Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2023

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. Which 8086 register is often used as a counter?

    a) SP

    b) BP

    c) C

    d) None of these

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2. S in HIS colour model stands for:

   a) Sign

   b) Soft

   c) Shine

   d) None of these

3. In 8086 microprocessor, let the content of CX = 3014H. What will be the content of CX after the execution of ROL CX, 2

   a) CO5OH

   b) 81B4H

   c) 4125H

   d) None of these

4. You have to construct AND gate (function) using only NAND gates. How many NAND gates are required?

   a) 2   b) 3

   c) 4   d) 5

5. Which of the following represent the equation for carry in a Full adder?

   a) Carry = $A\overline{BC} + \overline{A}BC$

   b) Carry = $A\overline{B}\ \overline{C} + \overline{A}BC + AB\overline{C}$

   c) Carry = $AB\overline{C} + \overline{A}BC + A\overline{B}C + \overline{A}\ \overline{B}\ \overline{C}$

   d) None of these

6. The BCD equivalent of the binary number 1011011 is

   a) 1001 0010   b) 1000 1000

   c) 1001 0001   d) 1000 1001

7. Which of the following about RISC architecture is not true?

   a) A RISC processor has few instructions compared to CISC

   b) RISC processors have few addressing modes than CISC

   c) RISC instructions generally require more than one clock cycle

   d) None of these

8. Cycle stealing is a concept in

   a) Virtual memory   b) Cache memory

   c) Content addressable memory   d) Direct Memory Access

9. ———————— is a situation where CPU spends more time for serving page faults than executing instructions.

   a) Deadlock
   b) Thrashing
   c) Critical section
   d) None of these

10. Which of the following is the most serious user concern in cloud computing?

    a) Cost
    b) Speed
    c) Bandwidth
    d) Security

11. In a group of 5 boys and 6 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?

    a) 315
    b) 295
    c) 325
    d) None of these

12. Which of the following removes transitive dependency?

    a) 2NF
    b) 3NF
    c) 4NF
    d) None of these

13. Which of the following is not a knowledge representation scheme?

    a) Predicate Logic
    b) Frames
    c) Semantic networks
    d) None of these

14. The address size of IPV6 is

    a) 32
    b) 64
    c) 128
    d) 256

15. The best-case time complexity of Binary search is

a) $O(n)$　　　　　　　　　b) $O(I)$

c) $O(\log n)$　　　　　　　d) None of these

16. Which of the following algorithm is an example of Divide and Conquer?

a) Quick sort　　　　　　　b) Merge sort

c) Binary search　　　　　　d) All the above

17. Let f be a pointer to the first node of a singly linked list with a node structure node {int data; node* next}. What would be result of the following steps:

node * previous;

node * temp = f;

if (temp!=NULL)

{ while (temp->next ! NULL)

{ previous temp;

temp= temp->next; }

if (temp == f)

f=NULL;
else{
previous->next=NULL;
delete (temp); }

}

a) Delete the first node　　　　　b) Delete the last node

c) Delete the second last node　　d) Delete all the nodes

18. What will be the values of the following matrix after shift row transformation in AES (all values in hex)?

AB 33 12 05
34 5E 16 F0
20 9D FE 44
15 5A 28 09

a)
33 12 05 AB
16 F0 34 5E
44 20 9D FE
15 5A 28 09

b)
AB 33 12 05
5E 16 F0 34
FE 44 20 9D
09 15 5A 28

c)
05 AB 33 12
F0 34 5E 16
FE 44 20 9D
15 5A 28 09

d) None of these

19. RSA algorithm in cryptography is an example of
   a) Symmetric algorithm
   b) Asymmetric algorithm
   c) Substitution algorithm
   d) None of these

20. Output of a hash function, which takes a variable length input and output a fixed length string/value is referred to as
   a) hash value
   b) message digest
   c) hash code
   d) All the above

21. Which of the following is not a malware?
    a) Virus   b) Trojans
    c) Worms   d) Kerberos

22. In ————————— the available bandwidth is divided into frequency bands.
    a) FDMA   b) CDMA
    c) TDMA   d) None of these

23. Which of the following is not an aggregate function?
    a) SUM   b) COUNT
    c) JOIN   d) None of these

24. ————————— entity set may not have sufficient attributes to form a primary key.
    a) Composite   b) Prime
    c) Weak   d) None of these

25. Which of the following operation allows us to find the tuples that are in one
    relation, but not in the other?
    a) Union   b) Cartesian product
    c) Set difference   d) Set intersection

26. ————————— is a predicate we expect the database to always satisfy.
    a) Assertion   b) Reason
    c) Mandate   d) None of these

27. Which of the following is not a database model?
    a) Hierarchical   b) Relational
    c) Object Relational   d) None of these

28. In a box, there are 6 orange, 5 white, and 9 blue balls. If a ball is picked up randomly, what is the probability that it is neither orange nor blue?

   a) 15/20
   b) 5/15
   c) 1/4
   d) None of these

29. The derivative of $\cos 2x$ is

   a) $-2\cos 2x$
   b) $-\cos 2x$
   c) $-2\sin 2x$
   d) $-\sin 2x$

30. The maximum number of edges in a bipartite graph on 12 vertices is

   a) 12
   b) 24
   c) 36
   d) 48

31. If there are 6 elements in a set, then the cardinality of its power set is

   a) 36
   b) 32
   c) 12
   d) None of these

32. The ———————— matrix is the sum of all the diagonal elements of a square matrix.

   a) Trace of
   b) Identity
   c) Diagonal
   d) None of these

33. A ———————— is a software that creates and runs virtual machines.

   a) Linker
   b) Supervisor
   c) Hypervisor
   d) None of these

34. In cloud computing PaaS stands for

   a) Program as a Service
   b) Platform as a Service
   c) Platform as a Software
   d) Program as a Software

35. ———————— refers to the location and management of cloud infrastructure.
    a) Virtualization   b) Deployment
    c) Reliability   d) Scalability

36. Each stage in pipelining (parallel processing) should be completed within ———————— cycle.
    a) 1   b) 2
    c) 3   d) 4

37. Which of the following is the Gray code equivalent of Binary 1001?
    a) 1101   b) 1100
    c) 1010   d) 1000

38. The Preset input in JK flip flop is used to set the output Q to
    a) 0   b) 1
    c) $\overline{Q}$ d) None of these

39. Which of the following is not a necessary condition for deadlock to occur?
    a) Mutual exclusion   b) Hold and Wait
    c) Preemption   d) None of these

40. A running process will move to ———————— State on I/O request.
    a) Ready state   b) Wait state
    c) Suspend Ready   d) None of these

41. The Translation Lookaside Buffer in paging (memory management)
    a) is maintained in the main memory
    b) is maintained in cache memory
    c) is maintained in the secondary storage
    d) None of these

42. Concurrent access to shared data may lead to
   a) Data insecurity
   b) Starvation
   c) Data inconsistency
   d) None of these

43. In which of the following scheduling algorithm, the concept of time quantum is used?
   a) Shortest Job First algorithm
   b) Priority scheduling algorithm
   c) Round Robin algorithm
   d) None of these

44. Banker's algorithm is used in
   a) Deadlock prevention
   b) Deadlock avoidance
   c) Mutual exclusion
   d) None of these

45. The 2's complement of 101011 is
   a) 010110
   b) 010100
   c) 010101
   d) None of these

46. Consider the following C code:
   int i = 100;
   int j = 200;
   const int * p = &i;
   *p = 20;
   p = &j;
   *p = 30;
   What will be values of i and j after executing the code?
   a) i = 20; j= 30.
   b) i = 20; j = 200;
   c) Error
   d) None of these

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47. Let s1 and s2 be two string variables in C. What will be the output of strcmp(s1, s2) if both the strings are exactly the same.

a)   1   b)   0

c)   −1   d)   NULL

48. Which of the following is true about macros compared to functions?

a)   Reduce execution time   b)   Reduce code size

c)   Reduce program complexity   d)   None of these

49. Consider the following C code: typedef char *S; Which of the following statement is correct?

a)   *S = "xyz";   b)   S = "xyz";

c)   S t = "xyz";   d)   None of these

50. Which of the following is a system software?

a)   Linker   b)   Compiler

c)   Loader   d)   All the above

51. In a two pass assembler, symbol table is created during

a)   Pass 1   b)   Pass 2

c)   Both Pass 1 and 2   d)   Prior to Pass 1

52. Which of the following statement is correct?

a)   For a Linking loader, relocating loader is required.

b)   Linkage editor performs all linking and relocation operations, including automatic library search, and loads the linked program into memory for execution.

c)   Both a) and b)

d)   Neither a) nor b)

53. An assembler stores all variable names and their attributes into
   a) a special register
   b) in variable table
   c) in parsing table
   d) None of these

54. Which of the following statement is true?
   a) A process takes less time for creation compared to a thread
   b) A process is a segment of a thread
   c) Thread takes less time for context switching
   d) None of these

55. Which of the following is not a storage class in C?
   a) static
   b) dynamic
   c) auto
   d) None of these

56. Consider the following C code:
   int i = 10;
   int x = i++, y=++i; int i + =y--;
   After the execution, the values of i, x, y are
   a) i = 22, x= 10, y = 11
   b) i = 22, x= 11, y = 12
   c) i = 23, x = 10, y = 12
   d) None of these

57. How is the 3rd element in an array x is accessed based on the pointer concept?
   a) $(* x + 3)$
   b) $* x + 3$
   c) $*(x + 3)$
   d) None of these

58. What is the size of (char) if a 64 bit compiler is used?
   a) 64
   b) 32
   c) 16
   d) 8

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59. —————— keyword used to declare a C file pointer.
   a) file
   b) filefp
   c) FILE
   d) FILEfp

60. DDA algorithm is used for
   a) Drawing circles
   b) Drawing ellipse
   c) Drawing triangles
   d) None of these

61. Identify the incorrect statement (computer graphics,):
   a) Scaling transformation is commutative
   b) The number of scaling factors in 3D is 3
   c) Scale factor can be less than zero
   d) None of these

62. In 2D graphics, rotation with respect to origin is defined by
   a) $X_{new} = X_{old}\cos(\theta) + Y_{old}\sin(\theta), Y_{new} = X_{old}\sin(\theta) - Y_{old}\cos(\theta)$
   b) $X_{new} = X_{old}\sin(\theta) + Y_{old}\cos(\theta), Y_{new} = X_{old}\cos(\theta) - Y_{old}\sin(\theta)$
   c) $X_{new} = X_{old}\cos(\theta) - Y_{old}\sin(\theta), Y_{new} = X_{old}\sin(\theta) - +Y_{old}\cos(\theta)$
   d) $X_{new} = X_{old}\sin(\theta) - Y_{old}\cos(\theta), Y_{new} = X_{old}\cos(\theta) - +Y_{old}\sin(\theta)$

63. Which of the following is an example of random scan display?
   a) LCD monitor
   b) LED monitor
   c) Both a) and b)
   d) Neither a) nor b)

64. Which of the following propositions is a tautology?
   a) $p \vee (p \rightarrow q)$
   b) $p \vee (q \rightarrow p)$
   c) Both a) and b)
   d) None of these

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65. The search algorithm which is similar to the minimax search, but removes the branches that don't affect the final output is known as.

a) Breadth First Search
b) Best First Search
c) Alpha-beta pruning
d) None of these

66. A* algorithm is based on which of the following?

a) Hill Climbing
b) Best-First Search
c) Breadth-First Search
d) Depth-first Search

67. ————————— generates new information from the given information.

a) Procedural knowledge
b) Inferential knowledge
c) Relational knowledge
d) None of these

68. A ————————— is defined as a group of objects with the same structure and behaviour.

a) Class
b) Method
c) Inheritance
d) Polymorphism

69. Cohesion and coupling are represented by using

a) Dependence matrix
b) Structure part
c) Structure effect
d) None of these

70. OOAD stands for

a) Object Oriented Algorithm Design
b) Online Object Analysis and Design
c) Object Oriented Analysis and Design
d) None of these

71. Which of the following is not a characteristic of a system?
   a) Operates within a boundary
   b) Has interacting components
   c) Has homogeneous components
   d) None of these

72. Which of the following is a Python data type?
   a) Mapping
   b) Set
   c) None
   d) Al the above

73. ——————— function is used to find the length of a dictionary in Python
   a) len ( )
   b) dic_len ( )
   c) Length ( )
   d) None of these

74. Identify the output of the following Python statement?
   >>> "a" + "bc"
   a) a + bc
   b) a bc
   c) abc
   d) None of these

75. Identify the output of the following Python code
   ```
   a = 1
   i = 2
   while True:
   if a % 5 = = 0:
   break
   print(a)
   a += i
   i++
   ```
   a) 1 2 3 4
   b) 1 3
   c) 136
   d) None of these

76. From the following list, identify the arithmetic exception.

    a) Over flow error
    b) Zero division error
    c) Floating point error
    d) All the above

77. Identify the values of s1, s2 and s3 based on the following Python code.

    s = 'performance'

    s1 = s[2:]

    s2 = slice [1:5]

    s3 = slice [0:6:2]

    a) rformance, erfo, pro
    b) rformance, erfor, prom
    c) rformanc, erfo, prom
    d) None of these

78. In HTML, the tags <a> and are used for

    a) Aligning text
    b) Inserting audio
    c) Adding image
    d) Adding links to your page

79. HTML documents root tag is

    a) <head.
    b) <html>
    c) <title>
    d) None of these

80. Which HTML tag defines a paragraph?

    a) <p>
    b) <par>
    c) <pg>
    d) None of these

81. In PHP ——————— keyword is used to start a function.

   a) function
   b) def
   c) fun
   d) None of these

82. Identify the PHP function to convert a string to all uppercase.

   a) struppercase()
   b) uppercase()
   c) strtoupper()
   d) None of these

83. The ——————— model helps in representing the system's dynamic behaviour.

   a) Context
   b) Data
   c) Object
   d) None of these

84. Identify white box testing category:

   a) Design based testing
   b) Acceptance testing
   c) Structural testing
   d) None of these

85. ——————— is an evaluation technique to assess the quality of test cases.

   a) Mutation analysis
   b) Performance analysis
   c) Validation
   d) Verification

86. Software project estimation can be broadly classified into

   a) Empirical models
   b) Decomposition techniques
   c) Both a) and b)
   d) Neither a) nor b)

87. ——————— coupling is also known as "Global coupling"?

   a) Common
   b) Data
   c) Stamp
   d) Content

88. Which of the following are part of requirement engineering?
   a) Feasibility study
   b) Requirements gathering
   c) Software requirements specification and validation
   d) All the above

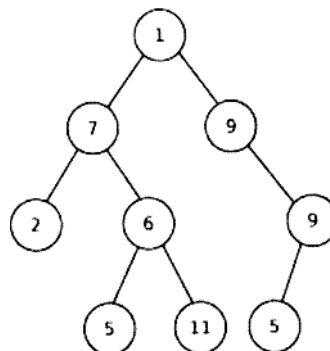89. If a binary tree has 10 leaf nodes. Then the number of nodes with two children is
   a) 9   b) 8
   c) Depends on the height of the tree   d) None of these

90. For the following graph, identify the sequence if a breadth first search is performed (from A).
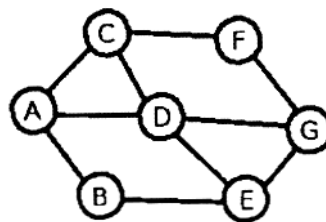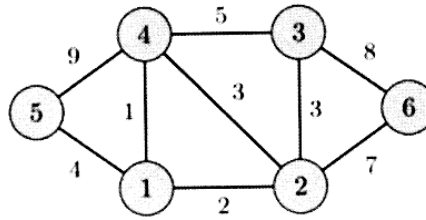

   a) ACDBFGE   b) ABEGCFD
   c) ACFGDEB   d) None of these

91. Which of the following is the output if the tree is traversed inorder?

   a) 2 7 5 6 11 1 9 5 9   b) 2 5 11 6 7 1 5 9 9
   c) 1 7 2 6 5 11 9 9 5   d) None of these

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92. The sum of the edge weight, if the following tree is converted into minimum spanning tree is

    a)   15   b)   17

    c)   18   d)   None of these

93. Which of the following statement is not true?
    a) Doubly linked list requires more memory
    b) We can construct a Queue data structure with linear Linked list
    c) Skip lists are used to speed up linked list searching
    d) None of these

94. Which of the following is not a Dynamic programming based algorithm?
    a) Prim's algorithm for minimum spanning tree
    b) Bellman - Ford algorithm for single source shortest path
    c) Floyd Warshall algorithm for all pairs shortest path
    d) None of these

95. Average Time complexity of Quick sort is

    a) $O(n)$ b) $O(n \log n)$

    c) $O(n^2)$ d) $O(\log n)$

96. When an array is passed to a Java method, what does the method receive?
    a) A copy of the array   b) The reference of the array
    c) Length of the array   d) None of these

97. Identify the feature not supported in Java
    a) Object-oriented   b) Architectural neutral
    c) Use of Pointers   d) None of these

98. What is the output of the following Java code?
    public class Test {
    public static void main(String[ ] args) {
    int count = 1;
    while (count <= 15) {
    System.out.println(count % 2 == 1 ? "***" : "+++++");
    ++count; } // end while
    } // end main
    }
    a) 15 times +++++   b) 15 times ***
    c) 17 times ***and 8 times +++++   d) 8 times *** and 7 times +++++

99. In which area of the memory, the system stores parameters and local variables
    whenever a Java method is invoked?
    a) Heap   b) Stack
    c) Array   d) None of these

100. Which of the following statement is false?
    a) An abstract class can have only abstract methods
    b) An abstract class cannot be instantiated
    c) An abstract class should be declared with abstract keyword
    d) None of these
                    _____

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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

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ROUGH WORK

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