



Term Evaluation (Even) Semester Examination March 2025

Roll no. **A***

Name of the Course: B.TECH

Semester: 2nd

Name of the Paper: Engineering Mathematics-II

Paper Code: TMA 201

Time: 1.5 hour

Maximum Marks: 50

Note:

- Answer all the questions by choosing any one of the sub-questions
- Each question carries 10 marks.

Q1.

a. Test the convergence of the series $\frac{1}{1.2.3} + \frac{3}{2.3.4} + \frac{5}{3.4.5} + \dots \infty$.

OR

b. Test the convergence of the series $\frac{1^2.2^2}{1!} + \frac{2^2.3^2}{2!} + \frac{3^2.4^2}{3!} + \dots \infty$.

CO 1 (10 Marks)

Q2.

a. Test the following series for convergence

$$\sum \frac{1}{\sqrt{n+1}-1}$$

OR

b. Test the following series for convergence

$$\sum \left(\frac{n}{n+1} \right)^{n^2}$$

CO 1 (10 Marks)

Q3.

a. Solve $(xy^2 + x)dx + (yx^2 + y)dy = 0$

OR

b. Solve $(D^3 - 3D^2 + 4)y = 0$, where $D \equiv \frac{d}{dx}$

CO 2 (10 Marks)

Q4.

a. Solve $(D^2 + D + 1)y = (1 + e^x)^2$.

OR

b. Solve $\frac{d^2y}{dx^2} + a^2y = \tan ax$.

CO 2 (10 Marks)



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Q5

CO 2 (10 Marks)

a. Solve $\frac{d^2y}{dx^2} + 4y = \cos 2x$.

OR

b. Solve by the method of Variation of Parameters $\frac{d^2y}{dx^2} - y = \frac{2}{1+e^x}$.

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