

Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2024

CSS

COMPUTER SCIENCE / COMPUTER SCIENCE WITH SPECIALIZATION IN (ARTIFICIAL INTELLIGENCE / MACHINE LEARNING)

General Instructions

1. The Question Paper is having 100 Objective Questions, each carrying one mark.
2. The answers are to be (✓) 'tick marked' **only** in the "**Response Sheet**" provided.
3. **Negative marking : 0.25 marks** will be deducted for each wrong answer .

Time : 2 Hours

Max. Marks : 100

To be filled in by the Candidate									
Register Number	in Figures								
	in words								

Choose appropriate answer from the options in the questions. **(100 × 1 = 100 marks)**

1. What will be the output of a X-NOR gate with two inputs 0 and 1 respectively?
 - A. 0
 - B. 1
 - C. X
 - D. None of the above

DO NOT WRITE HERE

-
2. An inverted AND gate operation's outcome, according to De-Morgan's Theorem, is similar to what kind of logic gate operation?
- A. OR B. NOT
C. NOR D. XOR
3. If the clock is low and $D = 0$, what will be the output of a D flip-flop?
- A. 0 B. 1
C. No change D. Toggle between 0 and 1

4. $(1E.43)_{16}$ in hexadecimal format is equivalent to
- A. $(36.506)_8$ B. $(36.206)_8$
C. $(35.506)_8$ D. $(35.206)_8$
5. How many bits are needed to store one BCD digit?
- A. 2 bits B. 4 bits
C. 3 bits D. 1 bit
6. Which one of these collections of logic gates is referred to as a universal gate?
- A. XOR, NAND, OR B. OR, NOT, XOR
C. NOR, NAND, XNOR D. NOR, NAND
7. In the toggle mode, a JK flip-flop has
- A. $J = 0, K = 1$ B. $J = 1, K = 1$
C. $J = 0, K = 0$ D. $J = 1, K = 0$
8. The method in which the controller is given complete access to main memory is known as
- A. Cycle stealing B. Memory stealing
C. Memory Con D. Burst mode
9. The Intel 8086 processor is a _____ processor.
- A. 8 bit B. 16 bit
C. 32 bit D. 64 bit
10. The function of EU in 8086 is
- A. Encoding B. Decoding
C. Processing D. Calculations

11. The goal of which of the following computer architecture is to minimise the time it takes for instructions to be executed.
- A. CISC
 - B. RISC
 - C. ISA
 - D. ANNA
12. The CISC stands for
- A. Computer Instruction Set Compliment
 - B. Complete Instruction Set Compliment
 - C. Computer Indexed Set Components
 - D. Complex Instruction Set computer
13. The time between the receiver of an interrupt and its service is
- A. Interrupt delay
 - B. Interrupt latency
 - C. Cycle time
 - D. Switching time
14. The addressing mode, in which the operand value is directly specified, is
- A. Immediate
 - B. Direct
 - C. Definite
 - D. Relative
15. What is the length of a line starting at (0,0) and ending at (4,6) in the DDA line algorithm?
- A. 3
 - B. 6
 - C. 4
 - D. 5
16. Which of the following properties is followed by the Bresenham's algorithm?
- A. It is an incremental method
 - B. It chooses points randomly
 - C. It uses floating point operations
 - D. All of the above

17. How many bit RGB color image is represented by full-color image?
- A. 32-bit RGB color image B. 24-bit RGB color image
C. 16-bit RGB color image D. 8-bit RGB color image
18. The third coordinate's value for a 2D transformation is $w = ?$
- A. 1 B. - 1
C. 0 D. Any value
19. If s_x and s_y scaling factors are less than 1, then
- A. It reduces the size of object B. It increases the size of object
C. It stunts the shape of an object D. None
20. Positioning an object along a straight line path from one coordinate point to another coordinate point is known as
- A. Translation B. Reflection
C. Shearing D. Transformation
21. Which of the following options is correct in accordance with the Random Scan Display Algorithm?
- A. It is best suited for line drawing algorithm
B. It has a high resolution
C. It has an electron beam which strikes only that part of the screen where the drawing is needed
D. All of the above
22. What is referred to as the single inference rule?
- A. Reference B. Resolution
C. Reform D. None of the mentioned

23. Which of the following graph is used to represent semantic network?
- A. Undirected graph
 - B. Directed complete graph
 - C. Directed Acyclic graph
 - D. Directed graph
24. Which of the following is Holonymy relation for X and Y?
- A. X is part of Y
 - B. X is superordinate of Y
 - C. X is a kind of Y
 - D. Y has X as a part of itself
25. What components of the following constitute the frame structure in AI?
- A. Facts or Data
 - B. Procedures and default values
 - C. Frame names
 - D. Frame reference in hierarchy
26. Depth First Search is equivalent to which of the traversal in the Binary Trees?
- A. Pre-order Traversal
 - B. Post-order Traversal
 - C. Level-order Traversal
 - D. In-order Traversal
27. The Data structure used in standard implementation of Breadth First Search is?
- A. Stack
 - B. Queue
 - C. Linked List
 - D. Tree
28. What is the other name of informed search strategy?
- A. Simple search
 - B. Heuristic search
 - C. Online search
 - D. None of the mentioned
29. SaaS Stands for
- A. Software-as-a-Service
 - B. Server-as-a-Software
 - C. Storage-as-a-Service
 - D. None of the above

30. Which among the following cloud computing services hardware is virtualized in the cloud?
- A. IaaS
 - B. CaaS
 - C. PaaS
 - D. None of the mentioned
31. Which of the following is not a phase of cloud lifecycle management?
- A. The definition of the service as a template for creating instances
 - B. Client interactions with the service
 - C. Management of the operation of instances and routine maintenance
 - D. None of the mentioned
32. Windows Azure and Force.com are example of
- A. PaaS
 - B. IaaS
 - C. SaaS
 - D. All of the above
33. The matrix A is represented as $\begin{bmatrix} 1 & 4 \\ -2 & 9 \\ -3 & -8 \end{bmatrix}$. The transpose of the matrix of this matrix is represented as?
- A. $\begin{bmatrix} 1 & 4 \\ -2 & 9 \end{bmatrix}$
 - B. $\begin{bmatrix} 1 & 4 \\ -2 & 9 \\ -3 & 8 \end{bmatrix}$
 - C. $\begin{bmatrix} 1 & -2 & -3 \\ 4 & 9 & 8 \end{bmatrix}$
 - D. $\begin{bmatrix} -1 & 2 & 3 \\ -4 & -9 & 8 \end{bmatrix}$
34. Which of the following is true for matrices?
- A. $(AB)^{-1} = B^{-1}A^{-1}$
 - B. $(A^T)^T = A$
 - C. $AB = BA$
 - D. $A * I = I$

35. The determinant of the matrix whose eigen values are 7, 1, 9 is given by
A. 7
B. 63
C. 9
D. 17
36. A graph G which is a connected acyclic graph is known as
A. Cyclic graph
B. Regular graph
C. Tree
D. Not a graph
37. A partial ordered relation is transitive, reflexive and
A. Antisymmetric
B. Bisymmetric
C. Anti reflexive
D. Asymmetric
38. The probability of getting two tails when two coins are tossed is
A. 1/6
B. 1/2
C. 1/3
D. 1/4
39. Which of the following describes duplicates of the same data (or information) taking up memory space in different locations?
A. Data Repository
B. Data Inconsistency
C. Data Mining
D. Data Redundancy
40. A set of a few attributes used in combination to uniquely identify a record is known as a
A. Primary Key
B. Foreign key
C. Super key
D. Candidate key
41. If every non key attribute is functionally depend on the primary key then the relation will be
A. First normal form
B. Second normal form
C. Third Normal Form
D. No normal form

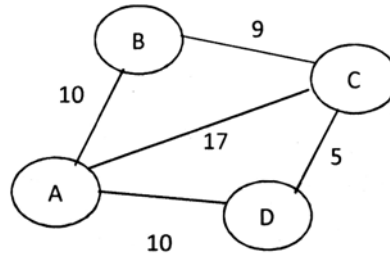
42. If a table is in second normal form (2NF) then it will
- A. Eliminate all hidden dependencies
 - B. Eliminate the possibility of a insertion anomalies
 - C. Have a composite key
 - D. Have all non-key fields depend on the whole primary key
43. MINUS Operator is used to displays rows which are
- A. Detected in the second query absent in the first query, and there are no duplications
 - B. Detected in the first query absent in the second query, and there are no duplications
 - C. Detected in the first query, absent in the second query, and there are duplications
 - D. Detected in the second query, absent in the first query, and there are duplications
44. Which of the following set of operations is a valid set of aggregate operations in SQL?
- A. COUNT, MAX, AVG, SUM
 - B. MAX, AVG, SUM, SELECT
 - C. UNION, COUNT, MIN, DESC
 - D. AVG, MIN, MAX, ASC
45. Which one of the following SQL statements contains error?
- A. `select * from emp where empid = 10003;`
 - B. `select empid from emp where empid = 10006;`
 - C. `select empid from emp;`
 - D. `select empid where empid = 1009 and Lastname = 'GELLER';`
46. Which of the following command should be used to include integrity constraint in an existing relation?
- A. Create table
 - B. Modify table
 - C. Alter table
 - D. Drop table

47. The _____ of one relation is referred to in another relation via a foreign key.
- A. Foreign key
 - B. Primary key
 - C. References
 - D. Check constraint
48. In an employee table to include the attributes whose value always have some value which of the following constraint must be used?
- A. Null
 - B. Not null
 - C. Unique
 - D. Distinct
49. In a relation between the entities the type and condition of the relation should be specified. That is called as _____ attribute.
- A. Descriptive
 - B. Derived
 - C. Recursive
 - D. Relative
50. For each attribute in the table, there is set of permitted values called the _____ of the attribute.
- A. Tuple
 - B. Domain
 - C. Column
 - D. Row
51. The layer which is present in OSI model but not in TCP/IP model is
- A. session layer
 - B. transport layer
 - C. application layer
 - D. network layer
52. Which layer is used for process to process delivery in a general network model?
- A. network layer
 - B. transport layer
 - C. session layer
 - D. data link layer

53. In slotted ALOHA, the vulnerable time is _____ the frame transmission time.
- A. Two times
B. The same as
C. Three times
D. None of the above
54. In which of the following methods the chance of collision can be reduced if a station senses the medium before trying to use it.
- A. FDMA
B. CDMA
C. CSMA
D. MA
55. A shared channel of 200 kbps is used by a pure ALOHA network to send 200-bit frames. If the system (all stations together) produces 1000 frames per second, what is the throughput?
- A. 150 frames
B. 80 frames
C. 135 frames
D. 96 frames
56. An IP packet has arrived with the first 8 bits as 01000001. What is the header length?
- A. 4
B. 8
C. 12
D. 16
57. Which of the following statements is incorrect about User Datagram Protocol?
- A. UDP is unreliable transport protocol
B. There is no window mechanism in UDP
C. There is a robust error control mechanism in UDP
D. The receiver may overflow with incoming messages
58. The DES algorithm has a key length of
- A. 128 Bits
B. 32 Bits
C. 64 Bits
D. 16 Bits

59. For a client-server authentication, the client requests from the Kerberos Key Distribution Centre a _____ for access to a specific asset.
- A. ticket
 - B. local
 - C. token
 - D. user
60. The term “linear list” refers to a collection of elements where deletions may only be made from one end (front) and insertions can only be made from the other end (rear).
- A. Queue
 - B. Stack
 - C. Tree
 - D. Linked List
61. Which of the following data structure is LIFO data structure?
- A. Queue
 - B. Trees
 - C. Stack
 - D. Linked List
62. What is the possible number of binary trees that can be created with 3 nodes, giving the sequence A, B, C when traversed in post-order?
- A. 15
 - B. 3
 - C. 5
 - D. 8
63. In delete operation of BST, we need inorder successor (or predecessor) of a node when the node to be deleted has both left and right child as non-empty. Which of the following is true about inorder successor needed in delete operation?
- A. Inorder successor is always a leaf node
 - B. Inorder successor is always a leaf node or a node with empty left child
 - C. Inorder successor may be an ancestor of the node
 - D. Inorder successor is always either a leaf node or a node with empty right child

64. Consider the given graph.



What is the weight of the minimum spanning tree using the Prim's algorithm, starting from vertex a?

- A. 24
- B. 26
- C. 11
- D. 23

65. Kruskal's algorithm is used to

- A. find minimum spanning tree
- B. find single source shortest path
- C. find all pair shortest path algorithm
- D. traverse the graph

66. Merge sort uses which of the following technique to implement sorting?

- A. backtracking
- B. greedy algorithm
- C. divide and conquer
- D. dynamic programming

67. Which class of decision problems can be solved by non-deterministic polynomial algorithms?

- A. NP
- B. P
- C. Hard
- D. Complete

68. A Process Control Block (PCB) does not contain which of the following?

- A. Code
- B. Stack
- C. Bootstrap program
- D. Data

69. In a multithreaded process which of the following program state components are shared?
- (i) Stack memory
 - (ii) Global variables
 - (iii) Heap memory
 - (iv) Register values
- A. Both (ii) and (iii) B. Only (ii)
C. Only (iii) D. Both (i) and (iv)
70. The section of code where a process may update tables, change common variables, or write files is referred to as
- A. Mutual Exclusion B. Critical section
C. Non-critical section D. Synchronizing
71. If resources are always pre-empted from the same process _____ can occur.
- A. Deadlock B. System crash
C. Starvation D. Aging
72. Which of the following is used as an index into the page table?
- A. Frame bit B. Frame offset
C. Page number D. Page Offset
73. The percentage of times a page number is found in a TLB is known as
- A. Miss ratio B. Hit ratio
C. Hit miss D. Miss percentage
74. Each address in segmentation is specified by
- A. segment number and offset B. an offset and value
C. a key and value D. a segment number and a value

75. For storing process pages in main memory, a system employs three page frames. Least Recently Used (LRU) page replacement is employed. Assume that at first, all of the page frames are empty. How many page faults will there be overall when processing the below-provided page reference string?

4, 7, 6, 1, 7, 6, 1, 2, 7, 2

- A. 7
- B. 6
- C. 8
- D. 9

76. Which of the following is used to control the function of a computer?

- A. System software
- B. Activity software
- C. Application software
- D. Utility software

77. What is the use of linker?

- A. Used to create a load module
- B. Always used before program execution
- C. Is same as the loader
- D. None of the above

78. Parsing is also known as

- A. Syntax analysis
- B. Semantic analysis
- C. Lexical analysis
- D. None of the above

79. How many times Hai is printed?

```
int main( )  
{  
    int i=0;  
    lbl :  
    cout <<" Hai ";  
    i++;  
    if(i<5)  
    {  
        goto lbl;  
    }  
    return 0;  
}
```

- A. 5
- B. 4
- C. 6
- D. 7

80. Read the following program carefully and find out which concept from the given options is not used or missing in the following program?

```
class A
{
    int x;
    public :
    void print( ) {cout <<"hello"<<x;}
}
class B : public A
{
    int y;
    public :
    void assign (int a){y = a;}
}
```

- (i) Polymorphism
- (ii) Inheritance
- (iii) Abstraction
- (iv) Encapsulation

- A. Both (i) and (ii)
- B. Only (i)
- C. Only (ii)
- D. Both (iii) and (iv)

81. Find output of the following program.

```
#include <stdio.h>
int main( )
{
    int i = 3, *j, k;
    j = &i;
    printf ("%d\n", i**j*i+*j);
    return 0;
}
```

- A. 30
- B. 3
- C. 9
- D. 27

82. What will be the output of the program?

```
class door
{
    final static short a = 2;
    public static int b = 0;
    public static void main (String [ ] args)
    {
        for (int h = 0; h<3; h++)
        {
            switch (h)
            {
                case a : System.out.print("1");
                case a -1 : System.out.print("2");
                default : System.out.print("0");
            }
        }
    }
}
```

A. 0 1 2

B. 0 1 2 0 2

C. 2 1 0 1 0 0

D. 0 2 0 1 2 0

83. What is the output of the below given code:

```
public class Test {
    public static void main(String [ ] args) {
        int [ ] a= {1, 2,3, 4};
        int [ ] b = a;
        a = new int [2];
        for (int i = 0; i <a.length; i++)
            System.out.print(b[i] + " ");
    }
}
```

A. 1 2 3 4

B. 12

C. 0000

D. 00

84. Which of these keywords is used to refer to member of base class from a subclass?
- A. upper
 - B. super
 - C. this
 - D. none of the mentioned
85. Cohesion is a qualitative indication of the degree to which a module
- A. can be written more compactly
 - B. focuses on just one thing
 - C. is able to complete its function in a timely manner
 - D. is connected to other modules and the outside world
86. Which of the following testing technique can be used in order to determine the validation test?
- A. Black-box Testing
 - B. White-box Testing
 - C. Yellow-box Testing
 - D. All of the above
87. Which of the following testing is the part of non-functional testing?
- A. Unit Testing
 - B. Performance Testing
 - C. System Testing
 - D. Integration Testing
88. In the Boehm model for software maintenance, what does ACT stand for?
- A. Actual Change Track
 - B. Annual Change Traffic
 - C. Annual Change Track
 - D. Actual Change Traffic
89. Which of the following tag is used to render an image on a webpage?
- A. img
 - B. src
 - C. image
 - D. none of the above

90. ASCII is
- A. 7 bit character set
 - B. 6 bit character set
 - C. 9 bit character set
 - D. 8 bit character set
91. Which scheme is used for securing Hypertext Transfer Protocol?
- A. ftp
 - B. http
 - C. https
 - D. file
92. Which of the following should not be used when transferring sensitive information like passwords?
- A. GET
 - B. POST
 - C. REQUEST
 - D. NEXT
93. What will be the output of the following code snippet?
- ```
a = [1, 2, 3]
a = tuple (a)
a [0] = 2
print (a)
```
- A. [2, 2, 3]
  - B. (2, 2, 3)
  - C. (1, 2, 3)
  - D. error
94. What will be the output of the following code snippet?
- ```
count = 0
while (True) :
if count %3 == 0:
print (count, end = " ")
if (count > 15):
break;
count +=1
```
- A. 0, 1, 2,15
 - B. Infinite loop
 - C. 0, 3, 6, 9, 12, 15
 - D. 0, 3, 6, 9, 12

95. In the Python programming language, how do we define a block of code?
- A. Key
 - B. Brackets
 - C. Indentation
 - D. None of the above
96. Which of the following is correctly evaluated for this function?
- ```
pow (x,y,z)
```
- A.  $(x^{**}y)/z$
  - B.  $(x/y)^*z$
  - C.  $(x^{**}y)\%z$
  - D.  $(x/y)/z$
97. The method of separating the components of an abstraction's structure and behaviour into distinct parts is referred to as
- A. Hierarchy
  - B. Encapsulation
  - C. Modularity
  - D. Entity Abstraction
98. \_\_\_\_\_ represented by In UML diagrams, relationship between component parts and object.
- A. Ordination
  - B. Aggregation
  - C. Segregation
  - D. Increment
99. Which of the following is conceptually similar to objects?
- A. PACKAGE
  - B. PROC
  - C. PRIVATE
  - D. None of the mentioned
100. In an object-oriented environment Software is a collection of discrete objects that encapsulate data and
- A. Programs
  - B. Class
  - C. Functions
  - D. Files

## ANSWER SHEET

|    |           |    |           |    |           |     |           |
|----|-----------|----|-----------|----|-----------|-----|-----------|
| 1  | A B C D E | 26 | A B C D E | 51 | A B C D E | 76  | A B C D E |
| 2  | A B C D E | 27 | A B C D E | 52 | A B C D E | 77  | A B C D E |
| 3  | A B C D E | 28 | A B C D E | 53 | A B C D E | 78  | A B C D E |
| 4  | A B C D E | 29 | A B C D E | 54 | A B C D E | 79  | A B C D E |
| 5  | A B C D E | 30 | A B C D E | 55 | A B C D E | 80  | A B C D E |
| 6  | A B C D E | 31 | A B C D E | 56 | A B C D E | 81  | A B C D E |
| 7  | A B C D E | 32 | A B C D E | 57 | A B C D E | 82  | A B C D E |
| 8  | A B C D E | 33 | A B C D E | 58 | A B C D E | 83  | A B C D E |
| 9  | A B C D E | 34 | A B C D E | 59 | A B C D E | 84  | A B C D E |
| 10 | A B C D E | 35 | A B C D E | 60 | A B C D E | 85  | A B C D E |
| 11 | A B C D E | 36 | A B C D E | 61 | A B C D E | 86  | A B C D E |
| 12 | A B C D E | 37 | A B C D E | 62 | A B C D E | 87  | A B C D E |
| 13 | A B C D E | 38 | A B C D E | 63 | A B C D E | 88  | A B C D E |
| 14 | A B C D E | 39 | A B C D E | 64 | A B C D E | 89  | A B C D E |
| 15 | A B C D E | 40 | A B C D E | 65 | A B C D E | 90  | A B C D E |
| 16 | A B C D E | 41 | A B C D E | 66 | A B C D E | 91  | A B C D E |
| 17 | A B C D E | 42 | A B C D E | 67 | A B C D E | 92  | A B C D E |
| 18 | A B C D E | 43 | A B C D E | 68 | A B C D E | 93  | A B C D E |
| 19 | A B C D E | 44 | A B C D E | 69 | A B C D E | 94  | A B C D E |
| 20 | A B C D E | 45 | A B C D E | 70 | A B C D E | 95  | A B C D E |
| 21 | A B C D E | 46 | A B C D E | 71 | A B C D E | 96  | A B C D E |
| 22 | A B C D E | 47 | A B C D E | 72 | A B C D E | 97  | A B C D E |
| 23 | A B C D E | 48 | A B C D E | 73 | A B C D E | 98  | A B C D E |
| 24 | A B C D E | 49 | A B C D E | 74 | A B C D E | 99  | A B C D E |
| 25 | A B C D E | 50 | A B C D E | 75 | A B C D E | 100 | A B C D E |

## **ROUGH WORK**

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