

# CSE

| Sr. No. | Question   | Option A  | Option B  | Option C   | Option D   |
|---------|--|---|---|--|--|
| 1       | If F1, F2 and F3 are propositional formulae such that $F1 \wedge F2 \rightarrow F3$ and $F1 \wedge F2 \rightarrow F3$ are both tautologies, then which of the following is TRUE?   | Both F1 and F2 are tautologies                              | The conjunction $F1 \wedge F2$ is not satisfiable | Neither is tautologies                                 | None of these                                      |
| 2       | Suppose the predicate $F(x, y, t)$ is used to represent the statement that person x can fool person y at time t. which one of the statements below expresses best the meaning of the formula $\exists x \forall y \exists t (\neg F(x, y, t))$ ? | Everyone can fool some person at some time                  | No one can fool everyone all the time             | Everyone cannot fool some person all the time          | No one can fool some person at some time           |
| 3       | Consider the assertions given below :<br>A : CDF is a monotonously increasing function<br>B : PDF is a derivative of CDF & is always positive<br>Which among them is correct according to the properties of PDF?                                 | A is true & B is false                                      | A is false & B is true                            | Both A & B are true but B is a reason for A            | Both A & B are false since B is not a reason for A |
| 4       | About the independent events A and B it is known that $P(A B) = 0.2$ and $P(B A) = 0.5$ . Compute the probability $P(A \cup B)$ .  | 0.7   | 0.2   | 0.4  | 0.6  |
| 5       | Let X and Y be two Bernoulli distributed random variables. Furthermore, $P(X = 0; Y = 0) = 0.3$ , $P(X = 0; Y = 1) = 0.2$ , and $P(X = 1; Y = 0) = 0.2$ .  | X and Y are uncorrelated and independent.                   | positively correlated and dependent.              | negatively correlated and dependent.                   | X and Y are correlated and independent.            |
| 6       | Discrete probability distribution depends on the properties of _____   | Data  | Machine   | Discrete Variables                                     | Probability Function                               |
| 7       | If we have $f(x) = 2x$ , $0 \leq x \leq 1$ , then f(x) is a:   | Probability density function                                | Probability distribution                          | Distribution function                                  | Continuous random variable                         |
| 8       | If $f : X \rightarrow Y$ and $a, b \in X$ , then $f(a - b)$ is equal to  | $f(a) - f(b)$   | $f(a) \cdot f(b)$                                 | a proper subset of $f(a) \cdot f(b)$                   | $f(b) - f(a)$                                      |
| 9       | Three boys and four girls sit in a row with all arrangements equally likely. Let x be the probability that no two boys sit next to each other. What is x?  | 1/7.  | 2/7.  | 3/7.   | 4/7.   |
| 10      | How many combinations are possible while selecting four letters from the word 'SMOKEJACK' with the condition that 'J' must appear in it?   | 81  | $8!/2!$   | $3!/2!$  | 41   |
| 11      | Which of the following statements for a simple graph is correct?   | Every path is a trail                                       | Every trail is a path                             | Every trail is a path as well as every path is a trail | Path and trail have no relation                    |
| 12      | For which of the following combinations of the degrees of vertices would the connected graph be eulerian?  | 1,2,3   | 2,3,4   | 2,4,5  | 1,3,5  |
| 13      | An isomorphism of graphs G and H is a bijection f the vertex sets of G and H. Such that any two vertices u and v of G are adjacent in G if and only if   | $f(u)$ and $f(v)$ are contained in G but not contained in H | $f(u)$ and $f(v)$ are adjacent in H               | $f(u * v) = f(u) + f(v)$                               | $f(u) = f(u)^2 + f(v)^2$                           |

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|----|---|--|---|--|--|
| 14 | BCD input 1000 is fed to a 7 segment display through a BCD to 7 segment decoder/driver. The segments which will lit up are_____   | a,b,d  | a,b,c   | all  | a,b,g,c,d  |
| 15 | In the expression $A + BC$ , the total number of minterms will be   | 3  | 2   | 5  | 4  |
| 16 | The ability to shift or rotate in the same instruction along with other operation is performed with the help of   | Switching circuit  | Barrel switcher circuit   | Integrated Switching circuit                                       | Multiplexer circuit  |
| 17 | The BEQ instructions is used _____  | to check the equality condition between the operands and then branch | to check if the Operand is greater than the condition value and then branch | to check if the flag Z is set to 1 and then causes branch          | None of the mentioned  |
| 18 | In a microprocessor system with memory mapped I/O   | Devices have 8-bit addresses   | Devices are accessed using IN and OUT instructions                          | There can be a maximum of 256 input devices and 256 output devices | Arithmetic and logic operations can be directly performed with the |
| 19 | To overcome the lag in the operating speeds of the I/O device and the processor we use  | Buffer spaces  | Status flags  | Interrupt signals  | Exceptions   |
| 20 | Dijkstra algorithm is also called the _____ shortest path problem.  | multiple source  | single source   | single destination   | multiple destination   |
| 21 | In linked lists, there are no NULL links in   | single linked list   | linear doubly linked list   | circular linked list   | linked list  |
| 22 | The order with which the nodes are inserted affects the running time of the _____ search algorithm.   | AVL Tree   | Red-Black Tree  | Binary Search Tree   | Binary Heap Tree   |
| 23 | In C Language which operator has the highest precedence   | Relational   | Equality  | Logical  | Arithmetic   |
| 24 | Which of the following statements is true?  | Recursion uses less memory compared to iteration                     | Recursion is always better than iteration                                   | Recursion uses more memory compared to iteration                   | Iteration is always better and simpler than recursion              |
| 25 | Euler's circuit problem belong to _____ class   | P  | NP  | Partition  | Complete   |
| 26 | The choice of polynomial class has led to the development of an extensive theory called _____   | computational complexity   | time complexity   | problem complexity   | decision complexity  |
| 27 | Which of the following is not a backtracking algorithm  | Knight tour problem  | N queen problem   | M coloring problem   | Tower of hanoi   |
| 28 | An undirected graph G has n nodes. Its adjacency matrix is given by an $n \times n$ square matrix whose (i) diagonal elements are 0's and (ii) non-diagonal elements are 1's. which one of the following is TRUE? | Graph G has no minimum spanning tree (MST)                           | Graph G has a unique MST of cost n-1  | Graph G has multiple distinct MSTs, each of cost n-1               | Graph G has multiple spanning trees of different costs             |

|    |  |  |  |   |   |
|----|--|--|--|---|---|
| 29 | A bottom-up parser generates:  | Left-most derivation in  | Right-most derivation in   | Left-most derivation  | Right-most derivation   |
| 30 | Given an arbitrary non-deterministic finite automaton (NFA) with N states, the maximum number of states in an equivalent minimized DFA is at least | $N^2$  | $2^N$  | $2N$  | $N!$  |
| 31 | <b>The identification of common sub-expression and replacement of run-time computations by compile-time computations is</b>                        | local optimization   | loop optimization  | constant folding  | data flow analysis  |
| 32 | The method which merges the bodies of two loops is   | Constant folding   | Loop jamming   | Loop unrolling  | None of these   |
| 33 | Which of the following is NOT true of deadlock prevention and deadlock avoidance schemes   | In deadlock prevention, the request for resources is always granted if the resulting state is safe | In deadlock avoidance, the request for resources is always granted if the result state is safe | Deadlock avoidance is less restrictive than deadlock prevention | Deadlock avoidance requires knowledge of resource requirements a priori |
| 34 | What is the swap space in the disk used for  | Saving temporary html pages  | Saving process data  | Storing the super-block   | Storing device drivers  |
| 35 | Which process is busy swapping pages in and out  | Division   | External fragmentation   | Thrashing   | Compaction  |
| 36 | Relational calculus is a   | Procedural language  | Non-procedural language  | Data definition language  | Data manipulation language  |
| 37 | If attributes A and B determine attribute C, then it is also true that   | A C.   | B C.   | (A,B) is a composite determinant.                               | C is a determinant.   |
| 38 | User datagram protocol is called connectionless because  | all UDP packets are treated independently by transport layer                                       | it sends data as a stream of related packets   | it is received in the same order as sent order                  | it sends data very quickly  |
| 39 | What are the Methods to move data through a network of links and switches?   | Packet switching and Line switching  | Circuit switching and Line switching   | Line switching and bit switching                                | Packet switching and Circuit switching                                  |
| 40 | Closed-Loop control mechanisms try to  | Remove after congestion occurs   | Remove after sometime  | Prevent before congestion occurs                                | Prevent before sending packets  |

Answer Key

| Question No. | Write Answer |
|--------------|--------------|
| 1            | B            |
| 2            | B            |
| 3            | C            |
| 4            | D            |
| 5            | B            |
| 6            | A            |
| 7            | A            |
| 8            | C            |
| 9            | B            |
| 10           | D            |
| 11           | A            |
| 12           | A            |
| 13           | B            |
| 14           | C            |
| 15           | D            |
| 16           | B            |
| 17           | C            |
| 18           | D            |
| 19           | B            |
| 20           | B            |
| 21           | C            |
| 22           | C            |
| 23           | D            |
| 24           | C            |
| 25           | A            |
| 26           | A            |
| 27           | D            |
| 28           | C            |
| 29           | B            |
| 30           | B            |
| 31           | C            |
| 32           | B            |
| 33           | A            |
| 34           | B            |
| 35           | C            |
| 36           | B            |
| 37           | C            |
| 38           | A            |
| 39           | D            |
| 40           | A            |