18MAB101T- CALCULUS AND LINEAR ALGEBRA

Unit-III Ordinary Differential Equations

ASSIGNMENT

Part-B

1. Solve $(D^3+6D^2+12D+8)y=0$ with x=0, y=1, y'==-2 and y''=12
2. Solve $(D^2+5D+6)y=e^{-x}$
3. Find the particular integral of $(D^2-4D+4)y=\cos 5x$
4. Find the particular integral of $(D^2+2D+1)y=x^2$
5. Find the particular integral of $(D^2-6D+9)y=x^2+5x-3$
6. Find the particular integral of $(D^3-D)y=2x+1$

Part-C

1. Solve $(D^2-4)y=x^3+\cos^2 x.$
2. Solve $(D^2+D+1)y=e^x+\sin 2x$
3. Solve $(D^2+10D+25)y=e^{2x}+\cos x$
4. Solve $(D^2-7D+6)y=\sin 2x\cos x$
5. Solve $(D^3+6D+9)y=\sin 5x$

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Part-B

1. Find the particular integral of $(D^3 - D)y = 2x + 1$
2. Solve $(D^2 + D + 1)y = e^{-x}$
3. Find the particular integral of $(D^2 - 6D + 13)y = 8e^{3x}\sin 2x$
4. Find the particular integral of $(D^2 + 1)y = x^3$
5. Find the particular integral of $(D^2 + D + 9)y = x^2 - 3$

Part-C

6. Solve $(D^2 - 1)y = e^x(1 + x^2)$
7. Solve $(D^2 + D - 2)y = 2(1 + x - x^2)$
8. Solve $(D^2 + 2D + 1)y = x\cos x$
9. Solve $(D^2 - 4D + 3)y = \sin 3x \cos 2x$
10. Solve $(D^3 + a^2 D)y = \sin ax$

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1. Solve $(x^2D^2 - xD + 1)y = \left(\frac{\log x}{x}\right)^2$
2. Solve $\frac{d^2y}{dx^2} + y = \sin x$, using method of variation of parameters.
3. Solve $\frac{d^2y}{dx^2} + a^2y = \tan ax$, using method of variation of parameters
4. Solve $\frac{dx}{dt} = x - 2y$
   $\frac{dy}{dt} = 5x + 3y$
5. Solve $\frac{dx}{dt} = 2x + y$
   $\frac{dy}{dt} = x - 2y$
6. Solve d $\frac{dx}{dt} + 2\frac{dy}{dt} - 3x - 4y = 0$
   $2\frac{dx}{dt} + \frac{dy}{dt} + 2x - y = 0$
7. Solve $(x^2D^2 + xD + 1)y = 5\log x$
8. Solve $Dx - (D-3)y = \cos 3t$
   $(D-3)x + Dy = \sin 3t$
9. Solve $(D^2 + 2)x + 5y = t$
   $(D^2 + 2)y + 5x = t^2 - 1$
10. Solve $(5D+1)x + (2D+1)y = e^{2t}$
    $(D-2)x + (D+5)y = 3e^t$