(NO. OF PAGES: 2)

(FOR THE CANDIDATES ADMITTED **22UAI3A3**

DURING THE ACADEMIC YEAR 2022 ONLY) **REG.NO.**

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : NOVEMBER-2023

BSC COMPUTER SCIENCE WITHAI & ML **MAXIMUM MARKS: 50**

SEMESTER-III **TIME : 3 HOURS**

PART - III

22UAI3A3- DISCRETE STRUCTURE ITS APPLICATION

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS. (K1)

1. The rank of smallest equivalence relation on a set with 12 distinct elements is _____
   a) 12
   b) 144
   c) 136
   d) 79
2. What is the minimal Hamming distance between any two correct code words?
   a) 1
   b) 2
   c) 3
   d) 4
3. If A is any statement, then which of the following is a tautology?
   a) $A \wedge F$
   b) $A \vee F$
   c) $A \vee \neg A$
   d) $A \wedge T$
4. What is the time complexity of Kruskal's algorithm?
   a) O(ElogV)
   b) O(V+logE)
   c) O(E+1)
   d) $O(V^2)$
5. Euclid's algorithm is used for finding _____
   a) GCD of two numbers
   b) GCD of more than three numbers
   c) LCM of two numbers
   d) LCM of more than two numbers

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. Define Relations.
7. What is a Group code?
8. Define Tautology.
9. Define Graph.
10. Illustrate the LCM of integers.

SECTION – B (5 X 3 = 15 MARKS)

ANSWER THE FOLLOWING QUESTIONS. (K3)

11. a) What is Cartesian Product? Explain the Two sets of Cartesian product with an example.

(OR)

b) Explain the equivalence classes with an example.

12. a) Examine the Encoding a Message.

(OR)

b) Summarize the Error Correcting Code.

13. a) Classify the Normal forms with example.

(OR)

b) Explain the Well-formed formula.

14. a) Describe the Graphs and Sub graphs.

(OR)

b) Examine the spanning trees of graph.

15. a) Summarize the Division algorithm.

(OR)

b) Analyze the Primes and Composite Number.

SECTION – C (5 X 5 = 25 MARKS)

ANSWER THE FOLLOWING QUESTIONS.K4 (Or) K5)

16. a) Discuss the Operations on Relations.

(OR)

b) Summarize the Warshall's Algorithm.

17. a) Explain the Hamming Distance.

(OR)

b) Prepare the Decoding and error correction.

18. a) Discuss the Propositional Logic.

. **(OR)**

b) Summarize the Principle of Normal Forms.

19. a) Discuss the Operations on Graphs .

(OR)

b) Examine the Krushkal's algorithm to find an optimal tree of a weighted graph..

20. a) Prepare the Euclid's theorem.

(OR)

b) Summarize the Unique factorization theorem.

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