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 - V

24UMAET5B01 - Mathematics for Computer Science

Total Duration : 1 Hrs.30 Mins. Total Marks : 40

Section B

Answer any **TEN** questions $(10 \times 2 = 20$ Marks)

1. Convert the number 1001010010 in base 2 to decimal.
2. Convert the binary number 101011.0101 to decimal.
3. Convert the number 1F5 in base 16 to decimal.
4. Convert the number 71 in base 16 to decimal.
5. Convert the number 379 in base 16 to decimal.
6. What is the greatest number that can be written with 2 octal digits?
7. Give the smallest positive integer that is congruent with 514 mod 35.
8. Find the smallest positive integer that is congruent with -29 modulo 52.
9. Find the next two terms in the sequence: 1/2, 1, 2/3, -1, 3/4, -3, 4/5,...
10. Find the sum 21 + 22 + 23 + ... + 100 + 101.
11. Write the condition that describes values of x the interval [-15,1]
12. Consider the function $f(x) = x2 + 12x$ +36. Prepare a table of values to plot the graph of $f(x)$

Section C

Answer any **FOUR** questions $(4 \times 5 = 20$ Marks)

13. a) Convert the 243 to binary number.
    b) Calculate 594 $\times$ 389(mod 53).
14. Convert the octal number 262.24^8 to decimal.
15. Find the multiplicative inverse of 207 in mod 43
16. Find the next five terms in the sequence: 55,89,144,233,..
17. Find the sum of 1 + 2 + 4 + 8 + 16 + ... + 4096.
18. a) Discuss the steps to transform $y = \frac{1}{x^2+x}$ into $y = -2 + \dfrac{1}{(x-8)^2 + (x-8)}$.
    b) A car accelerates from rest at a constant rate of 3 m/s^2.
    How far does it travel in the first 5 seconds?

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