

No. of Pages. 20

Code No.

Y – 3044

Register Number :

Time : 2 Hours

Name :

Max.Marks : 100

**Entrance Examination for Admission to the P.G. Courses in the
Teaching Departments, 2026**

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 marked **only** in the “**OMR Sheet**” provided.
3. **Negative marking** : **0.25 marks** will be deducted for each wrong answer .

INSTRUCTIONS FOR FILLING THE OMR SHEET

- The OMR sheet should not be folded or crushed.
- Use only blue/black ball point pen to fill the circles.
- Use of pencil is strictly prohibited.
- Circles should be darkened completely and properly.
- Cutting and erasing on this sheet is not allowed.
- Do not leave any stray marks on the sheet.
- Do not use marker or white fluid to hide the mark.

• **WRONG METHODS**



CORRECT METHOD



3. Which logic gate has the property of being a universal gate, meaning any Boolean expression can be implemented using only this gate?
 - A. AND
 - B. OR
 - C. NAND
 - D. XOR

4. Which flip-flop has the characteristic of toggling its output when both inputs are HIGH?
 - A. SR Flip-Flop
 - B. JK Flip-Flop
 - C. D Flip-Flop
 - D. T Flip-Flop

5. In a half-adder, what are the outputs when the inputs are $A = 1$ and $B = 1$?
 - A. Sum = 0, Carry = 0
 - B. Sum = 1, Carry = 0
 - C. Sum = 0, Carry = 1
 - D. Sum = 1, Carry = 1

6. Which of the following best describes the fetch-execute cycle of a processor?
 - A. Fetch the instruction → Decode → Execute → Store result → Increment PC
 - B. Fetch the instruction → Execute → Decode → Increment PC → Store result
 - C. Execute → Fetch → Decode → Store result → Increment PC
 - D. Decode → Fetch → Execute → Increment PC → Store result

7. Which addressing mode allows an instruction to specify the memory address of the operand directly in the instruction itself?
 - A. Register Addressing
 - B. Immediate Addressing
 - C. Direct Addressing
 - D. Indirect Addressing

8. Which of the following is a key difference between RISC and CISC architectures?
 - A. RISC has complex instructions; CISC has simple instructions
 - B. RISC typically executes one instruction per clock cycle; CISC may take multiple cycles per instruction
 - C. CISC has fixed instruction length; RISC has variable instruction length
 - D. CISC does not use registers; RISC relies on memory operations

9. In the 8086 microprocessor, which unit is responsible for fetching instructions and generating memory addresses?
- A. Execution Unit (EU)
 - B. Bus Interface Unit (BIU)
 - C. Arithmetic Logic Unit (ALU)
 - D. Control Unit (CU)
10. Which of the following is true about DMA (Direct Memory Access)?
- A. The CPU directly transfers each byte of data during a DMA transfer
 - B. DMA cannot handle block transfers
 - C. DMA is used only for program-controlled I/O
 - D. DMA allows peripherals to transfer data to memory without CPU intervention
11. In a raster scan system, which of the following statements is true?
- A. The electron beam draws images directly only along the required lines
 - B. The entire screen is refreshed line by line regardless of the object positions
 - C. Raster scan uses polar coordinates for beam movement
 - D. Random scan requires a frame buffer for image storage
12. Which of the following is a key advantage of Bresenham's Line Drawing Algorithm over DDA?
- A. Uses only integer arithmetic, reducing computational complexity
 - B. Can draw curves as well as straight lines
 - C. Requires floating-point operations for accuracy
 - D. Slower than DDA for short lines
13. Which transformation does not preserve the shape and angles of an object?
- A. Translation
 - B. Rotation
 - C. Scaling
 - D. Reflection

20. In the A^* search algorithm, the evaluation function is $f(n)=g(n)+h(n)$. What do $g(n)$ and $h(n)$ represent?
- A. $g(n)$ = estimated cost to goal, $h(n)$ = cost so far from start
 - B. $g(n)$ cost so far from start, $h(n)$ = estimated cost to goal
 - C. $g(n)$ = total cost, $h(n)$ = heuristic error
 - D. $g(n)$ = depth of node, $h(n)$ = number of children
21. Which cloud service model provides virtualized computing resources over the Internet?
- A. SaaS
 - B. PaaS
 - C. IaaS
 - D. DaaS
22. In the cloud life cycle model, which phase involves monitoring and optimizing cloud services after deployment?
- A. Design Phase
 - B. Deployment Phase
 - C. Operation Phase
 - D. Testing Phase
23. Which layer in cloud computing logical architecture is responsible for managing hardware resources?
- A. Application Layer
 - B. Platform Layer
 - C. Infrastructure Layer
 - D. Client Layer
24. What is DaaS primarily used for?
- A. Delivering software applications
 - B. Providing virtual desktops to users
 - C. Managing cloud infrastructure
 - D. Hosting development platforms
25. What does SaaS stand for in cloud computing?
- A. Software and Application System
 - B. Software as a Service
 - C. System as a Software
 - D. Service as a Software

34. Which of the following operations is used to select specific rows from a table?
- A. Projection
 - B. Selection
 - C. Join
 - D. Union
35. Which SQL function is used to find the total number of rows in a table?
- A. SUM()
 - B. MAX()
 - C. AVG()
 - D. COUNT()
36. Which layer of the OSI model is responsible for end-to-end communication?
- A. Network Layer
 - B. Transport Layer
 - C. Data Link Layer
 - D. Session Layer
37. In which protocol is time divided into discrete slots to reduce collisions?
- A. Pure ALOHA
 - B. Slotted ALOHA
 - C. CSMA
 - D. CSMA/CD
38. Which of the following is a connection-oriented protocol?
- A. UDP
 - B. IP
 - C. TCP
 - D. ICMP
39. Which encryption algorithm is a symmetric key algorithm?
- A. RSA
 - B. AES
 - C. DSA
 - D. DSS
40. Which type of malicious software disguises itself as legitimate software?
- A. Worm
 - B. Virus
 - C. Trojan
 - D. Spyware
41. Which of the following allows traversal in both directions?
- A. Single Linked List
 - B. Circular Linked List
 - C. Doubly Linked List
 - D. Linear Array
42. Which data structure follows the FIFO (First In First Out) principle?
- A. Stack
 - B. Queue
 - C. Tree
 - D. Graph

50. Which technique divides memory into fixed-size blocks?
- A. Segmentation
 - B. Paging
 - C. Virtual Memory
 - D. Demand Paging
51. What is the primary function of an assembler?
- A. Convert high-level language into machine code
 - B. Convert assembly language into machine code
 - C. Execute programs directly
 - D. Manage memory allocation
52. Which type of assembler processes the source code in a single pass?
- A. Multi-pass assembler
 - B. Two-pass assembler
 - C. One-pass assembler
 - D. Load-and-go assembler
53. What is the purpose of program relocation?
- A. To translate source code into assembly
 - B. To adjust program addresses when loaded into memory
 - C. To optimize program execution speed
 - D. To debug the program
54. Which loader loads a program into memory at a fixed location without relocation?
- A. Linking Loader
 - B. Dynamic Loader
 - C. Absolute Loader
 - D. Bootstrap Loader
55. Which feature allows linking of modules during program execution?
- A. Static Linking
 - B. One-pass Assembling
 - C. Absolute Loading
 - D. Dynamic Linking
56. What is the 2's complement representation of -18 in 8-bit binary?
- A. 11101110
 - B. 11101101
 - C. 11101100
 - D. 11110010

57. What will be the output of the following C code?

```
int arr []= (10, 20, 30, 40) ;
```

```
int * p = arr;
```

```
printf("%d", * (p + 2));
```

A. 10

B. 20

C. 30

D. 40

58. Which storage class in C retains the value of a variable between multiple function calls and restricts its scope to the function?

A. auto

B. register

C. static

D. extern

59. Which function is used to allocate memory for an array of elements and initializes them to zero?

A. malloc()

B. calloc()

C. realloc()

D. free()

60. What is the key difference between structures and unions in C?

A. Structures store only one member at a time

B. Unions allocate memory equal to the sum of all members

C. Structures allocate separate memory for each member, while unions share memory

D. There is no difference

61. What will be the output of the following Java code?

```
int x = 10;
```

```
if (x > 5)
```

```
if (x < 15)
```

```
System.out.print("A");
```

```
else
```

```
System.out.print("B");
```

```
System.out.print("C");
```

A. AC

B. ABC

C. A

D. BC

62. Which statement is TRUE about method overriding in Java?

A. Private methods can be overridden

B. Static methods can be overridden

C. The overridden method must have the same return type and parameters

D. Constructors can be overridden

63. Which of the following is correct?
- A. A class can be both final and abstract
 - B. A final method can be overridden
 - C. An abstract class cannot have constructors
 - D. A final class cannot be extended
64. Which of the following is the default access modifier for interface methods in Java?
- A. Private
 - B. Protected
 - C. Public
 - D. Default (package-private)
65. Which of the following is a checked exception in Java?
- A. Arithmetic Exception
 - B. NullPointerException
 - C. IO Exception
 - D. Array Index Out Of Bounds Exception
66. Which of the following best differentiates a software program from a software product?
- A. Programs are always reusable; products are not
 - B. Programs are developed for a specific user; products are developed for a general market
 - C. Programs have higher quality standards than products
 - D. Products are executed once; programs are executed multiple times
67. Which software estimation technique is based on historical data and expert judgment rather than detailed analysis?
- A. Algorithmic Estimation
 - B. Function Point Analysis
 - C. Delphi Technique
 - D. COCOMO
68. Which of the following is NOT a characteristic of a good software design?
- A. Modularity
 - B. High cohesion and low coupling
 - C. Portability
 - D. Complexity

69. In which testing phase are individual modules combined and tested as a group to detect interface defects?
- A. Unit Testing
 - B. Integration Testing
 - C. System Testing
 - D. Acceptance Testing
70. Which type of software maintenance deals with adding new features to a system after its deployment?
- A. Corrective Maintenance
 - B. Adaptive Maintenance
 - C. Perfective Maintenance
 - D. Preventive Maintenance
71. Which of the following HTML tags is used to define metadata about a document, such as author or description?
- A. <meta>
 - B. <head>
 - C. <title>
 - D. <link>
72. Which of the following is an absolute URL?
- A. ../images/pic.jpg
 - B. /home/user/pic.jpg
 - C. https://www.example.com/images/pic.jpg
 - D. pic.jpg
73. Which attribute of the <iframe> tag is used to specify the target window for a hyperlink inside the frame?
- A. src
 - B. target
 - C. name
 - D. frameborder
74. Which PHP superglobal variable is used to collect form data sent with the POST method?
- A. \$_GET
 - B. \$_POST
 - C. \$_REQUEST
 - D. \$_FORM
75. Which PHP array contains information about files uploaded via a form?
- A. \$_FILES
 - B. \$_UPLOAD
 - C. \$_POST
 - D. \$_INPUT

76. Which of the following is a valid Python identifier?
- A. 2variable
 - B. `_value123`
 - C. class
 - D. var-name
77. What will be the output of the following Python code?
- ```
x = 5
y = 2
print(x** y // 3)
```
- A. 1
  - B. 2
  - C. 3
  - D. 4
78. Which statement about Python functions is TRUE?
- A. Functions cannot return multiple values
  - B. Functions can be assigned to variables and passed as arguments
  - C. Python functions must always have a return statement
  - D. Functions cannot be nested
79. Which of the following statements about Python class destructors is correct?
- A. Destructor is defined using `__init__`
  - B. Destructor is automatically called when an object's reference count reaches zero
  - C. Destructor must explicitly free memory allocated to the object
  - D. Python does not support destructors
80. Which exception is raised when attempting to divide by zero in Python?
- A. ValueError
  - B. TypeError
  - C. ZeroDivisionError
  - D. ArithmeticError
81. Which of the following is NOT a fundamental principle of object-oriented programming?
- A. Encapsulation
  - B. Polymorphism
  - C. Inheritance
  - D. Normalization
82. Which methodology focuses on capturing real-world concepts and modeling systems using objects, classes, and interactions?
- A. Structured Analysis and Design
  - B. Object-Oriented Analysis and Design (OOAD)
  - C. Waterfall Model
  - D. Prototyping

83. In object-oriented analysis, classification theory is primarily used to:
- Define the sequence of operations in a system
  - Identify classes, objects, and their relationships
  - Determine hardware requirements
  - Optimize algorithm complexity
84. Which of the following is an example of a design axiom in object-oriented design?
- Encapsulation always increases system complexity
  - Coupling between modules should be minimized
  - All methods must be static
  - Each class must have exactly one object
85. In a UML class diagram, which symbol is used to represent inheritance?
- Solid line with an open arrow pointing to the subclass
  - Dashed line with an open arrow pointing to the superclass
  - Solid line with an open arrow pointing to the superclass
  - Dashed line with a closed arrow pointing to the subclass
86. A relation  $R(A,B,C,D)$  has the following functional dependencies:  
 $A \rightarrow B, B \rightarrow C, C \rightarrow D$   
 Which of the following statements is TRUE?
- $R$  is in 2NF but not in 3NF
  - $R$  is in 3NF but not in BCNF
  - $R$  is in BCNF
  - $R$  is in 1NF only
87. Which of the following statements regarding standard forms, flip flops, and adders is correct?
- A Sum of Products (SOP) expression is formed by ORing the maxterms, whereas a Product of Sums (POS) expression is formed by ANDing the minterms
  - In a JK flip-flop, when  $J = K = 1$ , the output toggles on each clock pulse, and in a D flip-flop the output  $Q$  follows the input  $D$  on the next clock edge
  - In a half adder, the sum output is implemented using an AND gate and the carry output is implemented using an XOR gate, which is suitable for multi-bit addition with carry propagation
  - In a 3-variable Karnaugh map, each group of 4 adjacent cells corresponds to a term containing 3 literals, which cannot be further simplified

88. Which of the following best describes how a 2D reflection about an arbitrary point is typically performed?
- A. Reflect the object directly about the arbitrary point using a single reflection matrix without any translation.
  - B. First scale the object so that the arbitrary point becomes the origin and then apply a rotation matrix.
  - C. Rotate the coordinate system so that the arbitrary point lies on the x-axis, then reflect about the x-axis only.
  - D. Translate the origin to the arbitrary point, apply the reflection about the origin, and then translate back to the original position.
89. Which of the following best describes the role of semantic nets, frames, and scripts in knowledge representation?
- A. They are all types of hardware architectures used to implement knowledge-based systems in AI chips
  - B. They are used to represent syntactic rules of natural language for parsing sentences in compilers
  - C. They are high-level programming languages designed specifically for building expert systems
  - D. They are knowledge-representation structures that organize information using concepts, attributes, and predefined scenarios such as typical events or scripts
90. A fair six-sided die is rolled once. What is the probability of getting an even number or a number greater than 4?
- A.  $1/6$
  - B.  $1/3$
  - C.  $1/2$
  - D.  $2/3$
91. Which of the following correctly matches a cloud service model with what is primarily managed by the provider?
- A. SaaS - The provider manages the application software only, while the customer manages the operating system and virtual machines.
  - B. PaaS-The provider manages the application framework and runtime, and the customer manages the hardware and network infrastructure.
  - C. IaaS-The provider manages the virtualized computing resources (servers, storage, network), and the customer manages the operating system and applications.
  - D. DaaS-The provider manages only the physical database servers, and the customer manages all data, security, and backups.



97. Consider the following C declaration:  
`int *arr[5];`  
What does arr represent?
- A. An array of 5 integers
  - B. A single pointer to an array of 5 integers
  - C. An array of 5 pointers to integers
  - D. A pointer to a single integer
98. In Java, if a class member is declared with the protected access modifier, where can it be accessed?
- A. Only within the same class
  - B. Within the same class and classes in the same package only
  - C. From any class in any package, without any restriction
  - D. Within the same class, same package, and by subclasses even in other packages
99. In a PHP form, which of the following HTML elements is used to send user-entered text data to a PHP script using the method="POST" attribute?
- A. <div> element with name="data"
  - B. <link> element with method="post"
  - C. <form> element with method="post" containing input fields
  - D. <script> element with method="post"
100. Which of the following is a key feature of the Python programming language?
- A. It requires explicit declaration of variable types before use, like in C or Java
  - B. It is a low-level language that provides direct access to hardware registers
  - C. It supports dynamic typing, where the data type of a variable is decided at runtime
  - D. It is platform-dependent and cannot run on more than one operating system
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## **ROUGH WORK**

## **ROUGH WORK**