**PaperCode:** 3004 **Paper Name:** 3004-M.TECH.(SET-VII) COMP SCI AND ENGG(PG-CSE) **Set Name:** Original

Q-1 The simplified SOP (Sum Of Product) form of the Boolean expression (P + Q' + R') . (P + Q' + R) . (P + Q + R') is

A (P' . Q + R')
**B (P + Q' . R')**
C (P' . Q + R)
D (P . Q + R)

**Correct Answer : B**

Q-2 What is the minimum number of gates required to implement the Boolean function (AB+C), if we have to use only 2-input NOR gates?

A 2
**B 3**
C 4
D 5

**Correct Answer : B**

Q-3 What is cache memory?

**A Buffer memory situated between CPU and RAM**
B Buffer memory situated between CPU and ROM
C Buffer memory situated between ROM and RAM
D Buffer memory situated between CPU and MOS

**Correct Answer : A**



Q-4 Which of these memories would have the lowest access time in a system:

A Main memory
B Magnetic Disk
**C Registers**
D Cache

**Correct Answer : C**

Q-5 Determine the decimal equivalent of $(1100.1011)_2$

**A 12.6875**
B 12.6685
C 12.5872
D 12.5875

**Correct Answer : A**

Q-6 Dijkstra's Algorithm is the prime example for

A Dynamic programming
B Back tracking
C Branch and bound
**D Greedy algorithm**

**Correct Answer : D**

Q-7 Two main measures for the efficiency of an algorithm are

A Processor and memory
B Complexity and capacity
**C Time and space**
D Data and space

**Correct Answer : C**

Q-8 Which of the following is/are property/properties of a dynamic programming problem?

A Optimal substructure
B Overlapping subproblems
C Greedy approach
**D Both optimal substructure and overlapping subproblems**

**Correct Answer : D**

Q-9 Which technique is essential for efficient implementation of dynamic programming?

A Recursion
B Backtracking
C Greedy approach
**D Memorization**

**Correct Answer : D**

Q-10 A push down automaton employs _____ data structure.

A Queue
B Linked List
C Hash Table
**D Stack**

**Correct Answer : D**

Q-11 Turing machine can be represented by using…...

A Transition graph
B Transition table
C Queue and Input tape
**D All of these**

**Correct Answer : D**

Q-12 Concatenation Operation refers to which of the following set operations:

A Union
**B Dot**
C Kleene
D Two of the options are correct

**Correct Answer : B**

Q-13 What does a top-down parser generate?

A Rightmost deviation in reverse
B Rightmost deviation
C Leftmost deviation in reverse
**D Leftmost deviation**

**Correct Answer : D**

Q-14 In which of the following phase of the compiler is Lexical Analyser?

**A First**
B Second
C Third
D All of these

**Correct Answer : A**

Q-15 Which of the following is a stage of compiler design?

A Semantic analysis
B Intermediate code generator
C Code generator
**D All of these**

**Correct Answer : D**

Q-16 The data structure required to check whether an expression contains a balanced parenthesis is

A Queue
**B Stack**
C Tree
D Array

**Correct Answer : B**

Q-17 The five items: A, B, C, D, and E are pushed in a stack, one after other starting from A. The stack is popped four items, and each element is inserted in a queue. The two elements are deleted from the queue and pushed back on the stack. Now one item is popped from the stack. The popped item is

A A
B B
C C
**D D**

**Correct Answer : D**

Q-18 What is the time complexity of accessing an element in an array by index?

A O(n)
**B O(1)**
C O(log n)
D O(n log n)

**Correct Answer : B**

Q-19 Which of the following is the correct way to declare an array in C?

A int array
B array {int}
**C int array [5]**
D int array()

**Correct Answer : C**

Q-20 How is the 2nd element in an array accessed based on pointer notation?

A *a + 2
**B *(a + 2)**
C *(*a + 2)
D &(a + 2)



**Correct Answer : B**

Q-21 Which of the following data structures finds its use in recursion?

**A Stacks**
B Arrays
C Linked lists
D queues

**Correct Answer : A**

Q-22 The post-order traversal of a binary tree is 8,9,6,7,4,5,2,3,1. The in-order traversal of the same tree is 8,6,9,4,7,2,5,1,3. The height of a tree is the length of the longest path from the root to any leaf. Then the height of the binary tree is

A 1
**B 4**
C 5
D 8

**Correct Answer : B**

Q-23 Increasing the RAM of a computer typically improves performance because:

A Virtual memory increases
**B Fewer page faults occur**
C Larger RAMs are faster
D Fewer segmentation faults occur

**Correct Answer : B**

Q-24 The data blocks of a very large file in the Unix file system are allocated using

A contiguous allocation
B linked allocation
C indexed allocation
**D an extension of indexed allocation**

**Correct Answer : D**

Q-25 A process can be terminated due to

A normal exit

B fatal error

C killed by another process

**D all of these**

**Correct Answer : D**

Q-26 What is a batch operating system?

A Multiple individual tasks

B Tasks operating at different systems

**C Similar types of tasks are grouped together**

D All of these

**Correct Answer : C**

Q-27 What is FIFO scheduling?

A First input-output scheduling

**B First in first out scheduling**

C Free input free output

D All of these

**Correct Answer : B**

Q-28 The row of a relation is known as….

A Degree

B Entity

**C Tuple**

D Feature



**Correct Answer : C**

Q-29 Which data structure is used in Hierarchical model records?

A Linked List

B Stacks

**C Tree**

D Graph

**Correct Answer : C**

Q-30 A prime attribute can be transitively dependent on a key in a BCNF relation. Which normal form deals with multivalued dependency?

A 1NF

B 2NF

C 3NF

**D 4NF**

**Correct Answer : D**

Q-31 Which of the following allows to uniquely identify a tuple?

**A SuperKey**

B Schema

C Attribute

D Domain

**Correct Answer : A**

Q-32 What is the full form of OSI?

A open service Internet

**B open system interconnection**

C operating system interface

D optical service implementation

**Correct Answer : B**

Q-33 Which of the following is the default return value of functions in C++?

**A** **int**
B char
C float
D void

**Correct Answer : A**

Q-34 Which operator is overloaded for a cout object?

A >>
**B** **<<**
C >
D <

**Correct Answer : B**

Q-35 From which layer does the data link layer collect packets and encapsulate them into frames for transmission?

A Transport layer
B Application layer
**C** **Network layer**
D Physical layer

**Correct Answer : C**

Q-36 What is the primary role of a network hub in a network?

A To filter data
**B** **To forward data to all connected devices**
C To route data between different networks
D To serve as a firewall for security

**Correct Answer : B**



Q-37 What is the function of a firewall in a computer network?

**A** **To protect the network from unauthorized access**
B To route data packets to their destination
C To forward data across different networks
D To monitor the network for performance issues

**Correct Answer : A**

Q-38 MAC address is also called _____

**A** **Physical address**
B Logical address
C Source address
D Destination address

**Correct Answer : A**

Q-39 Regression testing is primarily related to

A Functional testing
B Development testing
C Data flow testing
**D** **Maintenance testing**

**Correct Answer : D**

Q-40 Requirement engineering process includes which of these steps?

A Feasibility study
B Requirement Gathering
C Software Requirement specification & Validation
**D** **All of these**

**Correct Answer : D**

Q-41 The most common form of project schedule is a

A Pie chart

**B Gantt chart**

C Bar chart

D x-y chart

**Correct Answer : B**

Q-42 What are the attributes of good software?

A Development

B Maintainability

C Functionality

**D Functionality & Maintainability**

**Correct Answer : D**

Q-43 The term "hybrid cloud" refers to?

A Private cloud

B Public cloud

**C A combination of public and private clouds**

D None of these

**Correct Answer : C**

Q-44 Which of the following is a goal of clustering algorithms?

A Classification

B Regression

C Dimensionality reduction

**D Grouping similar data points together**

**Correct Answer : D**



Q-45 Which of the following are Advantages of fog computing?

A This approach reduces the amount of data that needs to be sent to the cloud

B Since the distance to be travelled by the data is reduced, it results in saving network bandwidth

C Reduces the response time of the system

**D All of these**

**Correct Answer : D**

Q-46 What does a block in a Blockchain have?

A Header & Digital ledger

B Bitcoins & Input

C Transactions & Bitcoins

**D Header & Transaction**

**Correct Answer : D**

Q-47 What are the advantages of blockchain technology?

A Security and speed

B User control over data

C Cost-effective transactions

**D All of these**

**Correct Answer : D**

Q-48 What is the standard form of RFID?

**A Radio Frequency Identification**

B Radio Waves Frequency Identification

C Radio Frequency Interdependent

D Radio Wave Frequency Independent

**Correct Answer : A**

Q-49 The standard port number of secure MQTT is

A 8000
B 8888
C 1883
**D 8883**

**Correct Answer : D**

Q-50 Which of the following is the branch of Artificial Intelligence?

**A Machine Learning**
B Cyber forensics
C Full-Stack Developer
D Network Design

**Correct Answer : A**

Q-51 An amount is invested at 10% per annum compound interest for 2 years, and the interest earned is Rs. 840. What is the principal amount?

A Rs. 3500
B Rs. 4500
**C Rs. 4000**
D Rs. 5000

**Correct Answer : C**

Q-52 In covering a distance of 30 km, A takes 2 hours more than B. If A doubles his speed, then he would take 1 hour less than B. A's speed is:

**A 5 km/h**
B 7 km/h
C 9 km/h
D 10 km/h

**Correct Answer : A**



Q-53 Fill the blank in the middle of the following series.
SCD, TEF, UGH, _____, WKL

A CMN
B UJI
**C VIJ**
D IJT

**Correct Answer : C**

Q-54 The Chandrayaan 3 mission's rover is known as

A PSLV
**B Pragyaan**
C Dhruv
D Vikram

**Correct Answer : B**

Q-55 We were very tired, So we _____ early.

A Leave
B Leaving
**C Left**
D Lost

**Correct Answer : C**

Q-56 Consider the system of linear equations

$$x+2y-3z=-2,$$
$$3x-y+4z=3,$$
$$6x+5y+\lambda z=-3$$

where x,y,z are the variables and λ is a constant.
Then which one of the following is true ?

A If λ=5, then system has unique solution

**B If λ=5, then system has infinitely many solutions**

C If λ=5, then system has no solution

D System is inconsistence for any value of λ

**Correct Answer : B**

Q-57 Evaluate double integral $\int_0^\infty \int_x^\infty \frac{e^{-y}}{y} dy\, dx.$

A 0

**B 1**

C -2

D 2

**Correct Answer : B**

Q-58 Using Newton's iterative method with initial approximation $x_0 = 2$, the root of the equation $x^3 - 2x - 8 = 0$ after one iteration is

**A 2.40**

B 2.33

C 2.12

D 2.50

**Correct Answer : A**

Q-59 Find the directional derivative of $F(x, y, z) = x^2yz + 4xz^2$ at $(1, -2, -1)$ in the direction of vector $2\hat{\imath} - \hat{\jmath} - 2\hat{k}$.



A 31/3

B 35/3

**C 37/3**

D 38/3

**Correct Answer : C**

Q-60 The general solution of the first order differential equation $\frac{dy}{dx} + 2y \tan x = \sin x$ is

A $y = \sin x + k \cos^2 x$

B $y = \sin x + k \sin^2 x$

C $y = \cos x + k \sin^2 x$

**D** $y = \cos x + k \cos^2 x$

**Correct Answer : D**