

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

B.Tech-II Semester (CSE/IT/ECE/CE)

COURSE CODE (CREDITS): 24B11MA211 (04)

MAX. MARKS: 25

COURSE NAME: Engineering Mathematics II

COURSE INSTRUCTORS: NKT, RAD, BKP, MDS

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	The temperature distribution of a rod of length 2 units is $f(x) = x, 0 < x < 2$. (a) Sketch the <i>odd extension</i> of $f(x)$ over $(-2, 2)$. (b) Determine the <i>half-range Fourier sine series</i> for $f(x)$ over $(0,2)$	CO-1	5
Q2	Find the general solution of $\left(\frac{d^2}{dx^2} + 3\right)^2 y = 0$.	CO-2	2
Q3	Find the general solution of $x^2 \frac{d^2 y}{dx^2} + y = 3x^2$	CO-2	5
Q4	Solve the following differential equation using the method of variation of parameters: $\frac{d^2 y}{dx^2} - 3 \frac{dy}{dx} + 2y = e^x$	CO-2	6
Q5	Find the general solution of $(2x + 1)^2 \frac{d^2 y}{dx^2} - 2(2x + 1) \frac{dy}{dx} - 12y = 6x$	CO-2	3
Q6	Find the power series solution of the following differential equation about the point $x = 0$ $\frac{d^2 y}{dx^2} - x \frac{dy}{dx} - y = 0$	CO-2	4