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.
BSc. Chemistry - END SEMESTER EXAMINATIONS APRIL - 2024
SEMESTER - II
20UCHAT2002 - Allied Mathematics II

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

Section B

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

1. Express f(x) = $(\pi$ - x)^{2}as a Fourier series of periodicity 2π in $0 < x < 2\pi$.
2. Eliminate the arbitrary constant a and b from z = $(x^2 + a^2)$ $(y^2 + b^2)$.
3. Form the partial differential equation from z = f$(x^2 + y^2 + z^2)$.
4. Solve $p^2 + q^2 = m^2$.
5. Solve (mz - ny) p + (nx - lz) q = ly - mx.
6. Find the Laplace transform of $t^3 + e^{3t}$.
7. State and prove linear property of Laplace transform.
8. Find the Laplace transform of te^{2t}.

Section C

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

9. Expand f(x) = x - x^{2}as a Fourier series in $(-\pi, \pi)$.
10. Form the partial differential equation from
    (i) z = ax + by + a/b.
    (ii) f(x + y + z, xy + z^2) = 0.
11. Solve (i) x(y - z) p + y(z - x)q = z(x - y). (ii) p(1 + q) = qz.
12. Find the Laplace transform of
    (i) $(t + 1)^2$ (ii) $\text{Cos}^2 t$ (iii) Sin(at + b)
13. (a) State and prove first shifting theorem.
    (b) Find the Laplace transform of (i) t^2e^{-4t} (ii) $(1 - e^{-t}) / t$.

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