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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**$\rightarrow Q$ **=> 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 (**$∃x)(P\left(x\right)∨Q\left(x\right))$**\_\_\_\_\_\_\_\_\_\_\_\_\_\_.** | **CO1** | **L2** |  |
| **a)** (  | **b)** (  |
| **c)** ( | **d)** ($∀x)(∼P\left(x\right)∧∼Q\left(x\right))$ |
| 15. | **Symbolize the following statement “Some men are mortal”\_\_\_\_\_\_\_\_.** | **CO1** | **L2** |  |
| a) $∃(x)$(H(x) ∨ G(x)) | a) $∃(x)$(H(x) ∧M(x)) |
| b) ∀x(P(x) → G(x)) | b) $∃(x)$ (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 |