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| **P.V.P Siddhartha Institute of Technology(Autonomous)** | | | | | | | | | | | | **Signature of Invigilator with date:** | | **Marks Obtained:** | |
| **Department of Computer Science and Engineering** | | | | | | | | | | | |
| **Course: B.Tech** | | | **Year: II** | | | **Semester: I** | | **Objective: I** | | | |
| **Regulation:PVP20** | | | **Maximum Marks:10Marks** | | | | | | | **Session: A.N** | |
| **A.Y:2023-24** | | | **Date:25-09-2023** | | | | **Duration: 20 min** | | | | |
| **Subject Code: 20BS1303** | | | | | **Subject Name: Engineering Mathematics III(Discrete Mathematical Structures)** | | | | | | | | | | |
| **Registered Number:** | | | | | | | | | **Name:** | | | | | | |
| **Answer all the Questions. Each Question carries ½ Mark 20×½ M=10M** | | | | | | | | | | | | | | | |
| **S.No** | **Question** | | | | | | | | | | | | **CO** | **Level** | **Answer** |
| 1. | **Write ~ (P∧Q) is equivalent to**\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | | | | | | | | | | | | **CO1** | **L2** |  |
| a) | | | b) | | | c) | | | | d) | |
| 2. | **The contrapositive of P→Q is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.** | | | | | | | | | | | | **CO1** | **L2** |  |
| a) | | | b) | | | c) | | | | d) | |
| 3. | **The Proposition P∧~P is a** | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Tautology | b) Contradiction | | | | | c) Contingency | | | | d) Contrapositive | |
| 4. | **Which of the following propositions is tautology?** | | | | | | | | | | | | **CO1** | **L2** |  |
| a) (p v q)→q | | | b) p v (q→p) | | | c) p v (p→q) | | | | d) both b&c | |
| 5. | **Which of the following is a declarative sentence\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Statement | | | b) Statement Formula | | | c) Well Formed Formula | | | | d) Predicate | |
| 6. | **The word NAND is a combination of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.** | | | | | | | | | | | | **CO1** | **L2** |  |
| a) NOT,AND | | | b) NOT,OR | | | c) OR | | | | d) AND | |
| 7. | A statement A is said to tautologically imply a statement B if and only if A 🡪 B is a | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Contradiction | | | | | | b) Tautology | | | | | |
| c) Negation | | | | | | d) Tautological Implication | | | | | |
| 8. | **The sum of elementary product is called\_\_\_\_\_\_\_\_\_\_\_\_\_.** | | | | | | | | | | | | **CO1** | **L2** |  |
| a) CNF | | | b) DNF | | | c) PDNF | | | | d) PCNF | |
| 9. | **Symbolize the Statement “All men are giants”** | | | | | | | | | | | | **CO1** | **L2** |  |
| a) ∀x(M(x) ∨ G(x)) | | | | | | b) ∀x(P(x) ∧ G(x)) | | | | | |
| c) ∀x M(x) ∨ ∀x M(x) G(x) | | | | | | d) ∀x(M(x)→G(x)) | | | | | |
| 10. | **A Sum of the variables and their negations in a term is called \_\_\_\_\_\_\_\_.** | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Minterm | b) Maxterm | | | | | c) Elementary  Product | | | | d) Elementary  Sum | |

|  |  |  |  |  |  |  |  |  |  |  |
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| 11. | **For three variables P, Q and R, how many Minterms are there\_\_\_\_\_.** | | | | | | | **CO1** | **L2** |  |
| a) 6 | b) 3 | | | | c) 8 | d) 4 |
| 12. | **P, P => Q is called logical formula for Modus Ponens is\_\_\_\_\_.** | | | | | | | **CO1** | **L2** |  |
| a) True | | | | | b) False | |
| 13. | **Elimination of the Quantifier from the predicate formula is called\_\_\_.** | | | | | | | **CO1** | **L2** |  |
| a) Generalization | | | | | b) Existential Generalization | |
|  | c) Specification | | | | | d) Universal Specification | |
| 14. | **The negation of (\_\_\_\_\_\_\_\_\_\_\_\_\_\_.** | | | | | | | **CO1** | **L2** |  |
| **a)** ( | | | | | **b)** ( | |
| **c)** ( | | | | | **d)** ( | |
| 15. | **Symbolize the following statement “Some men are mortal”\_\_\_\_\_\_\_\_.** | | | | | | | **CO1** | **L2** |  |
| a) (H(x) ∨ G(x)) | | | a) (H(x) ∧M(x)) | | | |
| b) ∀x(P(x) → G(x)) | | | b) (H(x) ∧ **~** G(x)) | | | |
| 16. | **The solution to a linear homogeneous recurrence relation depends on:** | | | | | | | **CO1** | **L2** |  |
| a) The values of the initial conditions | | | | b) The specific form of the recurrence relation | | |
|  | c) The length of the sequence | | | | d) The degree of the polynomial equation | | |  |  |  |
| 17. | **General solution of characteristic equation if root are real and equal\_\_\_\_\_\_.** | | | | | | | **CO1** | **L2** |  |
| a) an=(c1+c2 n)rn | | | | | b) an=(c1+c2 n)rn-1 | |
| c) an=(c1 rn +c2 n)rn-1 | | | | | b) an=(nc1+c2)rn | |
| 18. | **In a Statement “if P then Q” , Q is called\_\_\_\_\_\_\_\_\_\_\_\_\_\_.** | | | | | | | **CO1** | **L2** |  |
| a) hypothesis | | b) implication | | | c) conclusion | d) premise |
| 19. | **Find the free variable for the following predicate statement**  **∀(x) P(x, y) is \_\_\_\_\_\_\_\_\_\_** | | | | | | | **CO1** | **L2** |  |
| a) x | | b) y | | | c) x, y | d) unknown |
| 20. | **What is a recurrence relation?** | | | | | | | **CO1** | **L2** |  |
| A relation that occurs repeatedly in a sequence | | | | | A relation between two integers | |
| A relation involving continuous variables | | | | | A relation that cannot be expressed mathematically | |