SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
B.Sc.Mathematics - END SEMESTER EXAMINATIONS - NOV'2024
SEMESTER - III

20UMACT3005 - Differential Equations and Laplace Transforms

Total Duration : 2 Hrs.30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Solve $x^2p^2 + 3xyp + 2y^2 = 0$.
2. Illustrate $y = (x - a)p - p^2$.
3. Solve $(D^2 - 4D + 3)y = e^{-x}\ sinx$.
4. Interpret the result
   $yz(ax + y + z)dx + zx(x + ay + z)dy + xy(x + y + az)dz = 0$.
5. Compute $q = xp + p^2$.
6. Solve $(y + z)p + (z + x)q = x + y$.
7. Evaluate L ($\sin^3$ 2t).
8. Find $L^{-1}\ \dfrac{s+2}{(s^2+4s+5)^5}$.

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Solve $x^2 = (1 + p^2)$.
10. Classify $(D^2 + 16)y = 2e^{-3x} + cos4x$.
11. Examine $p^2 + q^2 = npq$.
12. Evaluate $\displaystyle\int_0^\infty \frac{e^{-t} - e^{-2t}}{t}\ dt$.
13. Discriminate that the solution of the differential equation $\dfrac{d^2y}{dt^2} + 4y = A$ sinkt which is such that $y = 0$ and $\dfrac{dy}{dt} = 0$, when $t = 0$.

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