Roll.No. | 25UDAGT1001

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 DS and AI - END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - I
25UDAGT1001 - Mathematics - I

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

Section B

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

1. Find the Laplace transforms of (i) 3 $\cos$ 4t (ii) 4 $\sin$ 3t.
2. Find the constant a_0 for the Fourier series for the function f(x) = x in $0 \leq x \leq 2\pi$.
3. If y(75) =246, y(80) = 202, y(85) = 118, y(90) = 40. Find y(79).
4. Solve $(D^2 + 3D + 2)y = \sin x$.
5. Explain the Procedure to form the PDE by eliminate the arbitrary constants a, b from z = f(x,y).
6. If y=(ax+b)^m then find y_3.
7. Find the minimum value of $x^2 + y^2 - 4x - 2y + 10$.
8. Expand $\cos^3\theta$ in series of cosines of multiples of θ.

Section C

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

9. Sum the series 1+ $\frac{1}{3} + \frac{1.3}{3.6} + \frac{1.3.5}{3.6.9}$+....
10. The value of x and y are given by

x	5	6	9	11
f(x)	12	13	14	16

Using Lagrange's Interpolation formula find f(x) when x =10.

11. How many types of solution are there in PDE? Explain in brief and obtain the working rule to find all the solutions for the standard type Z = f(p , q).
12. Determine y_n where y= $\frac{3}{(x+1)(2x-1)}$
13. Express $\cos 8\theta$ in terms of $\sin\theta$.

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