Roll No. 2 2 B

SHAMBHUNATH INSTITUTE OF ENGINEERING AND TECHNOLOGY, PRAYAGRAJ

Subject Code : BAS 203 **Subject :Engineering Mathematics II**

Course : B.Tech. **SEMESTER: II**

FIRST SESSIONAL EXAMINATION, EVEN SEMESTER, (2022-2023)

Common To All

***Time* –1hr 30 mins.** **Maximum Marks – 30**

1. Attempt any *FIVE* questions.

Q N	QUESTION	Marks	CO	BL
a.	The particular integral of $\frac{d^2y}{dx^2} - 4y = e^{2x}$ is	2	CO1	L3
b.	The complimentary function of $(D^3 + D^2 + D + 1)y = sinx$ is	2	CO1	L1
c.	The solution of the differential equation $(x^2D^2 + 1)y = 0$ is	2	CO1	L3
d.	The particular integral of $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = x$ is	2	CO1	L3
e.	The particular integral of $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x sinx$ is	2	CO1	L3
f.	Solve $\frac{1}{D^2+3D-2} sinxcosx$	2	CO1	L3

2. Attempt any *ONE* of the following.

Q N	QUESTION	Marks	CO	BL
a.	Solve the following differential equation $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} - 3y = 2e^{2x} + 10sin3x$ given that $y(0) = 2$ and $y'(0) = 4$	5	CO1	L3
b.	Solve the following simultaneous differential equation $(D-1)x + Dy = 2t + 1$ $(2D+1)x + 2Dy = t$	5	CO1	L4
c.	Use the method of variation of parameters to solve $y'' + 3y' + 2y = e^{e^x}$	5	CO1	L5

3. Attempt any *FIVE* questions.

Q N	QUESTION	Marks	CO	BL
a.	Find $L[cos^2x]$	2	CO2	L2
b.	Find $L[cosht\ sin2t]$	2	CO2	L3
c.	Find $L[t^2 sin2t]$	2	CO2	L3
d.	Evaluate $\int_0^\infty e^{-4t} cosh3t\ dt$	2	CO2	L2
e.	Find $L[te^{-t} sin2t]$	2	CO2	L3
f.	Find $L[e^{2t}(t+2)]$	2	CO2	L3

P.T.O.

4. Attempt any *ONE* of the following.

Q N	QUESTION	Marks	CO	BL
a.	Find $L[f(t)]$ if $f(t) = \begin{cases} 4 & 0 < t < 1 \\ -2 & 1 < t < 3 \\ 5 & t > 3 \end{cases}$	5	CO2	L3
b.	Find $L[\int_o^t \frac{e^{at} - cosbt}{t} dt]$	5	CO2	L4
c.	Evaluate $L[cos\sqrt{t}]$	5	CO2	L4

Bloom's Taxonomy Level (BL) :-
Remember (L1), Understanding (L2), Apply (L3), Analyze (L4), Evaluating (L5), Creating (L6)