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SHAMBHUNATH INSTITUTE OF ENGINEERING AND TECHNOLOGY, PRAYAGRAJ

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

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

FIRST SESSIONAL EXAMINATION, EVENSEMESTER, (2024-2025)

Common To All

Time –1hr **Maximum Marks – 15**

1. **Attempt *ALL* questions.**

Q N	QUESTION	Marks	CO	BL
a.	Find P.I. of $(D+5)^2y = sinh5x.$	1	CO1	L2
b.	Solve the differential $(D^2+1)y = 0,$ given that $y(0) = 2$ and $y(\pi/2) = -2.$	1	CO1	L2
c.	Find Particular integral of $(D^2 - 6D + 13)y = 2^x.$	1	CO1	L1
d.	Find the general solution of $(D^5 - D^3)y = 0.$	1	CO1	L1
e.	Find the complimentary function of $\left(xD^2 + D - \frac{1}{x}\right) = -ax^2.$	1	CO1	L1

2. **Attempt any *ONE* of the following**

Q N	QUESTION	Marks	CO	BL
a.	Obtain the general solution of the differential equation $y'' - 2y' + 2y = x + e^x cosx.$	5	CO1	L3
b.	Solve $(x^2D^2 - xD + 4)y = x^2 sin(logx).$	5	CO1	L2

3. **Attempt any *ONE* of the following.**

Q N	QUESTION	Marks	CO	BL
a.	Obtain the general solution of the equation $y'' + 3y' + 2y = sin(e^x)$ by using method of variation of parameters.	5	CO1	L3
b.	Solve the simultaneous differential equation $\frac{dx}{dt} = 3x + 2y, \frac{dy}{dt} = 5x + 3y.$	5	CO1	L2

Bloom's Taxonomy Level (BL):-

Remember (L1), Understanding (L2), Apply (L3), Analyze (L4), Evaluating (L5), Creating (L6)