorem or Problem	7
13 or 14	Unit-III	Theorem or Problem	7
15 or 16	Unit-IV	Theorem or Problem	7
17 or 18	Unit-V	Theorem or Problem	7

Model Question Paper
Mathematics (H) & Computational Mathematics
Paper-I   Semester – II
Paper Code – 224701 :: Differential Equations

(For the batch admitted in 2023-24 under single major system)

Time : $2\frac{1}{2}$ Hrs.   **Max.Marks : 50**

PART – A

Answer any Five questions. Each question carries 3 Marks.   5 x 3M = 15 Marks

1. Solve (e^y+1) cos x dx + e^y sin x dx.

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

3. Solve $4y^2p^2 + 2xy\,(3x+1)p + 3x^3=0$.

4. Solve $x^2\,(y – px\,) = p^2y$.

5. Solve $(D^2 - 3D + 2)y = \cos h\ x$.

6. Solve $(D^2 − 4D + 3)y = \sin 3x\cos 2x$.

7. Solve $(D^2 - 4D + 4)y = x^3$.

8. Solve $[(1+x)^2D^2 +(1+x)D+1]y = 4\cos \log (1+x)$.

PART – B

Answer all questions. Each question carries 7 Marks.   5 x 7M = 35 Marks

9. Solve $x^2y\ dx – (x^3+y^3)dy=0$.

                    OR

10. Solve x $\frac{d^2y}{dx^2} + y = y^2 \log x$

11. Find the orthogonal trajectories of the family of curves

$x^{\frac{2}{3}} + y^{\frac{2}{3}} = a^{\frac{2}{3}}$ where 'a' is the parameter.

                                OR

12. Solve $y = 2xp +x^2p^4$.

13. Solve $(D^3 + D^2 − D − 1)y = \cos 2x$

      OR

14. Solve $(D^2 - 4D+3)$ y= sin3x cos2x.

15. Solve $(D^2 -2D +4)y = 8(x^2 + e^{2x} + \sin 2x)$.

OR

16. Solve $\frac{d^2 y}{dx^2} + 3\frac{dy}{dx} + 2y = xe^x sinx$.

17. Solve $(D^2+a^2)y = \tan x$ by the method of variation of parameters.

OR

18. Solve $x^3 \frac{d^3 y}{dx^3} + 2x^2 \frac{d^2 y}{dx^2} + 2y = 10(x + \frac{1}{x})$.