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.C.A. - END SEMESTER EXAMINATIONS NOVEMBER-2022
SEMESTER - I
20UCAAT1001 - Allied Mathematics-I

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

Section A

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

1. Define Discrete Mathematics and explain about disadvantages of discrete Mathematics.
2. Express $\frac{sin7\theta}{sin\theta}$ as a polynomial in sinθ.
3. Prove that $\cosh^{-1}x = \pm \log(x + \sqrt{x^2 - 1})$
4. Evaluate L(e^{-3t} sint cost).
5. Find the inverse transform of the following
   (i) $\frac{1}{s-7}$ (ii)$\frac{1}{s+3}$ (iii)$\frac{1}{s^2+4}$ (iv)$\frac{1}{s^5}$
6. Show that $2^5 \cos^6\theta = \cos 6\theta + 6\cos 4\theta + 15\cos 2\theta + 10$.
7. Evaluate L(sin3t cos2t)and L(cos2t cost).
8. Find the inverse transform of the following $\frac{1}{s^2(s+4)}$.

Section B

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

9. Explain the basic logical operation.
10. Show that $\cos 8\theta = 128\ \cos^8\theta$ -$256\cos^6\theta + 160\cos^4\theta$ - $32\cos^2\theta + 1$.
11. If $\cos(A + iB) = x + iy$, then show that
    $\frac{x^2}{\cos^2 A}$ - $\frac{y^2}{\sin^2 A} = 1$ and $\frac{x^2}{\cosh^2 B} + \frac{y^2}{\sinh^2 B} = 1$.
12. Find the Laplace Transform of the following
    (i) sin2t sint (ii) cos4t cos2t (iii) 3cosh2t.
13. Find the inverse Laplace transform of $\frac{4s^2 - 3s + 5}{(s+1)(s-1)(s-2)}$.

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