Enrollment No:_____

FACULTY OF ENGINEERING

B.E. Sem - Mid Semester Examination Summer 2025

Subject Name: Mathematics-II
Subject Code: 2010200201

Date: 01/4/25
Time: 10:00 am to 11:30 am

Total Marks: 40

Instructions:
1. Attempt any FOUR questions out of FIVE questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 Answer the following.

(A) Find L($e^{-3t}t^4$) (2)

(B) *Solve*: $y^{iv} - y=0$ (3)

(C) Solve: Y"-5y'+6y=e^{4x} (5)

Q.2 Answer the following.

(A) State convolution theorem for Laplace Transform (2)

(B) Find $L^{-1}\{\frac{}{s(s+1)(s+2)}\}$ (3)

(C) Solve $\frac{d^2x}{dy^2}+5x^2+6x= e^{-t}$ given x(0)=0 and x'(0)= -1 (5)

Q.3 Answer the following.

(A) Find the order and degree of the differential equation (2)

$$\left(\frac{d^2y}{dx^2}\right)^4 = y + \left(\frac{dy}{dx}\right)^2$$

(B) Solve the following differential equation using the method of variation of parameters: (3)

$y'' + y=cosec\ x$

(C) Solve $y''+4y'+4y=0,\ y(0)=1,\ y'(0)=1$ (5)

Q.4 Answer the following.

(A) State First Shifting Therom (2)

(B) Find the Laplace transform of

$$f(t) = \begin{cases} 1 & 0 \le t \le a \\ -1 & a \le t \le 2a \end{cases}$$ Also f(t) is periodic (3)

with period 2a.

(C) Apply Laplace Transform to Solve x"+9x= cos2t given x(0)=1 and x(π/2)=-1 (5)

Q.5 Answer the following.

(A) Find L(sin 4t) (2)

(B) Find Laplace transform of $f(t) = \begin{cases} 0 & 0 < t < 3 \\ 4 & t \ge 3 \end{cases}$ (3)

(C) $$(x+1)^2 \frac{d^2y}{dx^2} + (x+1)\frac{dy}{dx} + y = 4\cos(\log(1+x))$$ (5)

**********Best of Luck**********

0+2D × 0-2D / 0-2D