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Question Booklet Alpha Code

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	Question Booklet Sl. No.
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Total Number of Questions : 100	Time : 90 Minutes
Maximum Marks : 100	

INSTRUCTIONS TO CANDIDATES

1. The Question Paper will be given in the form of a Question Booklet. There will be four versions of Question Booklets with Question Booklet Alpha Code viz. **A, B, C & D.**
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the Question Booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a Question Booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your Question Booklet is un-numbered, please get it replaced by new Question Booklet with same alpha code.
6. The Question Booklet will be sealed at the middle of the right margin. Candidate should not open the Question Booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the Question Booklet supplied to him/her contains all the 100 questions in serial order. The Question Booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank sheet of paper is attached to the Question Booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices **(A), (B), (C)** and **(D)** having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

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1. Suppose there are ten signals, each requiring 4,000 Hz, are multiplexed onto a single channel using FDM. What is the minimum bandwidth required for the multiplexed channel ? Assume that the guard bands are 400 Hz wide.
 - A) 4,000 Hz
 - B) 40,000 Hz
 - C) 42,600 Hz
 - D) 43,600 Hz

2. What is the size of ARP request and ARP reply packet ?
 - A) 18 bytes
 - B) 20 bytes
 - C) 28 bytes
 - D) 53 bytes

3. Which of the following specifies WLAN security standard ?
 - A) IEEE 802.11
 - B) IEEE 802.11 g
 - C) IEEE 802.11 i
 - D) IEEE 802.11 b

4. Which of the following switching services are appropriate for setting up :
 - I. a voice communication, and
 - II. internet service respectively ?
 - A) (I) Packet Switching, (II) Message Switching
 - B) (I) Packet Switching, (II) Circuit Switching
 - C) (I) Circuit Switching, (II) Packet Switching
 - D) (I) Circuit Switching, (II) Message Switching

5. In cryptography, the following uses transposition ciphers and the keyword is LAYER. Encrypt the following message. (Spaces are omitted during encryption) WELCOME TO NETWORK SECURITY !
 - A) WMEKREETSILTWETCOOCYONRU !
 - B) EETSICOOCYWMEKRONRU!LTWET
 - C) EETSIWMEKRONRU!LTWETCOOCY
 - D) ONRU!COOCYLTWETEETSIWMEKR

11. Select the true statement about ICMP error messages :
- Statement 1** : No ICMP message will be generated for a datagram having a multicast address.
- Statement 2** : No ICMP message will be generated for a fragmented datagram that is not the first fragment.
- A) Only Statement 1 is true
 B) Only Statement 2 is true
 C) Both Statements 1 and 2 are true
 D) Both Statements 1 and 2 are false
12. The protocol can connect together any internetwork of autonomous systems using
- A) Bus topology
 B) Mesh topology
 C) Autonomous topology
 D) Arbitrary topology
13. Which one of the following statements is/are false with respect to SCTP protocol ?
- I. Stream Control Transmission Protocol (SCTP) is a transport-layer protocol.
 II. SCTP is a connectionless protocol.
 III. SCTP is a byte-oriented protocol.
 IV. SCTP is a full-duplex connection.
- A) I and II
 B) II and III
 C) I, II and III
 D) I, II, III and IV
14. UMTS air interface is based on
- A) SDMA
 B) FDMA
 C) TDMA
 D) CDMA
15. The Data Encryption Standard (DES) has a function consisting of four steps. Which of the following is the correct order of these four steps ?
- A) An expansion permutation, S boxes, an XOR operation, a straight permutation
 B) An expansion permutation, an XOR operation, S boxes, a straight permutation
 C) A straight permutation, S boxes, an XOR operation, an expansion permutation
 D) A straight permutation, an XOR operation, S boxes, an expansion permutation

21. Match the following.
- | | |
|-------------------------|---------|
| 1. USART | a. 8251 |
| 2. Microcontroller | b. 8051 |
| 3. Interrupt controller | c. 8259 |
| 4. DMA controller | d. 8257 |
| 5. UART | e. 8250 |
- A) 1 – a, 2 – b, 3 – c, 4 – d, 5 – e
 B) 1 – b, 2 – a, 3 – e, 4 – d, 5 – c
 C) 1 – e, 2 – a, 3 – b, 4 – c, 5 – a
 D) 1 – a, 2 – c, 3 – d, 4 – e, 5 – b
22. The processing speeds of pipeline segments are
- A) Equal
 B) Unequal
 C) Constant
 D) Increases initially and then attains constant value
23. Number of flip-flops needed for mod-18 counters is
- A) 3 B) 4 C) 5 D) 2
24. What will happen when executing XCHG instruction ?
- A) All flags are affected
 B) Only carry flag is affected
 C) No flags are affected
 D) All flags other than carry flag are affected
25. Most efficient to perform arithmetic operation on the numbers is
- A) 1's complement B) 2's complement
 C) 10's complement D) All of the above
26. IEEE single precision and double precision format to represent floating point numbers has
- A) 8 bits and 16 bits respectively B) 16 bits and 32 bits respectively
 C) 32 bits and 64 bits respectively D) 64 bits and 128 bits respectively

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27. Simplified form of $ab + \bar{a}c + bc$ is

- A) $\bar{a}\bar{b} + ab$ B) $\bar{a}c + ab$ C) $a\bar{c} + b$ D) $\bar{a}\bar{b} + \bar{c}$

28. What will be the output of the following ?

MVI B, 80H
MOV A, B
MOV C, A
MVI D, 37 H
OUT PORT 1
HLT

- A) output = 80 H B) output = 37 H
C) output = 117 H D) error

29. How many 8 bit char can be transmitted per sec over 7200 baud serial communication link using parity synchronous mode of transfer with one start bit, 9 data bits, 1 stop bit and 1 parity bit ?

- A) 600 B) 720 C) 800 D) 900

30. The 8085 microprocessor has

- A) 8 bit address bus and 8 bit data bus
B) 16 bit address bus and 8 bit data bus
C) 16 bit address bus and 16 bit data bus
D) 8 bit address bus and 16 bit data bus

31. Select true statement from the following.

- A) Unless enabled, CPU won't be able to process interrupt.
B) Loop instruction can't be interrupted till they complete.
C) A processor checks for interrupts before executing a new instruction.
D) Only level triggered interrupts are possible on microprocessors.

32. RST 7 instruction in 8085 microprocessor is equivalent to

- A) CALL 0034H
B) CALL 0010H
C) CALL 003CH
D) CALL 0038 H

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38. **Statement 1** : A switch-tail ring counter connects the complement of the output of the last shift register to the input of the first register.
Statement 2 : Around the ring, it circulates a stream of 1's followed by 0's.
- A) None of the statements are correct
 - B) Both the statements are correct
 - C) Statement 1 is true, Statement 2 is wrong
 - D) Statement 2 is true, Statement 1 is wrong
39. Choose among the following the minimum number of JK flip-flops required to construct a synchronous counter with the count sequence (0, 0, 1, 1, 2, 2, 3, 3, 0, 0,...).
- A) 3
 - B) 0
 - C) 1
 - D) 2
40. The range of integers that can be represented by n-bit 2's complement number system is
- A) -2^{n-1} to $(2^{n-1} - 1)$
 - B) $-(2^{n-1} + 1)$ to $(2^{n-1} - 1)$
 - C) -2^n to $(2^{n-1} - 1)$
 - D) $-(2^{n-1} - 1)$ to $(2^n - 1)$
41. In pentium 4, the address bus is of _____ bits.
- A) 8
 - B) 16
 - C) 32
 - D) 36
42. Which register used as working area in CPU ?
- A) Accumulator
 - B) Program counter
 - C) Instruction register
 - D) Memory address register
43. Which memory is non-volatile and can be programmed and erased in circuit ?
- A) RAM
 - B) Dynamic RAM
 - C) EEPROM
 - D) Cache memory
44. How many addresses are required for 25 * 40 video RAM ?
- A) 1004
 - B) 1000
 - C) 2000
 - D) 1920

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45. The main feature of RAMBUS tech is
- A) Speed of transfer
 - B) Efficiency
 - C) Memory utilization
 - D) None of the above
46. Which of the following is not true about cache memory ?
- A) Volatile memory
 - B) Smaller size than RAM
 - C) Sequential access memory
 - D) Faster than RAM
47. The data size of word is
- A) 8 byte
 - B) 2 byte
 - C) 4 byte
 - D) 16 byte
48. Efficient access time is directly proportional to
- A) Memory access time
 - B) Miss ratio
 - C) Page fault ratio
 - D) None of the above
49. The access time of magnetic bubble memory is
- A) 30 nanoseconds
 - B) 30 milliseconds
 - C) .3 seconds
 - D) 30 microseconds
50. Which bus is used for transferring data to and from different devices ?
- A) Data bus
 - B) Address bus
 - C) Input bus
 - D) Output bus
51. RR scheduling is suitable for
- A) An ordinary OS
 - B) Distributed OS
 - C) Time shared OS
 - D) Real time OS

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52. In optimal page replacement algorithm, when a page is to be replaced, which of the following page is chosen ?
- A) Oldest page
 - B) Newest page
 - C) Not frequently occurred page in future
 - D) Frequently occurred page in future
53. Deadlock can be described more precisely in terms of directed graph is called
- A) System resource allocation graph
 - B) Pseudo graph
 - C) Symmetric diagraph
 - D) Pie chart
54. The first fit, best fit and worst fit algorithm can be used for
- A) Linked allocation of memory
 - B) Contiguous allocation of memory
 - C) Indexed allocation of memory
 - D) All of these
55. External fragmentation occurs when
- A) Memory are remain unused because it is too large to be allocated
 - B) Less memory is allocated than requested by the process
 - C) More memory is allocated than requested by the process
 - D) Memory area remain unused because it is too small to be allocated
56. The time taken for desired sector to rotate to the disk head is called
- A) Rotational latency
 - B) Positioning time
 - C) Seek time
 - D) Random access time
57. If a disk has a seek time of 20 ms, rotates 20 revolutions per second, has 100 words per block and each track has capacity of 300 words. The total time required to access one block is
- A) 25
 - B) 60
 - C) 30
 - D) 40
58. How many bits are there in logical address ?
- A) 12
 - B) 15
 - C) 13
 - D) 11

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63. What will be the error of the following program ?

```
interface I1 {
    double PI = 3.14;
}
interface I2 {
    double PI = 3.1415;
}
interface I3 extends I1, I2 {
    double area(double r);
}
public class Interface Test implements I3 {
    public double area(double r) {
        return PI*r*r;
    }
    public static void main(String[] args) {
        InterfaceTest it = new InterfaceTest();
        System.out.println(it.area(5));
    }
}
```

- A) InterfaceTest.java:12: error: reference to PI is ambiguous
- B) InterfaceTest.java:7: error: multiple inheritance is not permitted
- C) InterfaceTest.java:7: error: reference to PI is ambiguous
- D) InterfaceTest.java:12: error: reference to PI is not resolved (should implement Ambiguity Resolver)

64. What will be the output of the following program ?

```
public class SimpleClass {
    public static void main(String[] args) {
        SimpleClass sc = new SimpleClass();
        sc.begin();
    }
    void begin() {
        int[] a = {4, 5, 6};
        int[] b = operate(a);
        System.out.print(a[0]+a[1]+a[2]+ ":" );
        System.out.print(b[0]+b[1]+b[2]);
    }
    int[] operate(int[] c) {
        c[2] = 8;
        return c;
    }
}
```

- A) 15 : 17
- B) 17 : 15
- C) 15 : 15
- D) 17 : 17

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65. Which of the following statements is/are true ?

S1 : Every class is part of some package.

S2 : All classes in a file are part of the same package.

S3 : If no package is specified, the classes in the file go into java.lang package.

S4 : If no package is specified, a new package is created with folder name 'custom' and the class is put in this package.

A) Only S1, S2 and S3

B) Only S1, S2 and S4

C) Only S2 and S3

D) Only S1 and S2

66. What will be the output of the following Java Program ?

```
public class Test1 {
    public static long method(long n) {
        if(n<50) n = method(n+5);
        return (n-2);
    }
    public static void main(String[] args) {
        System.out.println(Test1.method(35));
    }
}
```

A) 48

B) 42

C) 28

D) 43

67. Consider the following program :

```
public class Test2 {
    public static void main(String[] args) {
        String str1 = new String("abcd");
        String str2 = str1;
        str2 = str2.concat(new String("ef"));
        System.out.print(str1.concat(str2));
        StringBuffer sb1 = new StringBuffer("abcd");
        StringBuffer sb2 = sb1;
        sb2 = sb2.append(new StringBuffer("ef"));
        System.out.print(sb1.append(sb2));
    }
}
```

What will be the output ?

A) abcdabcdeffabcdeffabcdeff

B) abcdeffabcdeffabcdeffabcdeff

C) abcdeffabcdeffabcdeff

D) Compilation Error

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68. What will be the output of the following program ?

```
class Base {
    public static void display( ) {
        System.out.print("I am Base");
    }
}
class Derived extends Base {
    public static void display( ) {
        super.display( );
        System.out.print("I am Derived") ;
    }
}
public class Test3 {
    public static void main (String[] args) {
        Base b = new Derived();
        b.display();
    }
}
```

- A) I am Base
- B) I am Derived
- C) I am Base I am Derived
- D) Compilation Error

69. The pre-order traversal of a binary search tree is given by 11, 7, 5, 1, 6, 8, 9, 15, 14, 18, 16, 19. Then the post-order traversal of this tree is

- A) 1, 5, 6, 7, 8, 9, 11, 14, 15, 16, 18, 19
- B) 1, 6, 5, 9, 8, 7, 14, 16, 19, 18, 15, 11
- C) 6, 3, 5, 7, 8, 9, 19, 16, 18, 14, 15, 11
- D) 6, 5, 1, 9, 8, 7, 14, 15, 16, 19, 18, 11

70. An unordered list contains m distinct elements. The number of comparisons to find an element in this list that is neither maximum nor minimum is

- A) $O(m)$
- B) $O(\log m)$
- C) $O(\log(\log m))$
- D) $O(1)$

71. Level order traversal of a rooted tree can be done by starting from the root and performing which of the following ?

- A) Preorder traversal
- B) Depth first search
- C) Postorder traversal
- D) Breadth first search

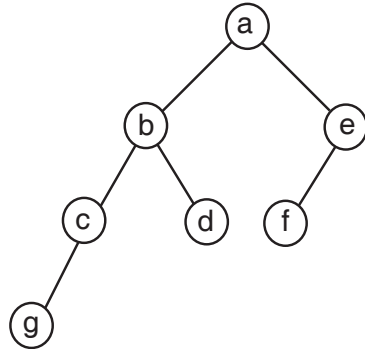
A

72. What is the result of evaluating the following prefix expression ?

$$* + 5 - 2 1 / - 4 2 + - 5 3 1$$

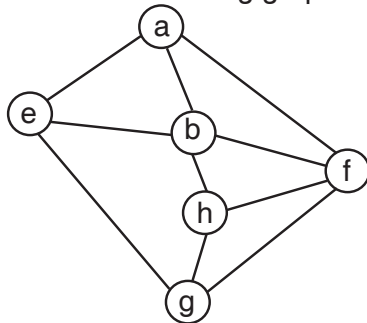
- A) 2 B) 8 C) 4 D) 12

73. In the balanced binary tree in the below figure, how many nodes will become unbalanced when two nodes are inserted as children of the node 'g' ?



- A) 1 B) 3
 C) 4 D) 7

74. Consider the following graph



Among the following sequences :

P : a b e g h f

Q : a b f g h e

R : a b f h g e

S : a f g h b e

Which are depth first traversals of the above graph ?

- A) P, Q, R and S
 B) P and R only
 C) Q, R and S only
 D) P, R and S only

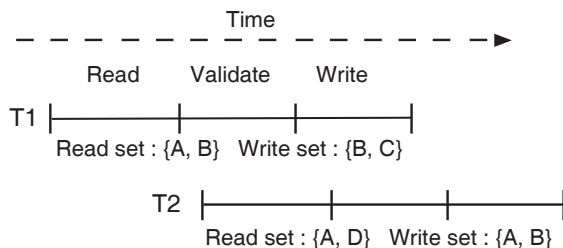
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75. Which one of the following models is not suitable for accommodating any change ?
- A) Prototyping model
 - B) RAD model
 - C) Build and Fix model
 - D) Waterfall model
76. White box testing, a software testing technique is sometimes called
- A) Graph testing
 - B) Basic path
 - C) Glass box testing
 - D) Dataflow
77. Which one of the following is not desired in a good Software Requirement Specifications (SRS) document ?
- A) Non-Functional Requirements
 - B) Goals of Implementation
 - C) Functional Requirements
 - D) Algorithms for Software Implementation
78. COCOMO stands for
- A) Constructive Cost Model
 - B) Common Control Model
 - C) Composition Cost Model
 - D) Consumed Cost Model
79. Line Of Code (LOC) of the product comes under which type of measures ?
- A) Direct measures
 - B) Coding
 - C) Indirect measures
 - D) None of the above
80. Which of the following is not one of the principles of Agile software development method ?
- A) Customer involvement
 - B) Embrace change
 - C) Incremental delivery
 - D) Following the plan

A

81. In RDBMS, second normal form deals with
- Functional dependencies
 - Transitive dependencies
 - Partial dependencies
 - Multivalued dependencies
82. A relation $R(x, y)$ in a particular relational database has redundant data due to inconsistent data entry and errors. Due to this several queries may fail to execute or generate incorrect answers. Despite these challenges, can any of the queries listed below execute without any errors and without any redundant records ?
- $\text{SELECT } x \text{ FROM } R \text{ WHERE } x = 1$
 - $\text{SELECT } x, y \text{ FROM } R \text{ GROUP BY } x, y$
 - $\text{SELECT MAX}(y) \text{ FROM } R \text{ GROUP BY } x$
 - All of the above
83. Consider two transactions T1 and T2 shown in figure. Based on the practical assumption that ACID properties have to be adhered to, in order to keep the database in consistent state, which of the two transactions would have to execute rollback due to failed operations, if concurrency control algorithms have been implemented on the database.



- T1 only
 - T2 only
 - T1 or T2 based on priority
 - Both T1 and T2
84. For N given relations, number of alternative join trees possible may be approximately
- $O(N)$
 - $O(N^2)$
 - $O(N \log N)$
 - None of the above

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85. Objective of normalization technique in DBMS is to

- A) Remove the functional dependencies
- B) Reduce the anomalies
- C) Remove redundancies
- D) Reduce the number of resultant relations

86. What is the output of the following code snippet ?

```
<?php
    $x=0;
    function myTest( )
    { static $y = $x;
      echo $y ;
      $y++; }
    myTest ( ) ;
    myTest ( ) ;
    myTest ( ) ;
?>
```

- A) 012
- B) 000
- C) No output
- D) Error

87. Consider the following JavaScript code snippet.

```
<script type= "text/javascript">
    var x = new Array ( ) ;
    x[0] = "kerala";
    x[1] = "state";
    x[2] = "india";
    document.write (x[0, 1, 2]) ;
</script>
```

What is the output of this script that is displayed on the webpage ?

- A) error
- B) india
- C) keralastateindia
- D) kerala, state, india

A

88. A Scripting language is a
- A) Assembly level programming language
 - B) Machine level programming language
 - C) Non-compiled language
 - D) High level programming language
89. Which of the following is used for terminate script execution in PHP ?
- A) break()
 - B) quit()
 - C) die()
 - D) none of the above
90. A MySQL customer table with some null values in a particular column for some of the records (i. e., optional data that customers left blank while filling a Web form) is given. You are asked to replace only these NULL value entries with a term "N/A". What command can be used do this ?
- A) UPDATE
 - B) INSERT
 - C) REPLACE
 - D) None of the above
91. Which of the following is used to delete an entire MySQL database ?
- A) DROP ENTIREDB
 - B) DROP DB
 - C) DROP DBASE
 - D) DROP DATABASE
92. What will be the output of the following PHP code ?
- ```
<?php
 $x = 10;
 $y = &$x;
 $x++;
 $y++;
 print $x.$y;
?>
```
- A) 1111
  - B) 1112
  - C) 1212
  - D) Circular referencing error

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93. What MySQL type can be used to store a list of permitted values for a variable during table creation time ?
- A) TEXT
  - B) SET
  - C) VARCHAR
  - D) None of the above
94. How does the identity operator `=====` compare two values ?
- A) Returns true only if both are of the same type and value
  - B) Performs a lexical comparison, if the two values are strings
  - C) Converts them to a common compatible data type and then compares resulting values
  - D) Converts both values to strings and compares them
95. In a SELECT with a GROUP BY clause, a WHERE clause and a HAVING clause, when are the WHERE conditions applied before the HAVING condition ?
- A) Depends on subquery structure
  - B) Always
  - C) Never
  - D) None of the above
96. \_\_\_\_\_ is an example of a magic method in PHP.
- A) `_compile()`
  - B) `_string()`
  - C) `_wakeup()`
  - D) all of the above

**A**

97. Using CSS, the background of an XHTML page can be set to an image
- A) `body {background("1.gif");}`
  - B) `body {background-image ("1.gif");}`
  - C) `body {background-image ('1.gif');}`
  - D) none of the above
98. Which of the below statements are true in the context of Primary Key (PK) and Unique Key (UK) ?
- A) Both are same
  - B) There is only one PK and one UK in a relation
  - C) PK does not allow NULL values while UK allows it
  - D) All of the above
99. What is the purpose of `<noscript>` tag in JavaScript ?
- A) Prevents scripts on the page from executing
  - B) Enclose text to be displayed by non-JavaScript browser
  - C) Suppresses the result to be displayed on the web page
  - D) None of the above
100. How is the following Boolean expression interpreted ?  
`var x = new Boolean ("false") ;`
- A) `x = true`
  - B) `x = false`
  - C) `x` has garbage value
  - D) none of the above
-

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Space for Rough Work



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