Code No.	V – 2342

Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2025

CSS

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

For office use only

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								

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Choose appropriate answer from the options in the questions.

(100 × 1 = 100 marks)

1. Which of the following logic gates is called a universal gate?

   A. AND B. OR

   C. NAND D. XOR

2. Which Boolean algebra law is represented by the equation A + A = A?

   A. Identity law B. Idempotent law

   C. Complement law D. Domination law

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3. Which flip-flop inverts its output state when both inputs are high?

   A. JK Flip-Flop
   B. D Flip-Flop
   C. SR Flip-Flop
   D. T Flip-Flop

4. The binary addition of 1101 and 1011 gives _____.

   A. 10000
   B. 11000
   C. 10100
   D. 11010

5. Which of the following is NOT a valid BCD code?

   A. 1001
   B. 0110
   C. 1010
   D. 0101

6. In a Karnaugh map, adjacent squares differ by :

A. 2 bits
B. 1 bit
C. 3 bits
D. 4 bits

7. Which unit of the 8086 Microprocessor is responsible for fetching instructions from memory?

A. Arithmetic Logic Unit
B. Execution Unit
C. Control Unit
D. Bus Interface Unit

8. Which of the following is an example of asynchronous data transfer?

A. Handshaking
B. Memory-mapped I/O
C. DMA
D. Bus multiplexing

9. Which register in 8086 holds the return address during a function call?

A. IP
B. SP
C. BP
D. Stack

10. Which addressing mode in 8086 is used in the instruction MOV AX, [1234H]?

A. Immediate
B. Direct
C. Register
D. Indirect

11. Which component handles branching and looping in 8086 assembly?

A. Arithmetic Unit
B. Data Segment
C. Stack
D. Iteration Control

12. What type of scan converts the entire screen one line at a time from top to bottom?

A. Random scan
B. Frame scan
C. Raster scan
D. Vector scan

13. In DDA line drawing algorithm, the primary operation is _____.

A. Multiplication
B. Division
C. Addition
D. Bitwise AND

14. Bresenham's line drawing algorithm is preferred over DDA because:
    A. It is easier to implement
    B. It uses only integer arithmetic
    C. It uses floating point arithmetic
    D. It is slower but more accurate

15. Which transformation moves an object from one location to another?
    A. Rotation
    B. Scaling
    C. Translation
    D. Shearing

16. Which color model is most commonly used in printing?
    A. RGB
    B. CMYK
    C. HIS
    D. YUV

17. In predicate logic, a predicate is defined as _____.
    A. A variable
    B. A constant
    C. A function
    D. A property or relation

18. In knowledge representation, a semantic net is used to :
    A. Perform image processing
    B. Store audio signals
    C. Represent knowledge using a graph structure
    D. Model neural networks

19. Which of the following is a blind or uninformed search strategy?
    A. Best First Search
    B. A* Search
    C. BFS (Breadth First Search)
    D. Hill Climbing

20. In predicate logic, which of the following expresses "All humans are mortal"?
    A. $\exists x\ (\text{Human}(x) \wedge \text{Mortal}(x))$
    B. $\forall x\ (\text{Human}(x) \rightarrow \text{Mortal}(x))$
    C. $\forall x\ (\text{Human}(x) \wedge \text{Mortal}(x))$
    D. $\neg \forall x\ (\text{Human}(x) \wedge \text{Mortal}(x))$

21. Which of the following is a correct form of a well-formed formula in Conjunctive Normal Form (CNF)?

A. $(A \vee B) \wedge (\neg C \vee D)$ B. $A \rightarrow (B \wedge C)$

C. $\neg(A \wedge B)$ D. $A \wedge (B \rightarrow C)$

22. The evaluation function used in a Heuristic search is _____.

A. f(n) = g(n) B. f(n) = h(n)

C. f(n) = g(n) + h(n) D. f(n) = g(n) * h(n)

23. In which scenario the usage of A* search algorithm is preferred?

A. When the path cost is uniform

B. When the heuristic is not admissible

C. When the search space is small

D. When the goal is to find the shortest path efficiently

24. In SaaS (Software as a Service), the cloud provider offers _____.

A. Virtual hardware only

B. Application software and databases

C. Operating system kernel only

D. Physical data centers

25. Which of the following is NOT a characteristic of cloud computing?

A. On-demand self-service

B. Broad network access

C. Manual resource allocation

D. Resource pooling

26. Which term refers to the ability to increase or decrease computing resources as needed?

A. Elasticity B. Portability

C. Compatibility D. Synchronization

27. Which of the following supports software development with ready-to-use tools and frameworks in cloud?

A. SaaS B. IaaS

C. Daas D. Paas

28. What is the cardinality of the power set of a set with n elements?

A. n B. $2n$

C. 2^n D. n^2

29. Which of the following matrices is always symmetric?

A. Identity matrix B. Diagonal matrix

C. Null matrix D. All of the above

30. What is the number of ways to choose 3 people out of 10?

A. 720 B. 120

C. 210 D. 60

31. A simple graph with 6 vertices can have at most _____ edges.

A. 15 B. 12

C. 18 D. 6

32. What is the probability of drawing an ace from a deck of 52 cards? (There are 4 aces in 52 cards)?

A. 1/13 B. 1/4

C. 1/26 D. 1/52

33. Which SQL clause is used to filter groups of rows that have been aggregated?

A. WHERE B. HAVING

C. GROUP BY D. ORDER BY

34. Which of the following is used to define the structure of a database?

A. DML B. DCL

C. DDL D. TCL

35. What is a view in SQL?

A. A real table

B. A temporary table

C. A virtual table based on a query

D. A backup table

36. Which of the following normal forms deals with multi-valued dependencies?

A. 2NF
B. BCNF
C. 3NF
D. 4NF

37. Which SQL keyword is used to remove duplicates?

A. DISTINCT
B. UNIQUE
C. REMOVE
D. DELETE

38. Which layer of the OSI model is responsible for end-to-end communication and error recovery?

A. Data Link Layer
B. Transport Layer
C. Network Layer
D. Session Layer

39. Which of the following is a connectionless protocol?

A. TCP
B. FTP
C. UDP
D. SMTP

40. Which protocol is used for sending emails?

A. FTP
B. SMTP
C. HTTP
D. DNS

41. Which of the following is a public key cryptographic system?

A. AES
B. DES
C. RSA
D. MD5

42. What does DNS stand for?

A. Domain Network System
B. Domain Name System
C. Data Name Server
D. Digital Network System

43. What is the function of a firewall?

A. Encrypt data
B. Monitor and filter network traffic
C. Format hard drives
D. Resolve DNS

44. Among the following, which one is used to connect two systems, specifically if the systems use different protocols?

A. Hub
B. Bridge
C. Gateway
D. Repeater

45. Which symmetric key algorithm replaced DES as the modern encryption standard?

A. AES
B. RSA
C. DSA
D. SHA

46. Which of the following is NOT a type of Asymptotic Notation?

A. Big O
B. Omega (Ω)
C. Beta (β)
D. Theta (Θ)

47. Which of the following is a characteristic of a binary search tree?

A. Each node has at most two children
B. Left child is greater than the parent node
C. Right child is smaller than the parent node
D. All of the above

48. Which data structure is used for implementing recursion?

A. Stack
B. Queue
C. List
D. Array

49. The prefix form of *A – B*/ (C * D ^ E) is _____.

A. – / *^ ACBDE
B. – A / BC*^DE
C. – ABCD*^DE
D. – A / B * C^DE

50. Which of the following problems is classified as NP-Complete?

A. Binary Search
B. Matrix Multiplication
C. Travelling Salesman Problem (TSP)
D. Merge Sort

51. A graph with n vertices is said to be complete if it has :

A. No edges
B. (n – 1) edges
C. Exactly one cycle
D. n(n – 1)/2 edges

52. Prim's algorithm for finding the Minimum Spanning Tree (MST) of a connected, weighted graph follows _____ approach.

A. Divide and Conquer
B. Dynamic Programming
C. Greedy Algorithm
D. Backtracking

53. What is the purpose of a system call in an operating system?

A. Execute hardware-level instructions
B. Provide an interface between and kernel mode
C. Format a hard drive
D. Restart the computer

54. The data structure used to represent a process in memory is called _____.

A. Task Scheduler
B. Process Descriptor
C. Program Counter
D. Process Control Block (PCB)

55. Which scheduling algorithm gives the minimum average waiting time for a given set of processes?

A. First-Come First-Serve (FCFS)
B. Round Robin
C. Shortest Job First (SJF)
D. Priority Scheduling

56. The method of memory allocation that divides memory into fixed-sized blocks is called :

A. Paging
B. Segmentation
C. Compaction
D. Swapping

57. Which synchronization mechanism is used to control access to shared resources?

A. Process ID
B. Semaphore
C. CPU Register
D. Fork

58. Which register holds the address of the next instruction to be fetched?

A. Program Counter (PC)
B. Instruction Register (IR)
C. Memory Address Register (MAR)
D. Memory Buffer Register (MBR)

59. Which memory hierarchy level is closest to the CPU?

A. RAM
B. Cache
C. Secondary Storage
D. Registers

60. Which of the following is a basic function of an assembler?

A. Syntax highlighting
B. Converting high-level language to machine code
C. Translating mnemonic instructions to machine code
D. Parsing HTML

61. The primary purpose of a loader is to _____.

A. Translate assembly code
B. Allocate I/O devices
C. Place the object code in memory for execution
D. Optimize code

62. Bootstrap loaders are typically stored in :

A. Hard disk
B. RAM
C. ROM
D. Cache

63. Which of the following is NOT a typical feature of system software?

A. Resource management

B. User interface design

C. File handling

D. Hardware abstraction

64. The register that holds the actual data to be read from or written to a given memory address is called _____.

A. Cache register

B. Instruction buffer register

C. Memory Buffer Register

D. None of these

65. Which of the following processor has a fixed length of instructions?

A. CISC

B. RISC

C. EPIC

D. Multi-core

66. Which of the following is not a type of Constructor in C++?

A. Default constructor

B. Parameterized constructor

C. Copy constructor

D. Friend constructor

67. What is the output of this code segment?

```
int x = 10;
int *p = &x;
printf("%d". *p);
```

A. Address of x

B. 10

C. 0

D. Garbage value

68. Which of the following function is used to dynamically allocate memory in C?

A. new()

B. allocate()

C. malloc()

D. create()

69. _____ storage class in C retains its value between function calls.

A. static
B. register
C. auto
D. extern

70. Which keyword is used to define the macros in C++?

A. #macro
B. #define
C. macro
D. define

71. What is the correct way to declare a pointer to a float in C?

A. float p;
B. float *p;
C. pointer float p;
D. *float p;

72. Which function is used to read a string from user input in C?

A. scanf("%s", str);
B. cin >> str;
C. gets(str);
D. Both A and C

73. Which of the following functions dynamically allocates memory in C?

A. realloc()
B. calloc()
C. malloc()
D. All of the above

74. What does the *this* pointer point to?

A. Base class
B. Next object in memory
C. Current object of the class
D. Derived object

75. What will be the output of the following code?

```
int a = 10;
int & b = a;
b = 20;
cout << a;
```

A. 10
B. 20
C. Error
D. 0

76. Which of these is a valid array declaration in Java?

A. int arr[] = new int(5);
B. int arr[5];
C. int[] arr = new int[5];
D. array arr = int[5];

77. What does the *super* keyword refer to in Java?

A. A static method
B. The base class constructor
C. The current object
D. The parent class

78. What is *Truncation* in Java?

A. Floating-point value assigned to a floating type
B. Floating-point value assigned to an integer type
C. Integer value assigned to a floating type
D. Integer value assigned to an integer type

79. Which software development model follows a strict sequential design process?

A. Spiral model
B. Agile model
C. Waterfall model
D. RAD model

80. What does COCOMO stand for in software engineering?

A. Control Cost Modeling
B. Constructive Cost Model
C. Combined Code Monitor
D. Code Construction Methodology

81. What does the <marquee> tag in HTML do?

A. Creates a scrolling text or image
B. Embeds a video
C. Defines a new section
D. Links to another page

82. In HTML, which tag is used to create a hyperlink?

A. <link>
B. <href>
C. <a>
D. <hyper>

83. _____ is used to collect data from an HTML form using the POST methods.

A. $_POST
B. $_GET
C. $_REQUEST
D. $_FORM

84. What is the default method used when submitting a form without specifying a method?

A. POST
B. GET
C. PUT
D. DELETE

85. Which of the following is used to apply styles to HTML elements?

A. Java
B. CSS
C. XML
D. PHP

86. Which HTML tag is used to embed an external web page within a webpage?

A. <embed>
B. <object>
C. <iframe>
D. <frame>

87. Find the output of the python code:

```
S = "gfg"
Printf(("g" or "") in s)
```

A. Error
B. True
C. False
D. None of the above

88. Which of the following statements is true regarding the if-else statement in Python?

A. The else block is mandatory.
B. The if block is optional.
C. Either the if block or the else block will be executed, but not both.
D. Both the if and else blocks can be executed under certain conditions.

89. Which of the following is used to define a function in Python?

A. func
B. function
C. define
D. def

90. Which of the following is true about Python tuples?

A. Tuples are mutable
B. Tuples are immutable
C. Tuples can only hold strings
D. Tuples can't be nested

91. How can you iterate over the elements of a list in reverse order using a for loop?

A. Using the reversed function
B. Using the reverse method
C. Using a negative step in the range function
D. Python doesn't support iterating in reverse order

92. What is the purpose of encapsulation in object-oriented design?

A. To increase memory usage
B. To protect data from unauthorized access
C. To speed up compilation
D. To improve polymorphism

93. _____ diagram in UML is used to represent class structure.

A. Class Diagram
B. Sequence Diagram
C. Activity Diagram
D. State Diagram

94. In object-oriented design, *cohesion* refers to:

A. Degree to which a class is independent of others
B. Degree to which elements within a class belong together
C. Number of subclasses inherited
D. Strength of class relationships

95. In how many ways can 4 different books be arranged on a shelf such that two particular books are never together?

A. 24 B. 14

C. 12 D. 18

96. If two events A and B are independent, then which is true?

A. $P(A \cap B) = P(A) + P(B)$

B. $P(A \cap B) = P(A) - P(B)$

C. $P(A \cap B) = P(A) \times P(B)$

D. $P(A \cap B) = P(B) - P(A)$

97. Evaluate the limit : lim x $\rightarrow$ 0 *sin*(3*x*)/*x*

A. 1 B. 3

C. 0 D. Does not exist

98. If A is a 3×3 matrix, and $A^2 = A$, then *A* is known as a

A. Diagonal matrix B. Orthogonal matrix

C. Idempotent matrix D. Symmetric matrix

99. In a graph, a Hamiltonian path is one that :

A. Visits every vertex exactly once

B. Visits every edge exactly once

C. Is a cycle

D. Is a tree

100. The rank of a matrix is:

A. The number of non-zero entries in the matrix

B. The number of linearly independent rows or columns

C. The number of non-zero rows in the matrix

D. The number of eigenvalues of the matrix

RESPONSE SHEET

1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E
6	A	B	C	D	E
7	A	B	C	D	E
8	A	B	C	D	E
9	A	B	C	D	E
10	A	B	C	D	E
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13	A	B	C	D	E
14	A	B	C	D	E
15	A	B	C	D	E
16	A	B	C	D	E
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95	A	B	C	D	E
96	A	B	C	D	E
97	A	B	C	D	E
98	A	B	C	D	E
99	A	B	C	D	E
100	A	B	C	D	E

ROUGH WORK

ROUGH WORK

ROUGH WORK