

Sr. No.481.....

ENTRANCE TEST-2024

SCHOOL OF APPLIED SCIENCES & TECHNOLOGY

COMPUTER SCIENCES

Question Booklet Series

A

Total Questions : 60

Time Allowed : 70 Minutes

Roll No. :

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Instructions for Candidates :

1. Write your Entrance Test Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
7. There will be '**Negative Marking**' for wrong answers. Each wrong answer will lead to the deduction of 0.25 marks from the total score of the candidate.
8. Only those candidates who would obtain positive score in Entrance Test Examination shall be eligible for admission.
9. Do not make any stray mark on the OMR sheet.
10. Calculators and mobiles shall not be permitted inside the examination hall.
11. Rough work, if any, should be done on the blank sheets provided with the question booklet.
12. OMR Answer Sheet must be handled carefully and it should not be folded or mutilated in which case it will not be evaluated.
13. Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/herself.
14. At the end of the examination, hand over the OMR Answer Sheet to the invigilator who will first tear off the original OMR sheet in presence of the Candidate and hand over the Candidate's Copy to the candidate.

SP-4500-A

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[Turn over

SEAL

1. Choose the correct meaning for the idiom/phrase highlighted in this sentence. "to spill the beans" :
 - (A) To reveal a secret unintentionally
 - (B) To be extremely cautious
 - (C) To start an argument
 - (D) To make a decision hastily
2. Choose the most appropriate word to fill in the blank. After the unexpected power outage, the presentation had to be _____.
 - (A) Initiated
 - (B) Continued
 - (C) Improvised
 - (D) Rescheduled
3. What is the synonym of word AMBIGUOUS ?
 - (A) Clear
 - (B) Definite
 - (C) Confusing
 - (D) Precise
4. Choose the most appropriate word to fill in the blank. She always endeavours to _____ the latest trends in fashion.
 - (A) keep up with
 - (B) keep down
 - (C) keep on
 - (D) keep off
5. Choose one option from below that will correctly fill in the blank given in the series :

M2 _____ K8 J16 I32

 - (A) N4
 - (B) N6
 - (C) L6
 - (D) L4
6. In a certain code, COMPUTERS is written as BMOUPETSR. What will be the fifth letter of the coded word for SCIENCE ?
 - (A) N
 - (B) I
 - (C) C
 - (D) E
7. Out of the following four words, three share a common characteristic, while one is distinct. Identify the odd one out.
 - (A) Pentagon
 - (B) Hexagon
 - (C) Heptagon
 - (D) Hendecagon
8. Two days before yesterday was Monday, what will be the day after tomorrow ?
 - (A) Sunday
 - (B) Tuesday
 - (C) Friday
 - (D) Saturday
9. Determine the 30th term of the arithmetic progression : 10, 7, 4, _____.
 - (A) 87
 - (B) 77
 - (C) -87
 - (D) -77
10. If the total of n terms in a geometric progression 5, 10, 20 equals 1275, what is the value of n ?
 - (A) 9
 - (B) 8
 - (C) 7
 - (D) 6

11. There are 8 letters in the word COMPUTER. How many permutations can these letters have ?

- (A) 8,080
- (B) 9,080
- (C) 10,080
- (D) 11,080

12. The value of $\log_2(2048)$ is :

- (A) 10
- (B) 11
- (C) 12
- (D) 13

13. Rectangular coordinate system is also termed as :

- (A) Polar coordinate system
- (B) Spherical coordinate system
- (C) Cartesian coordinate system
- (D) None of the above

14. Identify which one of the options is not the standard equation of a parabola :

- (A) $y^2 = 4ax$
- (B) $y^2 = -4ax^2$
- (C) $x^2 = 4ay$
- (D) $x^2 = -4ay$

15. Differential equation is given by $\frac{dy}{dx} + 6x = \cos x$

identify its order :

- (A) 0
- (B) 0.5
- (C) 1
- (D) 1.5

16. Compute the value of

$$\log \left(\frac{\tan \sqrt{\cos 45 + \sqrt{\sin 90}}}{\sin 90} \right)$$

- (A) -1
- (B) -0.9
- (C) 1
- (D) 0.9

17. Standard Deviation (SD) is given by $\sqrt{\frac{\sum |x - \mu|^2}{N}}$.

Use the given formula to identify the meaning of μ .

- (A) Value in the data set
- (B) Mean of the data set
- (C) Number of data points
- (D) None of the above

18. Batsman scored 60, 70, 80, 90 and 40 runs in different one day matches. Compute the approximate standard deviation.

- (A) 16.59
- (B) 16.69
- (C) 17.69
- (D) 17.19

19. When a pair of dice is rolled, the probability of obtaining an even prime number on each die can be calculated :

- (A) 0
- (B) 1/3
- (C) 1/12
- (D) 1/36

20. What is the probability of having a 1 or a 5 at the unit's place of a digit, that is chosen randomly and squared :
- (A) $3/10$
 (B) $7/10$
 (C) $1/10$
 (D) None of the above
21. Given the dimensions of matrix A are 4×3 , the dimensions of matrix B are 4×5 , and the dimensions of matrix C are 7×3 , then what are the dimensions of $(A^T B)^T C^T$?
- (A) 4×5
 (B) 5×4
 (C) 5×7
 (D) 3×7
22. Let $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 1 & 1 \\ 1 & 3 & 2 \end{bmatrix}$ be a square matrix of size 3×3 . Find the Determinant :
- (A) 16
 (B) 18
 (C) 20
 (D) 22
23. If the independent variables are more than one, then the differential equation is termed as :
- (A) ode
 (B) pde
 (C) Both (A) and (B)
 (D) Neither (A) nor (B)
24. For local maxima and minima, $f'(x)$ is equal to :
- (A) $1/2$
 (B) 0
 (C) 1
 (D) None of the above
25. What component replaced vacuum tubes in the second generation of computers ?
- (A) Resistor
 (B) Transistor
 (C) Integrated Chip (IC)
 (D) Micro-processor
26. During which generation of computers was the microprocessor introduced ?
- (A) Second
 (B) Third
 (C) Fourth
 (D) Fifth
27. What kind of technology enables simultaneous use of a computer by several users ?
- (A) Batch system
 (B) Multi-processor system
 (C) Multi-user system
 (D) Real Time system

28. How many bits are there in a nibble ?
- (A) Two
(B) Four
(C) Eight
(D) Thirty-two
29. What is the largest decimal number that can be represented with 8 bits ?
- (A) 127
(B) 128
(C) 255
(D) 256
30. Which of the following terms is used to represent memory of the size 2^{80} bytes ?
- (A) Exabyte
(B) Zettabyte
(C) Yottabyte
(D) Petabyte
31. Where is the first instructor of the operating system's bootstrap loader program stored ?
- (A) HDD
(B) SSD
(C) RAM
(D) BIOS
32. A register specifically designated to store the address of the location from or to which data is to be transferred is termed as :
- (A) Program Counter
(B) Instruction Register
(C) Memory Address Register
(D) Memory Data Register
33. What is the output of the following program fragment ?
- ```
#include <stdio.h>

int main()
{
 int x = 5;
 int y = 3;
 int z = ++x + y--;
 printf ("The value of z is %d\n", z);
 return 0;
}
```
- (A) 7  
(B) 8  
(C) 9  
(D) 10

34. What is the output of the following program fragment ?

```
#include <stdio.h>

int main()
{
 int x = 5;
 int y = 3;
 int z = (x ==y) && (x > y);
 printf("The value of z is %d\n", z);
 return 0;
}
```

- (A) The value of z is 0
- (B) The value of z is 1
- (C) The value of z is true
- (D) The value of z is false

35. What is the output of the following program fragment ?

```
#include <stdio.h>

int main()
{
 int x = 5;
 int y = 3;
 int z = (++x * y--) + (x--/++y);
 printf("The value of z is %d\n", z);
 return 0;
}
```

- (A) 18
- (B) 20
- (C) 22
- (D) 24

36. What is the output of the following program fragment ?

```
#include <stdio.h>

int main()
{
 int arr[] = {1, 2, 3, 4, 5};
 int *ptr = arr + 2;
 printf("%d", *ptr);
 printf("%d", ptr[1]);
 printf("%d\n", *(ptr - 1));
 return 0;
}
```

- (A) 3 4 2
- (B) 3 5 2
- (C) 2 3 1
- (D) 4 5 3

37. The Schema in a database is sometimes also called as :

- (A) Intension
- (B) Extension
- (C) Snapshot
- (D) Occurrence

38. Which of the following statements is TRUE ?

- (A) Every relation in BCNF is also in 3NF
- (B) Every relation in 3NF is also in BCNF
- (C) No relation can be in both BCNF and 3NF
- (D) None of the above

39. Among the options listed, which one is NOT classified as a type of Database Management System ?

- (A) Hierarchical
- (B) Network
- (C) Relational
- (D) Sequential

40. Match the following :

**List-I**

**List-II**

- |                             |                                                                                                                                                                                                                    |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I. Casual end users         | a. Include engineers, scientists, business analysts, and others who thoroughly familiarize themselves with facilities of the DBMS in order to implement their own applications to meet their complex requirements. |
| II. Naïve users             | b. Constantly querying and updating the database, using standard types of queries and updates called canned transactions.                                                                                          |
| III. Standalone users       | c. Maintain personal databases by using readymade program packages that provide easy to use menu based or graphics based interfaces.                                                                               |
| IV. Sophisticated end users | d. Occasionally access the database, but they may need different information each time.                                                                                                                            |

- (A) I-a, II-b, III-c, IV-d  
(B) I-d, II-c, III-b, IV-a  
(C) I-d, II-b, III-c, IV-a  
(D) I-a, II-b, III-c, IV-d

41. Starting with an empty stack, the following operations are performed : push(A), push(B), push(C), pop, push(D), push(E), pop, pop, pop. What will be the value at the top of the stack ?

- (A) A  
(B) B  
(C) C  
(D) D

42. Which of the following approach is used by recursive algorithms ?

- (A) Top Down approach  
(B) Bottom Up approach  
(C) Hierarchical approach  
(D) Heuristic approach

43. Choose the appropriate option representing the time complexity for inserting an element at the front of a LinkedList when the head pointer is given :

- (A)  $O(1)$   
(B)  $O(n)$   
(C)  $O(\log n)$   
(D)  $O(n^2)$

44. Evaluate the following postfix expression :  $4\ 6\ 2\ +\ 8\ /\ *$
- (A) 2  
(B) 8  
(C) 4  
(D) 6
45. If the FIFO page replacement algorithm is used with a total of  $m = 4$  frames, what number of page faults would occur given the following page trace :
- 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5 ?
- (A) 8  
(B) 9  
(C) 10  
(D) 12
46. A process that has finished its execution but its parent process has not yet executed the `wait()` system call is known as :
- (A) Orphan  
(B) Daemon  
(C) Zombie  
(D) None of the above
47. Which of the following scheduling algorithms does not allow pre-emption ?
- (A) Round Robin  
(B) Priority Scheduling  
(C) Shortest Job First  
(D) First come first serve
48. Which statements below accurately describe characteristics of scheduling algorithms ?
1. Pre-emptive scheduling can result in race conditions
  2. Round robin is better than FCFS in terms of response time
  3. FCFS may face the convoy effect
- (A) 1 only  
(B) 1 and 2 only  
(C) 2 and 3 only  
(D) 1, 2 and 3
49. What is the term used to describe the condition when a `pop()` operation is performed on an empty queue ?
- (A) Pop error  
(B) Push error  
(C) Overflow  
(D) Underflow
50. The worst case time complexity of merge sort is :
- (A)  $O(n)$   
(B)  $O(n \log n)$   
(C)  $O(n^2)$   
(D)  $O(\log n)$

51. What is the term used to describe the number of iterations required for a subproblem to reach the base condition ?

- (A) Count
- (B) Recursion depth
- (C) Both (A) and (B)
- (D) None of the above

52. Which sorting algorithm offers the best time complexity in the worst-case scenario among the following options ?

- (A) Bubble Sort
- (B) Selection Sort
- (C) Merge Sort
- (D) Quick Sort

53. What is the regular expression representing the set of all strings that start with "ab" and end with "aa," given the alphabet  $\Sigma = \{a, b\}$  ?

- (A)  $aba^*b^*aa$
- (B)  $ab(ab)^*aa$
- (C)  $ab(a+b)^*aa$
- (D) None of the above

54. What is the minimum number of states required in a DFA to accept the language defined by the given regular expression :  $(a+b)^*(a+b)(a+b)^*$

- (A) 1
- (B) 2
- (C) 3
- (D) 4

55. Match the following :

- |                               |                                    |
|-------------------------------|------------------------------------|
| a. Context Sensitive language | i. Deterministic finite automation |
| b. Regular grammar            | ii. Recursive enumerable           |
| c. Context free grammar       | iii. Recursive language            |
| d. Unrestricted grammar       | iv. Pushdown automation            |

Codes :

- |     | a   | b  | c  | d   |
|-----|-----|----|----|-----|
| (A) | ii  | i  | iv | iii |
| (B) | iii | iv | i  | ii  |
| (C) | iii | i  | iv | ii  |
| (D) | ii  | iv | i  | iii |

56. The language recognized by a Pushdown Automaton with a limited stack capacity of 20 items can be characterized as :

- (A) Regular
- (B) Context free
- (C) Context Sensitive
- (D) Recursive

57. Which of the following switching methods involves dividing the message into small packets ?
- (A) Message Switching
  - (B) Virtual Switching
  - (C) Packet Switching
  - (D) None of the above
58. In Classful addressing, the default subnet mask for a class C network is :
- (A) 255.255.255.0
  - (B) 192.255.255.0
  - (C) 255.0.0.0
  - (D) 192.0.0.0
59. The length of a MAC address is :
- (A) 48 bits
  - (B) 40 bits
  - (C) 32 bits
  - (D) 16 bits
60. In an asymmetric key cryptography system, the private key is :
- (A) Sender
  - (B) Receiver
  - (C) Both Sender and Receiver
  - (D) None of the above

Sr. No. ....

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## SCHOOL OF APPLIED SCIENCES AND TECHNOLOGY

### COMPUTER SCIENCE

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Time Allowed : 70 Minutes

Question Booklet Series

A

Roll No. :

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1. The best possible value of the problem objective, written as a function of the state, is called the \_\_\_\_\_.
  - (A) Value function
  - (B) Control variables
  - (C) Policy function
  - (D) Principle of Optimality
2. With respect to finding the time complexity of Kruskal's algorithm, which operation keeps track of the parent pointer until it reaches the root parent ?
  - (A) Makeset
  - (B) Union
  - (C) Find
  - (D) Merge
3. \_\_\_\_\_ means calculating the minimum amount of work required to solve the problem.
  - (A) Upper-bound
  - (B) Lower-bound
  - (C) Adversary
  - (D) Problem reduction
4. In a decision tree, a node represents a \_\_\_\_\_.
  - (A) Input value
  - (B) Output value
  - (C) Solution
  - (D) Decision
5. The number of key comparisons in the worst case while forming a heap is using an array of  $n$  elements is \_\_\_\_\_.
  - (A)  $n \log_2(n+1)$
  - (B)  $2(n \log_2(n+1))$
  - (C)  $2(n-1) \log_2(n+1)$
  - (D)  $2(n - \log_2(n+1))$
6. In \_\_\_\_\_, one begins at the root of the tree and then explores along each branch.
  - (A) Topological sorting
  - (B) Breadth-first search
  - (C) Depth-first search
  - (D) Insertion Sort
7. In order traversing a tree resulted EACKFHDBG; the preorder traversal would return :
  - (A) FAEKCDBHG
  - (B) FAEKCDHGB
  - (C) EAFKHDCBG
  - (D) FEAKDCHBG
8. The in-order traversal of tree will yield a sorted listing of elements of tree
  - (A) Binary trees
  - (B) Binary search trees
  - (C) Merging
  - (D) AVL Trees
9. Let  $r = ab^*c^*$  and  $r = (a^*b+c)^*$  and  $r = (a+b+c)^*$ . Then which of the following is true ?
  - (A)  $w = 'ac'$  belongs to  $L(r)$  and  $L(r)$  but not  $L(r)$
  - (B)  $w = 'ac'$  belongs to  $L(r)$  only
  - (C)  $w = 'ac'$  belongs to  $L(r)$ ,  $L(r)$  and  $L(r)$
  - (D)  $w = 'ac'$  belongs to  $L(r)$  and  $L(r)$  but not  $L(r)$
10. Let  $\Sigma = \{a, b\}$ ,  $r = a(a+b)^*$  and  $r = b(a+b)^*$ . Which of the following is true ?
  - (A)  $L(r) = L(r) = \Sigma^*$
  - (B)  $L(r) \cap L(r) = \{\epsilon\}$
  - (C)  $L(r) \cup L(r) = \Sigma^*$
  - (D)  $L(r) \cup L(r) \cup \{\epsilon\} = \Sigma^*$
11. Which of the following statements are true ?
  - (i)  $abcd \in L((b^*a^*)^*(d^*c^*)^*)$
  - (ii)  $abcd \in L((*c^*b^*a^*)^*)$
  - (iii)  $abcde \in L((a^*b^*a^*c^*d^*)^*)$
  - (A) (i) and (iii) only
  - (B) (ii) and (iii) only
  - (C) (i) and (ii) only
  - (D) All of these

12. Which of the following are regular languages ?
- (i) The language  $\{w^2 \mid w \in (a, b)^*, w \text{ has an odd number of } b\text{'s}\}$ .
  - (ii) The language  $\{w^2 \mid w \in (a, b)^*, w \text{ has an even number of } b\text{'s}\}$ .
  - (iii) The language  $\{w^2 \mid w \in (a, b)^*, w \text{ has an even number of } b\text{'s and odd number of } a\text{'s}\}$ .
- (A) (i) and (ii) only  
 (B) (i) only  
 (C) (ii) only  
 (D) All of these
13. \_\_\_\_\_ are special-interest groups that quickly test, evaluate, and standardize new technologies.
- (A) Forums  
 (B) Regulatory agencies  
 (C) Standards organizations  
 (D) All of the above
14. Complex routing strategies can be, and are, often used in systems such as \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_, which are sometimes used as underlying technologies to support IP networks.
- (A) MPLS, ATM, or Frame Relay  
 (B) CTLNS, ATM, or Slot  
 (C) ATM, PDMN, or Slot  
 (D) LAN, ATM, or Frame Relay
15. Process to process delivery of the entire message is done by :
- (A) Physical layer  
 (B) Transport layer  
 (C) Session layer  
 (D) Presentation layer
16. \_\_\_\_\_ overcame the registered number issue by assigning each organization one network number from the IPv4 address space.
- (A) Tracking  
 (B) Subnetting  
 (C) Packeting  
 (D) Switching
17. Match the following.
- |                     |                                                                     |
|---------------------|---------------------------------------------------------------------|
| i) Mutual exclusion | a) A process may hold allocated resources while waiting assignment. |
| ii) Hold and wait   | b) No resource can be forcibly removed from a process holding it.   |
| iii) No preemption  | c) Only one process may use a resource at a time.                   |
- (A) i-a, ii-b, iii-c  
 (B) i-a, ii-c, iii-b  
 (C) i-b, ii-c, iii-a  
 (D) i-c, ii-a, iii-b
18. \_\_\_\_\_ executes must frequently and makes the fine-grained decision of which process to execute the next.
- (A) Long-term scheduling  
 (B) Medium-term scheduling  
 (C) Short-term scheduling  
 (D) None of the above
19. With \_\_\_\_\_, a page is brought into main memory only when the reference is made to a location on that page.
- (A) demand paging  
 (B) main paging  
 (C) prepaging  
 (D) postpaging
20. \_\_\_\_\_ provides a larger size of virtual memory but require virtual memory which provides multidimensional memory.
- (A) Paging method  
 (B) Segmentation method  
 (C) Paging and segmentation method  
 (D) None of these

21. A command that lets you change one or more fields in a record is :
- (A) Insert
  - (B) Modify
  - (C) Look-up
  - (D) All of the above
22. Database Management System automatically takes care of \_\_\_\_\_.
- (A) Data Redundancy
  - (B) Backup and Recovery
  - (C) Data Security
  - (D) None of the above
23. Referential Integrity helps to avoid \_\_\_\_\_.
- (A) If you want to add a record in the related table and if there is no associated record available in the primary key table.
  - (B) Changing values in a primary if there are any dependent records in the related table.
  - (C) Deleting records from a primary key table if there are any matching related records available in the associated table.
  - (D) All of the above
24. The method of file organization in which data records in a file are arranged in a specified order according to key field is known as the :
- (A) Sequential access method
  - (B) Queuing method
  - (C) Predetermined method
  - (D) Direct access method
25. The errors that can be pointed out by the compiler are :
- (A) Syntax errors
  - (B) Semantic error
  - (C) Logical error
  - (D) None of the above
26. Which one of the following statements is incorrect?
- (A) A compiler compiles the source program
  - (B) An assembler takes an assembly program as input.
  - (C) A compiler does the same type of function as interpreter
  - (D) None of the above
27. When recovering from a failure:
- (A) examination of each pair of physical blocks occurs
  - (B) examination of a specified pair of physical blocks occurs
  - (C) examination of the first pair of physical blocks occurs
  - (D) none of the above
28. Which of the following register keeps track of the instructions stored in the program stored in memory ?
- (A) Address Register
  - (B) Accumulator
  - (C) Program Counter
  - (D) Index Register
29. Determine the output of the C code mentioned below:
- ```
#include <stdio.h>
int main()
{
float q = 'a';
printf("%f", q);
return 0;
}
```
- (A) run time error
 - (B) a
 - (C) 97.000000
 - (D) a.0000000

30. We cannot use the keyword 'break' simply within _____.
 (A) while
 (B) for
 (C) if-else
 (D) do-while
31. Out of the following operations, which one is not possible in the case of a register variable ?
 (A) Global declaration of the register variable
 (B) Copying the value from the memory variable
 (C) Reading any value into the register variable
 (D) All of the above
32. We can test the presence of a loop in a linked list by _____.
 (A) Comparing the node's address with the address of all the other nodes
 (B) Travelling the list. In case we encounter the NULL, then no loop exists
 (C) Comparing the stored values of a node with the values present in all the other nodes
 (D) None of the above
33. The process that uses computers to aid in the recording and analysis of a real-world or imaginary system is referred to as :
 (A) Data processing
 (B) Data capture
 (C) Data flow
 (D) Data transmission
34. The total amount of time that a piece of equipment would be in use is referred to as the _____ time.
 (A) Effective
 (B) Seek
 (C) Real
 (D) Access
35. Which of these is a single-user, general-purpose microcomputer intended to be used just by one person at any given time ?
 (A) M
 (B) PC
 (C) KIPS
 (D) Special-purpose computer
36. An integrated circuit (IC), sometimes called a chip or microchip are fabricated with :
 (A) Resistors
 (B) Capacitors
 (C) Transistors
 (D) All of these
37. When we add a two's complement, 4-bit, binary numbers 1101 and 0100, it would result in :
 (A) 1001 and no overflow
 (B) 0001 and an overflow
 (C) 1001 and an overflow
 (D) 0001 and no overflow
38. If in a base-x type of number system, 73_x is equivalent to that of 54_y in a base-y type of number system, then the possible values of both- x and y would be :
 (A) 10, 12
 (B) 8, 16
 (C) 8, 11
 (D) 9, 13
39. Which of these is required when we want to establish the communication links between a CPU and its peripherals ?
 (A) Memory data register
 (B) Memory address register
 (C) Instruction register
 (D) Index register

40. If we double the cache line length and it reduces the miss rate to 3%, then by how much will the average memory access time be reduced ?
- (A) 4.85 ns
 (B) 22.2 ns
 (C) 25.75 ns
 (D) 27.1 ns
41. When she was in the university, she _____ wake up early in the morning.
- (A) should
 (B) would
 (C) will
 (D) would have
42. One who does not care for literature or art :
- (A) Philistine
 (B) Dictator
 (C) Primitive
 (D) Hypocrite
43. That which cannot be averted :
- (A) irreparable
 (B) incomparable
 (C) indisputable
 (D) inevitable
44. Words of same sound are :
- (A) Soundnoms
 (B) Antonyms
 (C) Homonyms
 (D) None of these
45. What is the equation of the line that passes through the point (5, 2) and is perpendicular to the line $2x - y + 1 = 0$?
- (A) $y = -2x + 7$
 (B) $y = 2x + 7$
 (C) $y = 2x - 7$
 (D) $y = -2x - 7$
46. Which of the following functions is a polynomial function ?
- (A) $f(x) = 1/x$
 (B) $f(x) = e^x$
 (C) $f(x) = \sqrt{x}$
 (D) $f(x) = x^3 + 2x^2 - 5x + 1$
47. What is the equation of the circle with center (2, 3) and radius 4 units ?
- (A) $(x - 2)^2 + (y - 3)^2 = 16$
 (B) $(x - 2)^2 + (y - 3)^2 = 4$
 (C) $(x - 2)^2 + (y - 3)^2 = -16$
 (D) $(x - 2)^2 + (y - 3)^2 = -4$
48. What is the equation of the tangent line to the curve $y = x^3 - 4x + 1$ at $x = 2$?
- (A) $y = 4x - 1$
 (B) $y = 6x - 5$
 (C) $y = 10x - 11$
 (D) $y = 12x - 15$
49. In a group of five persons A, B, C, D and E one plays Tennis, one plays Chess and one Hockey. A and D are unmarried women and play no game. There is a couple among them where E is husband of C. No woman plays either Chess or Hockey. B is the brother of C and he neither plays Tennis nor Chess. Who plays Hockey here ?
- (A) A
 (B) B
 (C) C
 (D) E

50. Among A, B, C, D and E each having different amount of money, C has more money than only E. B has more money than D but less than A. Who among them has the highest amount of money ?
 (A) B
 (B) A
 (C) D
 (D) Data inadequate
51. Sprain : Fracture :: ?
 (A) Cool : Cold
 (B) Accident : Death
 (C) Pneumonia : Fever
 (D) Fall : Slip
52. How many meaningful English words can be made with the letters RTOU using each letter only once in each word ?
 (A) None
 (B) One
 (C) Two
 (D) Three
53. What are the coordinates of the point of intersection of the two lines $y = 2x - 1$ and $y = -x + 3$?
 (A) (1, 1)
 (B) (2, 3)
 (C) (-1, 5)
 (D) (1, 3)
54. The equation of the line that passes through the point (2, 3) and is parallel to the line $y = 2x + 1$ is :
 (A) $y = 2x + 5$
 (B) $y = 2x - 1$
 (C) $y = 2x + 7$
 (D) $y = -2x + 7$
55. Given the equation of a plane as $2x - 3y + z = 6$, what is the normal vector of the plane ?
 (A) $\langle 2, -3, 1 \rangle$
 (B) $\langle 2, 3, -1 \rangle$
 (C) $\langle -2, 3, -1 \rangle$
 (D) $\langle -2, -3, 1 \rangle$
56. Determine the equation of the parabola with a vertex at (2,3) and a path through (0, -1).
 (A) $y = (x - 2)^2 + 3$
 (B) $y = -(x - 2)^2 + 3$
 (C) $y = (x + 2)^2 - 3$
 (D) $y = -(x + 2)^2 - 3$
57. Variance of first 20 natural numbers is :
 (A) 32.25
 (B) 44.25
 (C) 33.25
 (D) 30
58. If the mean and coefficient of variation of a data are 4 and 87.5% then the standard deviation is :
 (A) 3.5
 (B) 3
 (C) 4.5
 (D) 2.5
59. If the mean of first n natural numbers is $4n/6$, then the value of n is :
 (A) 4
 (B) 2
 (C) 6
 (D) 3
60. Aarti gave her project assignment to a shopkeeper for binding. There were 19 pages including a cover page, 12 pages of theory and 6 pages of drawings. She told the shopkeeper that the theory pages are in a particular order and the drawing pages can be arranged anywhere provided they are together. If the cover page is always kept first what is the probability that rest of the pages are arranged as per requirement ?
 (A) $12C1 \times 6! / 18!$
 (B) $13C1 \times 6! / 19!$
 (C) $13 \times 40 / 17!$
 (D) $13! \times 6! / 18!$

ROUGH WORK

ENTRANCE TEST-2022**SCHOOL OF APPLIED SCIENCES AND TECHNOLOGY****COMPUTER SCIENCE**

Total Questions : 60
 Time Allowed : 70 Minutes

Question Booklet Series

A

Roll No. :

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Instructions for Candidates :

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4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
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SV-14754-A

**SEAL**

1. Which of phrases given below should replace the phrase printed in **bold** type in the sentence "I need not offer any explanation regarding this incident - my behaviour **is speaking itself.**" would make it grammatically correct ?
- (A) will speak to itself
 (B) speaks for itself
 (C) has been speaking
 (D) speaks about itself
2. The Antonym of the word "EXODUS" is :
- (A) Influx
 (B) Home-coming
 (C) Return
 (D) Restoration
3. Out of four alternatives, choose the one which can be substituted for the given sentence.
 "A style in which a writer makes a display of his knowledge".
- (A) Pedantic
 (B) Verbose
 (C) Pompous
 (D) Ornate
4. Select the pair which has the same relationship as PAIN : SEDATIVE
- (A) Comfort : Stimulant
 (B) Grief : Consolation
 (C) Trance : Narcotic
 (D) Ache : Extraction
5. A, B and C can complete a piece of work in 14, 6 and 12 days respectively. Working together, they will complete the work in :
- (A) 19/9 days
 (B) 27 days
 (C) 28/9 days
 (D) 25/8 days
6. The ratio of the present age of father to that of son is 7:2. After 10 years their ages will be in the ratio of 9:4. The present ages of the father is :
- (A) 20 years
 (B) 25 years
 (C) 30 years
 (D) 35 years
7. A 1200 m long train crosses a tree in 120 sec, how much time will it take to pass a platform 700 m long ?
- (A) 50 sec
 (B) 80 sec
 (C) 190 sec
 (D) 240 sec
8. If MIND becomes KGLB and ARGUE becomes YPESC, then what will DIAGRAM be in that code ?
- (A) BGYEPYK
 (B) BGYPYEK
 (C) GLPEYKB
 (D) LKBGYPK

9. If $\log \frac{a}{b} + \log \frac{b}{a} = \log(a + b)$:
- (A) $a + b = 1$
 (B) $a - b = 1$
 (C) $a = b$
 (D) $a^2 + b^2 = 1$
10. If one root of the quadratic equation $2x^2 + kx - 6 = 0$ is 2, the value of k is:
- (A) 1
 (B) -1
 (C) 2
 (D) -2
11. If a, b, c are in AP then:
- (A) $b = a + c$
 (B) $2b = a + c$
 (C) $b^2 = a + c$
 (D) $2b^2 = a + c$
12. If repetition of the digits is allowed, then the number of even natural numbers having three digits is:
- (A) 250
 (B) 350
 (C) 450
 (D) 550
13. Find the radius and center of a circle given by the equation $x^2 + y^2 - 4x - 6y - 12 = 0$:
- (A) Radius = 5, Center = (2,3)
 (B) Radius = 5, Center = (3,2)
 (C) Radius = 1, Center = (2,3)
 (D) Radius = 1, Center = (3,2)
14. What is the degree of the differential equation $y = x \left(\frac{dy}{dx} \right)^2 + \frac{dx}{dy}$?
- (A) 1
 (B) 2
 (C) 3
 (D) 4
15. The solution of the differential equation $dy = (1 + y^2)dx$ is:
- (A) $y = \tan x + c$
 (B) $y = \tan(x + c)$
 (C) $\tan^{-1}(y + c) = x$
 (D) $\tan^{-1}(y + c) = 2x$
16. When the sun's altitude changes from 30° to 60° , the length of the shadow of a tower decreases by 70m. What is the height of the tower?
- (A) 35m
 (B) 140m
 (C) 60.6m
 (D) 20.2m
17. What will be the probability of getting odd numbers if a dice is thrown?
- (A) $1/2$
 (B) 2
 (C) $4/2$
 (D) $5/2$

18. A continuous random variable has the distribution function ?

$$f(x) = \begin{cases} 0 & \text{if } x < 1 \\ k(x-1)^4 & \text{if } 1 < x < 3 \\ 1 & \text{if } x > 3 \end{cases}$$

- (A) $\frac{1}{4}$
 (B) $\frac{1}{8}$
 (C) $\frac{1}{16}$
 (D) $\frac{1}{2}$

19. Consider a Poisson distribution for the tossing of a biased coin. The mean for this distribution is μ . The standard deviation for this distribution is given by :

- (A) $\sqrt{\mu}$
 (B) μ^2
 (C) μ
 (D) $\frac{1}{\mu}$

20. If the distribution is negatively skewed, then the :

- (A) Mean is more than mode
 (B) Mean is less than mode
 (C) Median is at right to the mode
 (D) Mean is at right to the Median

21. The rank of the following matrix is :

$$\begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix}$$

- (A) 1
 (B) 2
 (C) 3
 (D) 4

22. Given $y = 5e^{3x} + \sin x$, $\frac{dy}{dx}$ is :

- (A) $5e^{3x} + \cos x$
 (B) $15e^{3x} + \cos x$
 (C) $5e^{3x} - \cos x$
 (D) $2.666e^{3x} - \cos x$

23. Ratio of volume of a cone to the volume of a cylinder for same base radius and same height is _____.

- (A) 3
 (B) $\frac{1}{3}$
 (C) 2
 (D) $\frac{1}{2}$

24. $\int \frac{x + \sin x}{1 + \cos x} dx$ is equal to :

- (A) $\log|1 + \cos x| + c$
 (B) $\log|x + \sin x| + c$
 (C) $x - \tan x + c$
 (D) $x \cdot \tan \frac{x}{2} + c$

25. The basic architecture of a computer system was developed by :
- John Von Neumann
 - Charles Babbage
 - Blaise Pascal
 - Garden Moore
26. Conversion of hexadecimal number $1D7F_{16}$ to a decimal number is :
- 7551_{10}
 - 8771_{10}
 - 5557_{10}
 - 7781_{10}
27. How many bytes does 4 kilobytes represent ?
- 1000
 - 1024
 - 4096
 - 8196
28. Which of the following address is generated by CPU ?
- Logical address
 - Physical address
 - Actual address
 - Simple address
29. In which addressing mode, the effective address of the operand is generated by adding a constant value to the contents of a register ?
- Absolute mode
 - Indirect mode
 - Immediate mode
 - Index mode
30. Consider the following gates :
- NAND gate
 - NOR gate
 - XOR gate
- II and III only
 - I and II only
 - I and III only
 - I, II and III
31. Which of the following Boolean rules is correct ?
- $A + 0 = 0$
 - $A + 1 = 1$
 - $A + A = A.A$
 - $A + A.B = A + B$
32. The performance of cache memory is frequently measured in terms of a quantity called :
- Miss ratio
 - Latency ratio
 - Read ratio
 - Hit ratio
33. In C++, which of the following operator cannot be overloaded ?
- \wedge
 - $==$
 - $.[dot]$
 - $!$

34. Which of the following is true about virtual functions in C++ ?
- (A) Virtual functions are functions that can be overridden in derived class with the same signature. Data that can be extracted from numerous internal and external sources
 - (B) Virtual functions enable run-time polymorphism in an inheritance hierarchy.
 - (C) If a function is 'virtual' in the base class, the most-derived class's implementation of the function is called according to the actual type of the object referred to, regardless of the declared type of the pointer or reference. In non-virtual functions, the functions are called according to the type of reference or pointer.
 - (D) All of the above
35. How many types of access specifiers are provided in OOP (C++) ?
- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4
36. What is the base data type of a pointer variable by which the memory would be allocated to it ?
- (A) Int
 - (B) No datatype
 - (C) Depends upon the type of the variable to which it is pointing
 - (D) Unsigned int
37. Snapshot of the data in the database at a given instant of time is called :
- (A) Database Schema
 - (B) Database Instance
 - (C) Database Snapshot
 - (D) All of the above
38. Which of the following data constraints would be used to specify that the value of cells in a column must be one of a specific set of possible values ?
- (A) A domain constraint
 - (B) A range constraint
 - (C) An intra-relation constraint
 - (D) An inter-relation constraint
39. In Context of database, Let T1 and T2 be two concurrent transactions. Consider the following sequence of operations on data X :
- T1 : R(X) T1 : W(X) T2 : R(X) T2 : W(X)
- This is called _____ Problem.
- (A) Dirty Read
 - (B) Lost update
 - (C) Incorrect summary
 - (D) Unrepeatable Read
40. Which of the following occurs when one transaction reads a changed record that has not been committed to the database ?
- (A) Non-repeatable read
 - (B) Phantom read
 - (C) Dirty read
 - (D) Consistent read

41. Identify the data structure which allows deletion at both ends of the list but insertion at only one end ?
- (A) Stack
 (B) Priority queue
 (C) Output restricted queue
 (D) Input restricted queue
42. Which of the following is not a linear data structure?
- (A) Stack
 (B) Graph
 (C) List
 (D) None of the above
43. Merge sort uses which of the following technique to implement sorting ?
- (A) Backtracking
 (B) Greedy Algorithm
 (C) Divide and Conquer
 (D) Dynamic Programming
44. A complete binary tree with the property that the value at each node is at least as large as the values at its children is called :
- (A) Binary search tree
 (B) Binary Tree
 (C) Completely balanced tree
 (D) Heap
45. To access the services of the operating system, the interface is provided by the ____.
- (A) Library
 (B) System calls
 (C) Assembly instructions
 (D) API
46. In a multi threaded environment ____.
- (A) Each thread is allocated with new memory from main memory
 (B) Main thread terminates after the termination of child threads
 (C) Every process can have only one thread
 (D) None of the above
47. Switching the CPU to another Process requires to save state of the old process and loading new process state is called as ____.
- (A) Process Blocking
 (B) Context Switch
 (C) Time Sharing
 (D) None of the above
48. The operating system and the other processes are protected from being modified by an already running process because ____.
- (A) They are in different memory spaces.
 (B) They are in different logical addresses
 (C) They have a protection algorithm
 (D) Every address generated by the CPU is being checked against the relocation and limit registers

49. What is the worst case time complexity of a quick sort algorithm ?
- (A) $O(n)$
 (B) $O(n \log n)$
 (C) $O(n^2)$
 (D) $O(\log n)$
50. The following paradigm can be used to find the solution of the problem in minimum time:
 Given a set of non-negative integers, and a value K , determine if there is a subset of the given set with sum equal to K ?
- (A) Divide and Conquer
 (B) Dynamic Programming
 (C) Greedy Algorithm
 (D) Branch and Bound
51. Which of the following is useful in traversing a given graph by breadth first search ?
- (A) Set
 (B) List
 (C) Stack
 (D) Queue
52. Best case time complexity of binary search algorithm is :
- (A) $O(n)$
 (B) $O(\log n)$
 (C) $O(n \log n)$
 (D) $O(n^2)$
53. According to Chomsky classification, Language of finite automata is :
- (A) Type 0
 (B) Type 1
 (C) Type 2
 (D) Type 3
54. How many DFA's exists with two states over input alphabet $\{0,1\}$?
- (A) 16
 (B) 26
 (C) 32
 (D) 64
55. Which of the following statement is false ?
- (A) Context free language is the subset of context sensitive language
 (B) Regular language is the subset of context sensitive language
 (C) Recursively enumerable language is the super set of regular language
 (D) Context sensitive language is a subset of context free language
56. Which of the following can accept even palindrome over $\{a,b\}$?
- (A) Push down Automata
 (B) Turing machine
 (C) NDFA
 (D) All of the mentioned

57. The required resources for communication between end systems are reserved for the duration of the session between end systems in _____ method.
- (A) Packet switching
 - (B) Circuit switching
 - (C) Line switching
 - (D) Frequency switching
58. The device bridge is used at _____ layer of OSI reference model.
- (A) DataLink
 - (B) Network
 - (C) Transport
 - (D) Application
59. In _____, the chance of collision can be reduced if a station senses the medium before trying to use it.
- (A) MA
 - (B) CSMA
 - (C) FDMA
 - (D) CDMA
60. Which one of the following is not a function of network layer ?
- (A) routing
 - (B) inter-networking
 - (C) congestion control
 - (D) error control



Sr. No.

ENTRANCE TEST-2021

SCHOOL OF APPLIED SCIENCES & TECHNOLOGY

COMPUTER SCIENCE

Question Booklet Series

A

Total Questions : 60

Time Allowed : 70 Minutes

Roll No. :

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1. *Have you been* more careful, the accident could have been averted.
- (A) If you have been
 (B) Had you been
 (C) If you could have been
 (D) No correction required
2. The Antonym of the word *Approbate* is :
- (A) Ingratitude
 (B) Dissatisfaction
 (C) Condemn
 (D) Master
3. The verbal analogy of *Liquid : Litre* is :
- (A) Hot : Cold
 (B) Weight : Kilogram
 (C) Movie : Entertainment
 (D) Winter : Cold
4. “ Sustained pressure must be brought to bear to see that pollution _____ Laws are _____ ”
 Select the appropriate set of words that make the sentence more meaningful?
- (A) enforcement, adhered to
 (B) control, adhered to
 (C) effective, complied to
 (D) prohibition, made up
5. Length and width of a field are in the ratio 5 : 3. If the width of the field is 42 m then its length is :
- (A) 100 m
 (B) 80 m
 (C) 50 m
 (D) 70 m
6. A can do a piece of work in 30 days. He works at it for 5 days and then B finishes it in 20 days. In what time can A and B together do it ?
- (A) $16\frac{2}{3}$ days
 (B) $13\frac{1}{3}$ days
 (C) $17\frac{1}{3}$ days
 (D) $16\frac{1}{2}$ days
7. A is the father of X. B is the mother of Y. The sister of X and Z is Y. Which of the following statements is definitely not true ?
- (A) B is the wife of A
 (B) B has one daughter
 (C) Y is the son of A
 (D) X is the sister of Z

8. If $44 \times 44 = 4444$ and $34 \times 52 = 5423$ then $81 \times 46 = ?$
- (A) 1648
(B) 8461
(C) 8164
(D) 4168
9. If a, b, c are real and $a + b + c = 0$ then the quadratic equation, $4ax^2 + 3bx + 2c = 0$ has :
- (A) One positive and one negative root
(B) Imaginary roots
(C) Two real roots
(D) None of these
10. A candidate is required to answer 6 out of 10 questions which are divided into two groups each containing 5 questions. He is not permitted to attempt more than 4 questions from either group. The number of different ways in which the candidate can select the 6 questions is :
- (A) 50
(B) 150
(C) 200
(D) 250
11. The 16th term of an arithmetic sequence 4, 7, 10, _____ is :
- (A) 16
(B) 23
(C) 35
(D) 49
12. Numbers lying between 99 and 1000 that can be formed from the digits 2, 3, 7, 0, 8, 6 are :
- (A) 100
(B) 150
(C) 200
(D) 250
13. A circle passing through $(0, 0)$, $(a, 0)$, $(0, b)$ then the coordinates of the centre are :
- (A) $\left(\frac{a}{2}, \frac{b}{2}\right)$
(B) $\left(\frac{b}{2}, \frac{a}{2}\right)$
(C) (a, b)
(D) (b, a)
14. What is the order of the equation, $xy^3\left(\frac{\partial y}{\partial x}\right)^2 + yx^2 + \frac{\partial y}{\partial x} = 0$ $y\partial x = 0$?
- (A) Third Order
(B) Second Order
(C) First Order
(D) Zero Order
15. If $\cos 5\theta = a \cos \theta + b \cos^3\theta + c \cos^5\theta + d$, then :
- (A) $A = 20$
(B) $B = -16$
(C) $C = 16$ and -20
(D) $D = 5$

16. A tower subtends an angle of 30° at a point on the same level as the foot of the tower, and at a second point, "h" metre above the first, the depression of the foot of the tower is 60° . The height of the tower is :
- (A) h metre
 (B) 3h metre
 (C) $\sqrt{3}$ h metre
 (D) None of these
17. The average score of boys in an examination of a school is 71 and that of girls is 73. The average of the school in that examination is 71.8. Find the ratio of the number of boys to the number of girls in the examination.
- (A) 2:3
 (B) 1:2
 (C) 2:1
 (D) 3:2
18. The coefficient of correlation was defined by :
- (A) Laplace
 (B) Pascal
 (C) De Moivre
 (D) Karl Pearson
19. If the mean and variance of a binomial distribution are 2 and $\frac{4}{3}$ respectively, then the value of $p(x = 0)$ is :
- (A) $\frac{1}{8}$
 (B) $\frac{64}{729}$
 (C) $\frac{1}{729}$
 (D) $\frac{8}{729}$
20. In a group of 52 persons, 16 drink tea but not coffee and 33 drink tea, How many drink Coffee but not tea ?
- (A) 3
 (B) 7
 (C) 17
 (D) 19
21. If circular metal sheet is 0.65 cm thick and of 50 cm in diameter is melted and recast into cylindrical bar with 8cm diameter then the length of bar will be :
- (A) 24.41 cm
 (B) 35.41 cm
 (C) 40.41 cm
 (D) 30.41 cm

22. The radius of a hemispherical balloon increases from 6 cm to 12 cm as air is being pumped into it. The ratios of the surface areas of the balloon in the two cases is :
- (A) 1 : 4
 (B) 1 : 3
 (C) 2 : 3
 (D) 2 : 1

23. Let $P = \begin{bmatrix} 1 & 1 & -1 \\ 2 & -3 & 4 \\ 3 & -2 & 3 \end{bmatrix}$ and $Q = \begin{bmatrix} -1 & -2 & -1 \\ 6 & 12 & 6 \\ 5 & 10 & 5 \end{bmatrix}$

be two matrices, then rank of $P + Q$ will be :

- (A) 0
 (B) 1
 (C) 2
 (D) 3
24. The value of $\int_0^{\frac{\pi}{2}} \sin^5 x \cos^3 x \, dx$ is :
- (A) 0.0203
 (B) 0.0307
 (C) 0.0417
 (D) 0.0543
25. ASCII and EBCDIC are the popular character coding systems. What does EBCDIC stand for ?
- (A) Extended Binary Coded Decimal Interchange Code
 (B) Extended Bit Code Decimal Interchange Code
 (C) Extended Bit Case Decimal Interchange Code
 (D) Extended Binary Case Decimal Interchange Code

26. ENIAC uses ____.
- (A) Decimal Numbering System
 (B) Octal Numbering System
 (C) Binary Numbering System
 (D) Hexadecimal Numbering System

27. The term gigabyte refers to :

- (A) 1024 bytes
 (B) 1024 kilobytes
 (C) 1000 megabytes
 (D) 1024 megabytes
28. EPROM can be used for ____.
- (A) Erasing the contents of ROM
 (B) Reconstructing the contents of ROM
 (C) Erasing and reconstructing the contents of ROM
 (D) Duplicating ROM

29. The essential features of a number system are

- (A) Radix
 (B) Set of distinct counting digits
 (C) Bits
 (D) Both (A) and (B)
30. What is the mantissa portion of float number 0.085 when it is stored in 32-bit floating point representation ?
- (A) 3019899
 (B) 2019899
 (C) 3019898
 (D) None

31. The essential content(s) of each entry of a page table are :
- (A) Virtual page number
 - (B) Page frame number
 - (C) Both Virtual page number and Page frame number
 - (D) Access rights information.
32. The contents of a base register are added to the contents of index register in :
- (A) indexed addressing mode
 - (B) based indexed addressing mode
 - (C) relative based indexed addressing mode
 - (D) based indexed and relative based indexed addressing mode
33. The value of "l" after executing the following code fragment will be :
- ```

int i = 5, j, l = 0;
for (i = 1 ; i <= 5 ; i ++)
 for (j = 0 ; j <= i ; j ++)
 l ++ ;

```
- (A) 25
  - (B) 5
  - (C) 15
  - (D) None of these
34. The statement which makes a while loop to skip statements in the current iteration and goes straight to the while condition checking is :
- (A) Continue
  - (B) Break
  - (C) Skip
  - (D) None of these
35. Which of the following comment is correct when a macro definition includes arguments ?
- (A) The opening parenthesis should immediately follow the macro name.
  - (B) There should be at least one blank between the macro name and the opening parenthesis.
  - (C) There should be only one blank between the macro name and the opening parenthesis.
  - (D) All the above comments are correct.
36. What will be the output of the following program if the input is abcdefg ?
- ```

main()
{
    char x [10], *ptr = x;
    scanf ("%s", x);
    change(&x[4]);
}
change(char a[])
{
    puts(a);
}

```
- (A) abcd
 - (B) abc
 - (C) efg
 - (D) Garbage
37. Which of the following is generally used for performing tasks like creating the structure of the relations, deleting relation?
- (A) DML (Data Manipulation Language)
 - (B) Query
 - (C) Relational Schema
 - (D) DDL (Data Definition Language)

38. Which one of the following refers to the copies of the same data (or information) occupying the memory space at multiple places ?
- (A) Data Repository
(B) Data Inconsistency
(C) Data Mining
(D) Data Redundancy
39. The relation employee(ID,name, street, Credit, street,city, salary) is decomposed into Employee1(ID,name) Employee2(name, street, city, salary) This type of decomposition is called :
- (A) Lossless decomposition
(B) Lossless-join decomposition
(C) Lossy-join decomposition
(D) None of the mentioned
40. Which of the following protocols ensures conflict serializability and safety from deadlocks ?
- (A) Two-phase locking protocol
(B) Time-stamp ordering protocol
(C) Graph based protocol
(D) None of the mentioned
41. What data structure would you mostly likely see in non recursive implementation of a recursive algorithm ?
- (A) Linked List
(B) Stack
(C) Queue
(D) Tree
42. What is the maximum number of children that a binary tree node can have ?
- (A) 0
(B) 1
(C) 2
(D) 3
43. Which of the following ways can be used to represent a graph ?
- (A) Adjacency List and Adjacency Matrix
(B) Incidence Matrix
(C) Adjacency List, Adjacency Matrix as well as Incidence Matrix
(D) No way to represent
44. Which of the following sorting algorithms in its typical implementation gives best performance when applied on an array which is sorted or almost sorted (maximum 1 or two elements are misplaced).
- (A) Insertion Sort
(B) Quick Sort
(C) Merge Sort
(D) Heap Sort
45. In operating system, each process has its own _____.
- (A) address space and global variables
(B) open files
(C) pending alarms, signals and signal handlers
(D) All of the mentioned

46. Which of the following algorithms tends to minimize the process flow time ?
- (A) First come First served
 - (B) Shortest Job First
 - (C) Earliest Deadline First
 - (D) Longest Job First
47. Memory management technique in which system stores and retrieves data from secondary storage for use in main memory is called :
- (A) Fragmentation
 - (B) Paging
 - (C) Mapping
 - (D) None of the mentioned
48. Which of the following condition is required for a deadlock to be possible ?
- (A) Mutual exclusion
 - (B) A process may hold allocated resources while awaiting assignment of other resources
 - (C) No resource can be forcibly removed from a process holding it
 - (D) All of the mentioned
49. The word _____ comes from the name of a Persian mathematician Abu Ja'far Mohammed ibn-i Musa al Khowarizmi.
- (A) Flowchart
 - (B) Flow
 - (C) Algorithm
 - (D) Syntax
50. What is an external sorting algorithm ?
- (A) Algorithm that uses tape or disk during the sort
 - (B) Algorithm that uses main memory during the sort
 - (C) Algorithm that involves swapping
 - (D) Algorithm that are considered 'in place'
51. What is the worst case complexity of bubble sort ?
- (A) $O(n \log n)$
 - (B) $O(\log n)$
 - (C) $O(n)$
 - (D) $O(n^2)$
52. What is the average running time complexity of a quick sort algorithm ?
- (A) $O(n \log n)$
 - (B) $O(\log n)$
 - (C) $O(n)$
 - (D) $O(n^2)$
53. There are _____ tuples in finite state machine.
- (A) 4
 - (B) 5
 - (C) 6
 - (D) Unlimited
54. Regular grammar is :
- (A) Context free grammar
 - (B) Non context free grammar
 - (C) English grammar
 - (D) None of the mentioned

55. Which of the following statement is false ?
- (A) Context free language is the subset of context sensitive language
 - (B) Regular language is the subset of context sensitive language
 - (C) Recursively enumerable language is the super set of regular language
 - (D) Context sensitive language is a subset of context free language
56. Which of the following can accept even palindrome over $\{a, b\}$?
- (A) Push down Automata
 - (B) Turing machine
 - (C) Non Deterministic Finite Automata
 - (D) All of the mentioned
57. What do we call a collection of two or more computers that are located within a limited distance of each other and that are connected to each other directly or indirectly ?
- (A) Internet
 - (B) Intranet
 - (C) Local Area Network
 - (D) Wide Area Network
58. The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called _____.
- (A) Piggybacking
 - (B) Cyclic redundancy check
 - (C) Fletchers checksum
 - (D) Parity check
59. The network layer protocol for internet is _____.
- (A) Ethernet
 - (B) Internet protocol
 - (C) Hypertext transfer protocol
 - (D) File transfer protocol
60. Which of the following are transport layer protocols used in networking ?
- (A) TCP and FTP
 - (B) UDP and HTTP
 - (C) TCP and UDP
 - (D) HTTP and FTP

ROUGH WORK

ROUGH WORK

ENTRANCE TEST-2020**SCHOOL OF APPLIED SCIENCES AND TECHNOLOGY****MCA**

Question Booklet Series

A

Total Questions : 60

Time Allowed : 70 Minutes

Roll No. :

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Instructions for Candidates :

1. Write your Entrance Test Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
7. There will be '**Negative Marking**' for wrong answers. Each wrong answer will lead to the deduction of 0.25 marks from the total score of the candidate.
8. Only those candidates who would obtain positive score in Entrance Test Examination shall be eligible for admission.
9. Do not make any stray mark on the OMR sheet.
10. Calculators and mobiles shall not be permitted inside the examination hall.
11. Rough work, if any, should be done on the blank sheets provided with the question booklet.
12. OMR Answer Sheet must be handled carefully and it should not be folded or mutilated in which case it will not be evaluated.
13. Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/herself.
14. At the end of the examination, hand over the OMR Answer Sheet to the invigilator who will first tear off the original OMR sheet in presence of the Candidate and hand over the Candidate's Copy to the candidate.

SEAL

1. Choose the correct meaning for the idiom/phrase highlighted in this sentence. "After completing my Bachelor's Degree, I find myself at a **loose end**" :
 - (A) With nothing to do
 - (B) Vacations
 - (C) Happy
 - (D) Free of troubles
2. The chairman is ill and we will have to _____ the meeting.
 - (A) Put on
 - (B) Put of
 - (C) Put away
 - (D) Put off
3. What is the synonym of word REDUNDANT ?
 - (A) Cancel
 - (B) Abolish
 - (C) Unnecessary
 - (D) Revoke
4. Fill in the blank with most appropriate word(s). After a break of one month, I had to _____ with a lot of work.
 - (A) Take up
 - (B) Take on
 - (C) Catch up
 - (D) Catch on
5. Choose one option from below that will correctly fill in the blank given at the end of the series :
 GLHA ILJA KLLA MLNA _____
 - (A) OPLA
 - (B) OPNA
 - (C) OLLA
 - (D) OLPA
6. In a certain code, PLAYERS is written as OALEYSR, what will be the third letter of the coded word for PATTERN ?
 - (A) P
 - (B) A
 - (C) T
 - (D) E
7. Find the odd one out :
 - (A) Deposit
 - (B) Withdrawal
 - (C) Debit
 - (D) Deduction
8. The day before yesterday was Monday, what will be the day after tomorrow ?
 - (A) Sunday
 - (B) Tuesday
 - (C) Friday
 - (D) Saturday
9. If the sum of three numbers in an arithmetic progression is 24 and their product is 440. Find the numbers.
 - (A) 5, 8, 11
 - (B) 1, 8, 11
 - (C) 5, 7, 12
 - (D) 5, 9, 10
10. The sum of the non-real roots of $(x^2 + x - 2)(x^2 + x - 3) = 12$ is :
 - (A) -1
 - (B) 1
 - (C) -6
 - (D) 6

11. There are 30 people in a group. If all shake hands with one another, how many handshakes are possible ?
 (A) 825
 (B) 225
 (C) 435
 (D) 535
12. $\frac{\log \sqrt{8}}{\log 8}$ is equal to :
 (A) $1/2$
 (B) $1/4$
 (C) $1/6$
 (D) $1/8$
13. The differentiation of $\sin x$ with respect to $\cos x$ is :
 (A) $\cot x$
 (B) $\tan x$
 (C) $-\cot x$
 (D) $-\tan x$
14. Find the principal value of $\sin^{-1}\left(-\frac{1}{2}\right)$:
 (A) $-\frac{\pi}{2}$
 (B) $\frac{\pi}{2}$
 (C) $-\frac{\pi}{6}$
 (D) $\frac{\pi}{6}$
15. The area of a triangle having vertices $A(3,2)$, $B(11,8)$ and $C(8,12)$ is :
 (A) 50 sq. units
 (B) 45 sq. units
 (C) 55 sq. units
 (D) 25 sq. units
16. If $\sin x + \operatorname{cosec} x = 2$, then find $\sin^n x + \operatorname{cosec}^n x$.
 (A) 2^n
 (B) $2n$
 (C) $n/2$
 (D) 2
17. The probability of obtaining an even prime number on each dice, when a pair of dice is rolled is :
 (A) 0
 (B) $1/3$
 (C) $1/12$
 (D) $1/36$
18. An integer is chosen at random and squared. The probability that the digit at units place of the square is 1 or 5 is :
 (A) $3/10$
 (B) $7/10$
 (C) $1/10$
 (D) None of the above
19. If $P(A \cup B) = 3/4$ and $P(\bar{A}) = 2/3$. Then the value of $P(\bar{A} \cap B)$ is :
 (A) $3/12$
 (B) $5/12$
 (C) $7/12$
 (D) $1/6$
20. The number of elements in the power set of the set $\{1, \{1\}, \{1, 9\}\}$ is :
 (A) 3
 (B) 6
 (C) 8
 (D) 15

21. If A is a skew symmetric matrix then A^T is :
- (A) 0
(B) 1
(C) A
(D) -A
22. Let A be a square matrix of order 3×3 , then $|kA|$ is equal to :
- (A) $k|A|$
(B) $k^2|A|$
(C) $k^3|A|$
(D) $3k^2|A|$
23. The degree of the differential equation $\frac{d^2y}{dx^2} + e^{dy/dx} = 0$ is :
- (A) 1
(B) 2
(C) 3
(D) Not defined
24. The value of $\lim_{x \rightarrow 4} \frac{\sin(x-4)}{x-4}$ is :
- (A) 1
(B) 0
(C) 2
(D) 4
25. Which access method is used for obtaining a record from a cassette tape ?
- (A) Direct
(B) Sequential
(C) Random
(D) None of the above
26. In which generation of computers, was the Microprocessor introduced ?
- (A) Second
(B) Third
(C) Fourth
(D) Fifth
27. The acronym UNIVAC stands for :
- (A) Universal Automatic Computer
(B) Universal Array Computer
(C) Unique Automatic Computer
(D) Unvalued Automatic Computer
28. A nibble consists of _____ bits.
- (A) Two
(B) Four
(C) Eight
(D) Thirty-two
29. The binary equivalent of the hex number "F2.17" is :
- (A) 00101111.01110001
(B) 11110001.11101000
(C) 00010111.11110111
(D) 11110010.00010111
30. Which of the following flags are set when 'JMP' instruction is executed ?
- (A) SF and CF
(B) AF and SF
(C) All flags
(D) No flag is set
31. In which addressing mode, the effective address of the operand is generated by adding a constant value to the contents of a register ?
- (A) Absolute
(B) Index
(C) Indirect
(D) Immediate

32. Which of the following flip-flops is free from race condition ?
- (A) T flip-flop
 - (B) SR flip-flop
 - (C) Master Slave flip-flop
 - (D) None of the above

33. What is the output of the following program fragment ?

```
#include <stdio.h>
int main()
{
    printf("%f", (float)7/3);
    return 0;
}
```

- (A) 1.3
- (B) 2.3
- (C) 2.0
- (D) 3.0

34. What is the output of the following program fragment ?

```
#include <stdio.h>
int main()
{
    int x;
    if (x = 0)
        printf("The value of x is 0");
    else
        printf("The value of x is not 0");
    return 0;
}
```

- (A) The value of x is 0
- (B) The value of x is not 0
- (C) A syntax error
- (D) Garbage value

35. What is the output of the following program fragment ?

```
#include <stdio.h>
int main()
{
    int x = 10, y = 20;
    printf("%d", x = y);
    return 0;
}
```

- (A) 20
- (B) 10
- (C) 0
- (D) A syntax error

36. What is the output of the following program fragment ?

```
#include <stdio.h>
int main()
{
    printf("My", "subject", "is", "CS");
    return 0;
}
```

- (A) My subject is CS
- (B) My
- (C) Subject
- (D) None of the above

37. Referential integrity is directly related to :

- (A) Relation key
- (B) Foreign key
- (C) Primary key
- (D) Candidate key

38. Third normal form is based on the concept of :

- (A) Normal Dependency
- (B) Transitive Dependency
- (C) Functional Dependency
- (D) None of the above

39. Which of the following is not a type of Database Management System ?
- (A) Hierarchical
 - (B) Network
 - (C) Relational
 - (D) Sequential
40. Granularity defines the size of a :
- (A) Database
 - (B) Record
 - (C) Data Item
 - (D) File
41. Given an empty stack, after performing push(A), push(B), push(C), pop, push(D), push(E), pop, pop, pop. What is the value of the top of stack ?
- (A) A
 - (B) B
 - (C) C
 - (D) D
42. Which sorting technique can be efficient, if the number of records to be sorted is small ?
- (A) Heap
 - (B) Selection
 - (C) Merge
 - (D) Bubble
43. Leaves of which of the following trees are at the same level ?
- (A) Binary tree
 - (B) B-tree
 - (C) AVL tree
 - (D) Expression tree
44. The in-order traversal of _____ tree will yield a sorted list of elements.
- (A) Binary tree
 - (B) Binary search tree
 - (C) Heaps
 - (D) None of the above
45. Consider the following page trace : 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5
Percentage of page fault that would occur if FIFO page replacement algorithm is used with number of frames $m = 4$ will be :
- (A) 8
 - (B) 9
 - (C) 10
 - (D) 12
46. The module that gives control of the CPU to a process selected by short-term scheduler is :
- (A) Dispatcher
 - (B) Threading
 - (C) Interrupt handler
 - (D) Scheduler
47. The problem of indefinite blockage of low-priority jobs in general priority scheduling algorithm can be solved using :
- (A) Parity bit
 - (B) Aging
 - (C) Compaction
 - (D) None of the above
48. If the size of logical address space is 2^m and a page size is 2^n addressing units, then the high order _____ bits of a logical address designate the page number and the _____ low order bits designate the page offset.
- (A) m, n
 - (B) n, m
 - (C) $m - n, m$
 - (D) $m - n, n$
49. In the worst case, how many items would binary search have to examine to find the location of a particular number in a sorted array of 32 elements ?
- (A) At most 32
 - (B) At most 16
 - (C) At most 6
 - (D) At most 1

50. The worst case time complexity of merge sort is :
- (A) $O(n)$
 (B) $O(n \log n)$
 (C) $O(n^2)$
 (D) $O(\log n)$
51. The number of iterations it takes until the sub problem has been reduced to the base condition is called as :
- (A) Count
 (B) Recursion depth
 (C) Both (A) and (B)
 (D) None of the above
52. If $f(n) = 10 \log n + 4$, then $\Theta(f(n))$ is :
- (A) 2^n
 (B) n^2
 (C) $\log n$
 (D) 1
53. Give an alphabet $\Sigma = \{a, b\}$. The regular expression for all strings that begin with "ab" and end with "aa" is :
- (A) aba^*b^*aa
 (B) $ab(ab)^*aa$
 (C) $ab(a+b)^*aa$
 (D) None of the above
54. The Regular expression Φ^* is equivalent to :
- (A) 0
 (B) 1
 (C) ϕ
 (D) ϵ
55. The 'C' language is :
- (A) Context Sensitive Language
 (B) Context Free Language
 (C) Regular Language
 (D) None of the above
56. Consider the languages $L1 = \phi$ and $L2 = \{a\}$. Which one of the following represents $L1.L2^* \cup L1^*$?
- (A) $\{\epsilon\}$
 (B) ϕ
 (C) a^*
 (D) None of the above
57. The size of an ATM cell is :
- (A) 5 bytes
 (B) 48 bytes
 (C) 53 bytes
 (D) 55 bytes
58. In classful addressing, the IP address 223. 255. 255. 254 belongs to :
- (A) Class A
 (B) Class B
 (C) Class C
 (D) Class D
59. The size of the fixed format TCP segment Header is :
- (A) 5 bytes
 (B) 10 bytes
 (C) 15 bytes
 (D) 20 bytes
60. A terminal multiplexer has eight 800 bps terminals and n 200 bps terminals connected to it. The outgoing line is 9600 bps. What is the maximum value of n ?
- (A) 2
 (B) 4
 (C) 8
 (D) 16

1. What is the synonym of word LAMENT ?
 - (A) Comment
 - (B) Complain
 - (C) Condone
 - (D) Console
2. Choose the word which is the exact OPPOSITE of the word RELINQUISH :
 - (A) Abdicate
 - (B) Renounce
 - (C) Possess
 - (D) Deny
3. Choose the word which is the exact OPPOSITE of the word VANITY :
 - (A) Pride
 - (B) Humility
 - (C) Conceit
 - (D) Ostentious
4. Choose the correct meaning for the idiom/phrase "To play second fiddle" :
 - (A) To be happy, cheerful and healthy
 - (B) To reduce importance of one's senior
 - (C) To support the role and view of another person
 - (D) To do back seat driving
5. If DELHI is coded as 'CDK GH' and 'MADRAS' as 'IZC QZR' then how will PATNA be coded ?
 - (A) OZTMZ
 - (B) OZSMZ
 - (C) QBUMB
 - (D) OZMSZ
6. Pointing to a lady, a man said, "The son of her only brother is the brother of my wife". How is the lady related to the man ?
 - (A) Mother-in-law
 - (B) Sister of father-in-law
 - (C) Maternal Aunt
 - (D) Mother's Sister
7. In a flight of 600 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/hr and the time of flight increased by 30 minutes. The duration of the flight is:
 - (A) 1 hour
 - (B) 2 hours
 - (C) 3 hours
 - (D) 4 hours
8. A farmer travelled a distance of 61 km in 9 hours. He travelled partly on foot @ 4 km/hr and partly on bicycle @ 9 km/hr. The distance travelled on foot is:
 - (A) 14 Km
 - (B) 15 Km
 - (C) 16 Km
 - (D) 17 Km
9. A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had :
 - (A) 588 apples
 - (B) 600 apples
 - (C) 672 apples
 - (D) 700 apples
10. What is the highest integral value of 'k' for which the quadratic equation $x^2 - 6x + k = 0$ have two real and distinct roots ?
 - (A) 9
 - (B) 7
 - (C) 3
 - (D) 8
11. If the roots of the equation $x^2 + bx + c = 0$ are opposite in sign, then :
 - (A) $c > 0$
 - (B) $c < 0$
 - (C) $b^2 = 4c$
 - (D) $c = \frac{b^2}{4}$

12. If $i = \sqrt{-1}$ and n is a positive integer, then
 $i^n + i^{n+1} + i^{n+2} + i^{n+3} =$
 (A) 1
 (B) i
 (C) i^n
 (D) 0
13. Three numbers are in A.P., their sum is 24 and sum of their squares is 200, the numbers are :
 (A) 4, 8, 12
 (B) 6, 8, 10
 (C) 5, 8, 11
 (D) 2, 8, 14
14. $\int \frac{dx}{x-x^3} = A \log \left(\frac{x^2}{1-x^2} \right) + c$ then A is equal to :
 (A) $1/2$
 (B) 2
 (C) $2/3$
 (D) $1/3$
15. $\int \sqrt{1 + \sin \frac{x}{4}} dx$ is equal to :
 (A) $8 \left(\sin \frac{x}{8} - \cos \frac{x}{8} \right) + c$
 (B) $\left(\sin \frac{x}{8} + \cos \frac{x}{8} \right) + c$
 (C) $\frac{1}{8} \left(\sin \frac{x}{8} - \cos \frac{x}{8} \right) + c$
 (D) $8 \left(\cos \frac{x}{8} + \sin \frac{x}{8} \right) + c$
16. An arc AB of length of 5 cm is marked on a circle of radius 3 cm. Area of sector bounded by this arc and radii from A and B is :
 (A) 7.5 cm^2
 (B) 7.5 m^2
 (C) 75 m^2
 (D) 75 cm^2
17. The function
 $g(x) = \sin x - \cos x$ and $f(x) = \log \left(\frac{1-x}{1+x} \right)$
 are :
 (A) Both odd
 (B) $f(x)$ is odd and $g(x)$ is neither even nor odd
 (C) $f(x)$ is neither even nor odd and $g(x)$ is odd
 (D) $f(x)$ is odd and $g(x)$ is even
18. $\sec^2 \theta - \tan^2 \theta =$
 (A) 1
 (B) -1
 (C) 0
 (D) $\sec^2 2\theta$
19. What are the chances that no two boys are sitting together for a photograph if there are 5 girls and 2 boys ?
 (A) $1/21$
 (B) $4/7$
 (C) $2/7$
 (D) $5/7$
20. Formula to calculate standardized normal random variable is :
 (A) $x - \mu/\sigma$
 (B) $x + \mu/\sigma$
 (C) $x - \sigma/\mu$
 (D) $x + \sigma/\mu$
21. Relationship between correlation coefficient and coefficient of determination is that :
 (A) Both are unrelated
 (B) The coefficient of determination is the coefficient of correlation squared
 (C) The coefficient of determination is the square root of the coefficient of correlation
 (D) Both are equal

22. In a class of 120 students numbered 1 to 120, all even numbered students opt for Physics, whose numbers are divisible by 5 opt for Chemistry and those whose numbers are divisible by 7 opt for Math. How many opt for none of the three subjects?
 (A) 19
 (B) 41
 (C) 21
 (D) 57
23. The ratio of the volumes of two cubes is 729 : 1331. What is the ratio of their total surface areas?
 (A) 81 : 121
 (B) 9 : 11
 (C) 729 : 1331
 (D) 27 : 121
24. If $A = \begin{vmatrix} 1 & 0 \\ -1 & 7 \end{vmatrix}$ and $B = \begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix}$, then the value of k so that $A^2 = 8A + kB$ is :
 (A) 7
 (B) -7
 (C) -0
 (D) 5
25. If $A = \begin{vmatrix} 1 & 2 \\ 3 & 0 \end{vmatrix}$ and $B = \begin{vmatrix} 3 & 4 \\ 1 & 6 \end{vmatrix}$ then $(AB)^T$ is :
 (A) $\begin{vmatrix} 5 & 9 \\ 16 & -12 \end{vmatrix}$
 (B) $\begin{vmatrix} 5 & -9 \\ -16 & 12 \end{vmatrix}$
 (C) $\begin{vmatrix} 5 & 9 \\ 16 & 12 \end{vmatrix}$
 (D) None of these
26. The value of $\lim_{x \rightarrow 0} (\sin x)^x$ is :
 (A) 1
 (B) ∞
 (C) -1
 (D) Limit does not exist
27. A computer program that converts assembly language to machine language is :
 (A) Compiler
 (B) Interpreter
 (C) Assembler
 (D) Comparator
28. Which type of system puts the user into direct conversation with the computer through a keyboard ?
 (A) Real time processing
 (B) Interactive computer
 (C) Batch processing
 (D) Time sharing
29. A section of code that may only be executed by one process at any one time is :
 (A) Critical region
 (B) Critical resource
 (C) Gray code
 (D) None of the above
30. Static binding occurs at :
 (A) Compilation time
 (B) Run time
 (C) Program storage time
 (D) None of the above
31. Increasing the precision of the float data type requires at least one additional bit in :
 (A) The mantissa
 (B) The exponent
 (C) Both mantissa and exponent
 (D) Neither in mantissa nor in exponent
32. A helpful illustration used to visualize relationships among variables of Boolean expression is :
 (A) map
 (B) logic gates
 (C) Venn diagram
 (D) Graph

33. The idea of cache memory is based :
- (A) On the property of locality of reference
 - (B) On the heuristic 90-10 rule
 - (C) On the fact that references generally tend to cluster
 - (D) None of these

34. In the following indexed addressing mode instruction,
MOV 5(R1), LOC
The effective address is _____.

- (A) $EA = 5 + R1$
- (B) $EA = R1$
- (C) $EA = [R1]$
- (D) $EA = 5 + [R1]$

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

```
#include<stdio.h>
Void main()
{
    int i = 5;
    printf(“%d%d%d”, ++i, i, i++);
}
```

- (A) 6 5 7
- (B) 7 5 6
- (C) 7 6 5
- (D) 5 5 6

36. What will be the output if you will compile and execute the following C code ?

```
#define x 3+2
void main()
{
    int i;
    i = x+x*x
    printf(“%d”, i);
}
```

- (A) 24
- (B) 50
- (C) 32
- (D) 16

37. Scope resolution operator is used _____.

- (A) To resolve the scope of global variables only
- (B) To resolve the scope of functions of the classes only
- (C) To resolve the scope of global variables as well as functions of the classes
- (D) None of these

38. Which of the following is true about pure virtual functions ?

1. Their implementation is not provided in a class where they are declared.
2. If a class has a pure virtual function, then the class becomes abstract class and an instance of this class cannot be created.

- (A) Both 1 and 250
- (B) Only 1
- (C) Only 2
- (D) Neither 1 nor 2

39. To arrange a binary tree in ascending order we need :

- (A) Post order traversal
- (B) Pre order traversal
- (C) In order traversal
- (D) None of the above

40. To arrange the books of library the best method is :

- (A) Bubble sort
- (B) Quick sort
- (C) Merge sort
- (D) Heap sort

41. Which of the following is useful in traversing a given graph by breadth first search ?

- (A) Queue
- (B) List
- (C) Set
- (D) Stack

42. The minimum number of arithmetic operations required to evaluate the polynomial $P(X) = X^5 + 4X^3 + 6X + 5$ for a given value of X using only one temporary variable.
- (A) 6
(B) 7
(C) 8
(D) 9
43. The primary tool used in the structured design is a :
- (A) Structure chart
(B) Data Flow Diagram
(C) Module
(D) None of the above
44. The approach used in top-down analysis and design is :
- (A) To identify the top level functions by combining many smaller components into a single entity
(B) To prepare flow charts after programming has been completed
(C) To identify a top level function and then create a hierarchy of lower-level modules and components
(D) None of the above
45. In the system concepts, term Integration :
- (A) Implies structure and order
(B) Refers to the holism of systems
(C) Means that parts of the computer system depend on one another
(D) Refers to the manner in which each component functions with other components of the system
46. System prototyping helps the designer in :
- (A) Communicating to the user, quickly, how the system, when developed, will look like and get a feedback
(B) Giving a demo of the software, to the system manager to whom he reports
(C) Making the programmers understand how the system will function
(D) None of these
47. Visual Basic responds to events using which of the following ?
- (A) A code procedure
(B) An event procedure
(C) A form procedure
(D) A property
48. What will be the output of the following statement ?
`txtBox.Text = FormatCurrency (1234.567).`
- (A) \$1234.567
(B) \$1,234.567
(C) \$1234.57
(D) \$1,234.57
49. Suppose that the selector in a Select Case block is the string variable `myVar`. Which of the following is NOT a valid Case clause ?
- (A) Case "Adams"
(B) Case "739"
(C) Case (`myVar.Substring(0, 1)`)
(D) Case `myVar.Length`
50. Which of the following statements is guaranteed to pass the variable `numVar` by value to the Sub procedure `Tally` ?
- (A) `Tally(numVar)`
(B) `Tally(ByVal numVar)`
(C) `Tally((numVar))`
(D) `Tally(ByVal numVar As Double)`
51. In SQL, which command is used to make permanent changes made by statements issue since the beginning of a transaction ?
- (A) ZIP
(B) PACK
(C) COMMIT
(D) SAVE
52. In a relational schema, each tuple is divided into fields called :
- (A) Relations
(B) Domains
(C) Queries
(D) All of the above

53. Given relations $r(w, x)$ and $s(y, z)$, the result of "SELECT DISTINCT w, x FROM r, s " is guaranteed to be same as r , provided :
- (A) r has no duplicates and s is non-empty
 - (B) r and s have no duplicates
 - (C) s has no duplicates and r is non-empty
 - (D) r and s have the same number of tuples
54. $R(A, B, C, D)$ is a relation. Which of the following does not have a lossless join, dependency preserving BCNF decomposition ?
- (A) $A \rightarrow B, B \rightarrow CD$
 - (B) $A \rightarrow B, B \rightarrow C, C \rightarrow D$
 - (C) $AB \rightarrow C, C \rightarrow AD$
 - (D) $A \rightarrow BCD$
55. Which image files are a lossy format ?
- (A) GIF
 - (B) MPEG
 - (C) JPEG
 - (D) PNG
56. Many bitmapped images in a sequence is known as :
- (A) JPEG Animation
 - (B) Tweening
 - (C) TIF Animation
 - (D) GIF Animation
57. A structure of linked elements through which the user can navigate, interactive multimedia becomes _____.
- (A) Hypermedia
 - (B) Hypertext
 - (C) Intermedia
 - (D) Digital media
58. Frames from one LAN can be transmitted to another LAN via the device :
- (A) Router
 - (B) Modem
 - (C) Bridge
 - (D) Repeater
59. In _____ topology if cable breaks, it will stop all transmission.
- (A) Mesh
 - (B) Bus
 - (C) Star
 - (D) Primary
60. What is the main function of transport layer ?
- (A) Process to process delivery
 - (B) Node to node delivery
 - (C) Synchronization
 - (D) Updating and maintenance of routing tables

1. Choose the word which is most nearly the SAME in meaning as the word ARDUOUS :

- (A) Hazardous
- (B) Difficult
- (C) Different
- (D) Pleasurable

2. The master dispensed _____ the services of his servant.

- (A) of
- (B) off
- (C) with
- (D) for

3. **PASSAGE :**

The New Year is a time for resolutions. Mentally at least, most of us could compile formidable lists of do's and don'ts. The same old favourites recur year in and year out with monotonous regularity. Past experience has taught us that certain accomplishments are beyond attainment. If we remain inveterate smokers, it is only because we have so often experienced the frustration that results from failure. Most of us fail in our efforts at self improvement because our schemes are too ambitious and we never have time to carry them out. We also make the fundamental error of announcing our resolutions to everybody so that we look even more foolish when we slip back into our old bad ways.

The author seems to imply that many are inveterate smokers because :

- (A) They have not really tried to give up smoking
- (B) They know from past experience they can succeed in their attempt
- (C) They know from past experience that they can never succeed in their attempt to give up
- (D) They do not have the will power to stop smoking

4. Choose the word which is most nearly the OPPOSITE in meaning as the word TERRIBLE :

- (A) Soothing
- (B) Frightening
- (C) Scaring
- (D) Delectable

5. If $a : b = 2 : 3$ and $b : c = 4 : 3$, then find $a : b : c$

- (A) $8 : 12 : 9$
- (B) $2 : 3 : 8$
- (C) $2 : 3 : 9$
- (D) $2 : 3 : 12$

6. A train travels for seven hours, the first half of the distance at 60 km/h and the other half at 80 km/h. Find the total distance travelled :

- (A) 400 km
- (B) 480 km
- (C) 560 km
- (D) 640 km

7. In a certain coded language, if the word "PLAYER" is coded as "AELPRY", then how is the word "MANAGER", coded in that language ?

- (A) AEAGMNR
- (B) AAGEMNR
- (C) AAEGMNR
- (D) AAEGNMR

8. A's father's mother-in-law's only daughter's son is B. How is A related to B ?

- (A) Brother
- (B) Sister
- (C) Nephew
- (D) Cannot be determined

9. For $S =$ sum of roots and $P =$ product of roots, quadratic equation is :

- (A) $A \cdot x^2 + Sx + P = 0$
- (B) $A \cdot x^2 + Sx - P = 0$
- (C) $A \cdot x^2 - Sx + P = 0$
- (D) $A \cdot x^2 - Sx - P = 0$

10. If $\log_x y = 100$ and $\log_3 x = 10$, then the value of y is :
- (A) 3^{10}
 (B) 3^{100}
 (C) 3^{1000}
 (D) 3^{10000}
11. In how many ways can we arrange the word "FUZZTONE" so that all the vowels come together ?
- (A) 4320
 (B) 2160
 (C) 1440
 (D) 6
12. By simplifying $[(16x^6y^5)^2/(2x^2y^2)^4] \times [x^5y^3/x^3y^2]$, answer will be :
- (A) $16x^4y^2$
 (B) $16x^4y^4$
 (C) $16x^6y^3$
 (D) $16x^7y^5$
13. The perpendicular distance of a point P(3, 4) from the y-axis is :
- (A) 3
 (B) 4
 (C) 5
 (D) 7
14. The development of cylinder is a :
- (A) Rectangle
 (B) Circle
 (C) Ellipse
 (D) None of the above
15. If $y = c_1 \log x + c_2 \log c_3 + c_4 e^x + c_5$ is the general solution of a homogeneous linear differential equation, then the order of the equation is :
- (A) 2
 (B) 3
 (C) 4
 (D) 5
16. Considering Cosine Rule of any triangle ABC, possible measures of angle A includes :
- (A) Angle A is obtuse
 (B) Angle A is acute
 (C) Angle A is right-angled
 (D) All of the above
17. Type of distribution which is useful when occurrences of events are constant is classified as :
- (A) Open frequency distribution
 (B) Class frequency distribution
 (C) Rectangular distribution
 (D) Square distribution
18. Statistical measures such as average deviation, standard deviation and mean are classified as part of :
- (A) Deciles system
 (B) Moment system
 (C) Quartile system
 (D) Percentile system
19. Let R be a non-empty relation on a collection of sets defined by ARB if and only if $A \cap B = \emptyset$ then (pick the TRUE statement) :
- (A) R is reflexive and transitive
 (B) R is an equivalence relation
 (C) R is symmetric and not transitive
 (D) R is not reflexive and not symmetric
20. For a standard normal variate, the value of mean is :
- (A) ∞
 (B) 1
 (C) 0
 (D) Not defined

21. If the sides of a triangle measure 72, 75 and 21 units, what is the measure of it in radius ?
- (A) 37.5 units
(B) 24 units
(C) 15 units
(D) 9 units
22. A 4 cm cube is cut into 1 cm cubes. What is the percentage increase in the surface area after cutting ?
- (A) 4%
(B) 75%
(C) 300%
(D) 400%
23. If :
- $$\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \end{bmatrix} A = \begin{bmatrix} b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{bmatrix}$$
- Then, order of matrix A = ?
- (A) 2×2
(B) 2×3
(C) 3×2
(D) 3×3
24. Mathematically, what is a differential ?
- (A) A gear box on the back end of your car
(B) A word used a lot on a popular medical television series
(C) A method of directly relating how changes in an independent variable affect changes in a dependent variable
(D) A method of directly relating how changes in a dependent variable affect changes in an independent variable
25. What is operating system ?
- (A) Collection of programs that manages hardware resources
(B) System service provider to the application programs
(C) Link to interface the hardware and application programs
(D) All of the mentioned
26. Which of the following is a type of program that either pretends to have, or is described as having, a set of useful or desirable features but actually contains damaging code :
- (A) Trojans
(B) Viruses
(C) Worms
(D) Bots
27. The technique used to store programs larger than the memory is _____.
- (A) Overlays
(B) Extension registers
(C) Buffers
(D) Both (B) and (C)
28. The control unit of a computer controls other units by generating _____.
- (A) Control signals
(B) Timing signals
(C) Transfer signals
(D) Command signals
29. The result obtained after (100101 – 011110) is :
- (A) 000111
(B) 111000
(C) 010101
(D) 101010
30. Floating-point numbers are normally a multiple of size of a :
- (A) Bit
(B) Nibble
(C) Word
(D) Byte

31. The type of control signals generated are generated based on :
- (A) Contents of the step counter
 - (B) Contents of IR
 - (C) Contents of condition flags
 - (D) All of the mentioned
32. The spatial aspect of the locality of reference means :
- (A) That the recently executed instruction is executed again next
 - (B) That the recently executed won't be executed again
 - (C) That the instruction executed will be executed at a later time
 - (D) That the instruction in close proximity of the instruction executed will be executed in future
33. Which of the following is a correct format for declaration of function ?
- (A) Return-type function-name (argument type);
 - (B) Return-type function-name (argument type) {}
 - (C) Return-type (argument type) function-name;
 - (D) All of the mentioned
34. Which of the following is not possible in C ?
- (A) Array of function pointer
 - (B) Returning a function pointer
 - (C) Comparison of function pointer
 - (D) None of the mentioned
35. False statements/s about function overloading is :
- (A) Defining multiple functions with same name in a class is called function overloading
 - (B) Overloaded functions must differ in their order and types of arguments
 - (C) Overloaded functions should be preceded with virtual keyword
 - (D) No statement is false
36. Pick out the correct statement :
- (A) A friend function may be a member of another class
 - (B) A friend function may not be a member of another class
 - (C) A friend function may or may not be a member of another class
 - (D) None of the above
37. Relational Algebra is a _____ query language that takes two relations as input and produces another relation as output of the query.
- (A) Relational
 - (B) Structural
 - (C) Procedural
 - (D) Fundamental
38. Which of the following is correct ?
- (A) SQL query automatically eliminates duplicates
 - (B) SQL permits attribute names to be repeated in the same relation
 - (C) SQL query will not work if there are no indexes on the relations
 - (D) None of these
39. A transaction is delimited by statements (or function calls) of the form _____.
- (A) Begin transaction and end transaction
 - (B) Start transaction and stop transaction
 - (C) Get transaction and post transaction
 - (D) Read transaction and write transaction
40. _____ refers to the ability of the system to recover committed transaction updates if either the system or the storage media fails.
- (A) Isolation
 - (B) Atomicity
 - (C) Consistency
 - (D) Durability

41. Which of the following statement(s) about stack data structure is/are NOT correct ?
- (A) Linked lists are used for implementing stacks
 - (B) Top of the stack always contains the new node
 - (C) Stack is the FIFO data structure
 - (D) Null link is present in the last node at the bottom of the stack
42. Which of the following is not true about QuickSort ?
- (A) In-place algorithm
 - (B) Pivot position can be changed
 - (C) Adaptive sorting algorithm
 - (D) Can be implemented as a stable sort
43. What are the applications of binary search ?
- (A) To find the lower/upper bound in an ordered sequence
 - (B) Union of intervals
 - (C) Debugging
 - (D) All of the above
44. Which of the following algorithms can be used to most efficiently determine the presence of a cycle in a given graph ?
- (A) Depth First Search
 - (B) Breadth First Search
 - (C) Prim's Minimum Spanning Tree Algorithm
 - (D) Kruskal's Minimum Spanning Tree Algorithm
45. In a DFD external entities are represented by a :
- (A) Rectangle
 - (B) Ellipse
 - (C) Diamond shaped box
 - (D) Circle
46. Which of the models is used for system components ?
- (A) PERT chart
 - (B) Gantt chart
 - (C) Organizational Hierarchy Chart
 - (D) DFD
47. A data dictionary has information about :
- (A) Every data element in a data flow
 - (B) Only key data element in a data flow
 - (C) Only important data elements in a data flow
 - (D) Only numeric data elements in a data flow
48. The CASE repository :
- (A) Works as storage for the diagrams and project data
 - (B) Provides valuable information to the project manager
 - (C) Both (A) and (B)
 - (D) None of the above
49. All the classes necessary for windows programming are in the module :
- (A) *win.txt*
 - (B) *win.std*
 - (C) *win.main*
 - (D) None of these
50. The function procedures in Visual Basic are _____ by default.
- (A) Public
 - (B) Private
 - (C) Protected
 - (D) None of the above
51. The arguments appearing in a call statement must match the parameters in the appropriate Sub or Function header in all but one of the following ways. Which one :
- (A) Number of arguments
 - (B) Name of arguments
 - (C) Data type of arguments
 - (D) Order of arguments

52. The properties window plays an important role in the development of Visual Basic Applications. It is mainly used :
- (A) To change how objects look and feel
 - (B) When opening programs stored on a hard drive
 - (C) To allow the developer to graphically design program components
 - (D) To set program related options like Program Name, Program Location, etc
53. Which one of the following is the characteristic of a multimedia system ?
- (A) High storage
 - (B) High data rates
 - (C) Both (A) and (B)
 - (D) None of the mentioned
54. Short films that use stop motion techniques are what type of animation ?
- (A) Frame-based animation
 - (B) HTML
 - (C) Animation
 - (D) Production
55. HTML uses :
- (A) User defined tags
 - (B) Pre-specified tags
 - (C) Fixed tags defined by the language
 - (D) Tags only for linking
56. In HTML form `<input type = "text">` is used for :
- (A) Block of text
 - (B) One line text
 - (C) One paragraph
 - (D) None
57. Communication between a computer and a keyboard involves _____ transmission.
- (A) Automatic
 - (B) Half duplex
 - (C) Full duplex
 - (D) Simplex
58. Fiber optics posses following properties :
- (A) Immune electromagnetic interference
 - (B) Very less signal attenuation
 - (C) Very hard to tap
 - (D) All of the above
59. This layer is an addition to OSI model :
- (A) Application layer
 - (B) Presentation layer
 - (C) Session layer
 - (D) Both (B) and (C)
60. Physical or logical arrangement of network is :
- (A) Topology
 - (B) Routing
 - (C) Networking
 - (D) None of the mentioned

Sr. No.773.....

ENTRANCE TEST-2017

SCHOOL OF APPLIED SCIENCES AND TECHNOLOGY

MCA

Question Booklet Series

A

Total Questions : 60
Time Allowed : 70 Minutes

Roll No. :

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Instructions for Candidates :

1. Write your Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
7. There will be 'Negative Marking' for wrong answers. Each wrong answer will lead to the deduction of 0.25 marks from the total score of the candidate.
8. Only those candidates who would obtain positive score in Entrance Test Examination shall be eligible for admission.
9. Do not make any stray mark on the OMR sheet.
10. Calculators and mobiles shall not be permitted inside the examination hall.
11. Rough work, if any, should be done on the blank sheets provided with the question booklet.
12. OMR Answer sheet must be handled carefully and it should not be folded or mutilated in which case it will not be evaluated.
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SEAL

1. In the following question three statements are followed by a conclusion. Study the statements and the conclusion and point out which statement studied together will bring to the conclusion.

Statements:

- i. Price rise is a natural phenomenon
- ii. If production increases prices fall
- iii. High prices affect the poor

Conclusion: If production rises the poor feel relieved.

Answer choices:

- (A) Only i and ii
 - (B) Only i and iii
 - (C) Only ii and iii
 - (D) Data Insufficient
2. Which should be the next two numbers in the series 28 25 5 21 18 5 14 ?
- (A) 11, 5
 - (B) 10, 7
 - (C) 11, 8
 - (D) 5, 10
3. If $\frac{3}{4}$ of a number is equal to $\frac{2}{3}$ of another number, what is the ratio between these two numbers ?
- (A) 3 : 4
 - (B) 5 : 6
 - (C) 8 : 9
 - (D) 9 : 10
4. A train can travel 50% faster than a car. Both start from point A at the same time and reach point B 75 kms away from A at the same time. On the way, however, the train lost about 12.5 minutes while stopping at the stations. The speed of the car is:
- (A) 100 kmph
 - (B) 105 kmph
 - (C) 115 kmph
 - (D) 120 kmph
5. The meaning of word EGRESS is
- (A) Entrance
 - (B) Exit
 - (C) Double
 - (D) Program

6. Find the synonym that is most nearly similar in meaning to the word CLANDESTINE

- (A) abortive
- (B) secret
- (C) tangible
- (D) doomed

Directions: Questions 7 and 8.

Read the passage and select the most suitable answer to questions from the given choices.

Observe the dilemma of the fungus: It is a plant, but it possesses no chlorophyll. While all other plants put the sun's energy to work for them combining the nutrients of ground and air into the body structure, the chlorophylls must look elsewhere for energy supply. It finds it in those other plants which, having received their energy free from the sun, relinquish it at some point in their cycle either to animals (like us humans) or to the fungi.

In this search for energy the fungus has become the earth's major source of rot and decay. Wherever you see mould forming on a piece of bread, or a pile of leaves turning to compost, or a blown-down tree becoming pulp on the ground, you are watching a fungus eating. Without fungus action the earth would be piled high with the dead plant life of past centuries. In fact, certain plants which contain resins that are toxic to fungi will last indefinitely; specimens of the redwood, for instance, can still be found resting on the forest floor centuries after having been blown down.

7. The passage states all the following about fungi EXCEPT :
- (A) They are responsible for the decomposition of much plant life
 - (B) They cannot live completely apart from other plants
 - (C) They are vastly different from other plants
 - (D) They are poisonous to resin producing plants
8. The passage is primarily concerned with
- (A) Warning people of the dangers of fungi
 - (B) Rot and decay of plants in nature
 - (C) Describing the action of fungi
 - (D) Relating how most plants use solar energy



9. The circle $x^2 + y^2 = 9$ is contained in the circle $x^2 + y^2 - 6x - 8y + 25 = c^2$ if
- (A) $c = 2$
 (B) $c = 3$
 (C) $c = 5$
 (D) $c = 10$
10. The eccentricity of ellipse $9x^2 + 5y^2 - 30y = 0$ is
- (A) $1/3$
 (B) $2/3$
 (C) $3/4$
 (D) $1/4$
11. If $\tan \theta = b/a$ then the value of $a \cos 2\theta + b \sin 2\theta$ is
- (A) b
 (B) a
 (C) a/b
 (D) $a/(a+b)$
12. Classify the following differential equation $e^x dy/dx + 3y = x^2y$
- (A) Separable and not linear
 (B) Linear and not separable
 (C) Neither separable nor linear
 (D) Both separable and linear
13. If α, β are the roots of the equation $x^2 - 2x - 1 = 0$ then the value of $\alpha^2 + \beta^2$ is
- (A) 64
 (B) 6
 (C) 256
 (D) 132
14. The coefficient of the fourth term in the binomial expansion of $(x + y)^5$
- (A) 10
 (B) 15
 (C) 22
 (D) 25
15. How many ways a 6 member team can be formed having 3 men and 3 ladies from a group of 6 men and 7 ladies?
- (A) 650
 (B) 700
 (C) 750
 (D) 520
16. $\log \frac{a}{b} + \log \frac{b}{a} = \log (a + b)$, then :
- (A) $a - b = 1$
 (B) $a = b$
 (C) $a^2 - b^2 = 1$
 (D) $a + b = 1$
17. A random variable X has the following probability distribution :
- | | | | | | | | | | |
|--------|---|----|----|----|----|-----|-----|-----|-----|
| X | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| P(X=x) | A | 3a | 5a | 7a | 9a | 11a | 13a | 15a | 17a |
- Then the value of 'a' is
- (A) $1/81$
 (B) $2/82$
 (C) $5/81$
 (D) $7/81$
18. What is the probability that a number selected from numbers [1, 30] is prime number?
- (A) $1/3$
 (B) $2/7$
 (C) $5/9$
 (D) $5/30$
19. The mean of first n natural numbers is equal to $(n+7)/3$ then 'n' is equal to
- (A) 9
 (B) 10
 (C) 11
 (D) 12
20. In a Poisson distribution if $P[X=3] = 1/4P[X=4]$ then $P[X=5] = kp[X=7]$ where k equals to:
- (A) $1/7$
 (B) $21/128$
 (C) $128/21$
 (D) $21/256$
21. Matrix A will not be transformed into an identity matrix if matrix is
- (A) singular
 (B) non-singular
 (C) identified
 (D) unidentified

Don't do series

22. Result of square matrix will be inverse when all columns or rows are
- linearly dependant
 - linearly independent
 - identity dependence
 - identity independence
23. In matrices, determinant of a matrix is denoted by
- vertical lines around matrix
 - horizontal lines around matrix
 - bracket around matrix
 - none of above
24. If A is a matrix of order $m \times n$ and B is a matrix of order $n \times p$ then order of AB is
- $p \times m$
 - $p \times n$
 - $n \times p$
 - $m \times p$
25. Domain constraints, functional dependency and referential integrity are special forms of _____.
- Foreign key
 - Primary key
 - Assertion
 - Referential constraint
26. Which of the following is not integrity constraint?
- Not null
 - Positive
 - Unique
 - Check 'predicate'
27. Which of the join operations do not preserve non matched tuples?
- Left outer join
 - Right outer join
 - Inner join
 - None
28. The basic data type char(n) is a _____ length character string and varchar(n) is _____ length character.
- Fixed, equal
 - Equal, variable
 - Fixed, variable
 - Variable, equal
29. Which of the following file organizations is most efficient for a file with a high degree of file activity?
- Sequential
 - ISAM
 - VSAM
 - B-Tree Index
30. Which company is the biggest player in the microprocessor industry?
- Motorola
 - IBM
 - Intel
 - AMD
31. The first digital computer built with IC chips was known as
- IBM 7090
 - Apple ? 1
 - IBM System / 360
 - VAX-10
32. EBCDIC can code up to how many different characters?
- 256
 - 16
 - 32
 - 64
33. A microprocessor has a data bus with 64 lines and address bus with 32 lines. The maximum number of bits that can be stored in memory is :
- 32×232
 - 32×264
 - 64×232
 - 64×264
34. Memory address refers to the successive memory words and the machine is called as _____.
- word addressable
 - byte addressable
 - bit addressable
 - Terra byte addressable



35. PC Program Counter is also called _____.
- memory pointer
 - instruction pointer
 - data counter
 - file pointer
36. The access time of memory is _____ the time required for performing any single CPU operation.
- Longer than
 - Shorter than
 - Negligible than
 - Same as
37. Visual Basic forms are identified by a:
- “.mak” suffix
 - “.for” suffix
 - “.frm” suffix
 - A special icon
38. To run an application in Visual Basic:
- Click on the start button (blue arrow)
 - Use the File Menu
 - Use the Project Menu to select Run
 - None of the above
39. To exit Visual Basic:
- Use the File Menu to select Quit
 - Use the Window Menu to select Exit
 - Click Alt-Q
 - Click on the diskette icon
40. The reference library of Visual Basic books is called:
- MSDN Library
 - Help Library
 - Contents
 - Topic pane
41. When collection of various computers seems a single coherent system to its client, then it is called
- computer network
 - distributed system
 - both (A) and (B)
 - none of the mentioned
42. Two devices are in network if
- a process in one device is able to exchange information with a process in another device
 - a process is running on both devices
 - PIDs of the processes running of different devices are same
 - none of the mentioned
43. Which one of the following computer networks is built on the top of another network?
- prior network
 - chief network
 - prime network
 - overlay network
44. In computer network nodes are
- the computer that originates the data
 - the computer that routes the data
 - the computer that terminates the data
 - all of the mentioned
45. Interleaving the audio and video segments of a video clip together in a data file is:
- Flare
 - Flattening
 - Hot Spot
 - Helical Scan
46. The rank of the matrix $\begin{bmatrix} 1 & 2 & -1 & 3 \\ 3 & 4 & 0 & -1 \\ -1 & 0 & -2 & 7 \end{bmatrix}$ is:
- 1
 - 2
 - 3
 - 4
47. Space between lines:
- Leading
 - Kerning
 - Extrude
 - Expanded
48. The visual representation of a project that includes a table of contents as well as a chart of the logical flow of the interactive interface is often called
- A master layout
 - A navigation map
 - A workflow diagram
 - A prototype

- 2
49. The make-or-buy decision is associated with the _____ step in the SDLC.
 (A) Problem/Opportunity Identification
 (B) Design
 (C) Analysis
 (D) Development and Documentation
50. In the Analysis phase, the development of the _____ occurs, which is a clear statement of the goals and objectives of the project.
 (A) documentation
 (B) flowchart
 (C) program specification
 (D) design
51. Actual programming of software code is done during the _____ step in the SDLC.
 (A) Maintenance and Evaluation
 (B) Design
 (C) Analysis
 (D) Development and Documentation
52. Enhancements, upgrades, and bug fixes are done during the _____ step in the SDLC.
 (A) Maintenance and Evaluation
 (B) Problem/Opportunity Identification
 (C) Design
 (D) Development and Documentation
53. When determining the efficiency of algorithm, the space factor is measured by
 (A) Counting the maximum memory needed by the algorithm
 (B) Counting the minimum memory needed by the algorithm
 (C) Counting the average memory needed by the algorithm
 (D) Counting the maximum disk space needed by the algorithm
54. When determining the efficiency of algorithm, the time factor is measured by
 (A) Counting microseconds
 (B) Counting the number of key operations
 (C) Counting the number of statements
 (D) Counting the kilobytes of algorithm
55. The operation of processing each element in the list is known as
 (A) Sorting
 (B) Merging
 (C) Inserting
 (D) Traversal
56. Arrays are best data structures
 (A) for relatively permanent collections of data
 (B) for the size of the structure and the data in the structure are constantly changing
 (C) for both of above situations
 (D) for none of above situations
57. Which of the following statements is correct?
 (A) A constructor is called at the time of declaration of an object.
 (B) A constructor is called at the time of use of an object.
 (C) A constructor is called at the time of declaration of a class.
 (D) A constructor is called at the time of use of a class.
58. Which of the following correctly describes overloading of functions?
 (A) Virtual polymorphism
 (B) Transient polymorphism
 (C) Ad-hoc polymorphism
 (D) Pseudo polymorphism
59. Which of the following concepts means adding new components to a program as it runs?
 (A) Data hiding
 (B) Dynamic typing
 (C) Dynamic binding
 (D) Dynamic loading
60. Which of the following problems causes an exception?
 (A) Missing semicolon in statement in main().
 (B) A problem in calling function
 (C) A syntax error
 (D) A run-time error

Sr. No.645.....

ENTRANCE TEST-2016

FACULTY OF APPLIED SCIENCE & TECHNOLOGY

MASTER OF COMPUTER APPLICATIONS (MCA)

Total Questions : 60

Question Booklet Series

A

Time Allowed : 70 Minutes

Roll No. :

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Instructions for Candidates :

1. Write your Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
7. There will be 'Negative Marking' for wrong answers. Each wrong answer will lead to the deduction of 0.25 marks from the total score of the candidate.
8. Only those candidates who would obtain positive score in Entrance Test Examination shall be eligible for admission.
9. Do not make any stray mark on the OMR sheet.
10. Calculators and mobiles shall not be permitted inside the examination hall.
11. Rough work, if any, should be done on the blank sheets provided with the question booklet.
12. Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/herself.
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CWG-33123-A

1

[Turn over

SEAL

1. Majid makes Tea. Which among the following is correct ?
(A) Tea has made by Majid (B) Tea is made by the Majid
(C) Tea was made by Majid (D) Tea is made by Majid
2. The Phrase Wild Goose Chase means :
(A) Collective effort (B) Hard work
(C) Very profitable (D) Unprofitable
3. Solve the Narration: [Rahul said to me, "I had gone through it."]
(A) Rahul told me that he have went through it
(B) Rahul told me that he had gone through it
(C) Rahul told me that he had went through it
(D) Rahul told me that he gone through it
4. Choose the Correct Spelling :
(A) Zigzagged (B) Zigzagged
(C) Zigzegged (D) Zigzegeed
5. Antonym of DOCILE :
(A) Pliant (B) Pliable
(C) Unyielding (D) Quiet

Read the Passage below and solve Questions from 6 to 9 :

The enjoyment of physical possession of things would seem to be one of the prerogatives of wealth which has been little impaired. Presumably nothing has happened to keep the man who can afford them from enjoying his Rembrandt and his homegrown orchids. But enjoyment of things has always been associated with the third prerogative of wealth which is the distinct it confers. In a world where nearly everyone was poor, the distinction was very great. It was the natural consequence of rarity. In England it is widely agreed, the ducal families are not uniformly superior. There is a roughly normal incidence of intelligence and stupidity, good taste and bad taste, morality, immorality. But very few people are dukes and duchesses, although the later have become rather more frequent with modern easing of divorce laws. As

a result, even though they may be intrinsically unexceptional they are regarded with some awe. So it has long been with the rich. Were dukes numerous their position would deteriorate. As the rich have become more numerous, they have inevitably become a debased currency.

6. The distinction conferred by wealth :
- (A) Was unfair to the poor
 - (B) Was unlikely to spread throughout the world
 - (C) Was very great when there were few rich people
 - (D) Was very great when there were many rich people
7. The enjoyment of the physical possession of things :
- (A) Is one of the privileges of wealth which has not been changed
 - (B) Is one of the privileges of wealth which should be curtailed
 - (C) Has little to do with the prerogatives of wealth
 - (D) Is a prerogative of wealth which cannot be disputed
8. Ducal families in England :
- (A) Are generally agreed to be fairly common
 - (B) Are generally agreed to be fairly superior
 - (C) Are superior because they are rich
 - (D) Are generally agreed not to be always better than others
9. There are more duchesses now because :
- (A) It is easier for dukes to divorce and remarry
 - (B) Dukes are more immoral than they used to be
 - (C) Their position has deteriorated
 - (D) They are debased
10. What is the remainder if the number 3×9 is divided by 5 ?
- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4

11. Total number of factors of 576 is :
- (A) 18 (B) 19
(C) 20 (D) 21
12. If a student walks from his house to school at 5 Kms/h, he is late by 30 minutes. However if he walks at 6km/h, he is late by 5 min only. The distance from school to his house is kms :
- (A) 6.5 (B) 12.5
(C) 2.5 (D) 15
13. A is twice as fast as B and B is thrice as fast as C. The Journey covered by C in 54 min. will be covered by B in _____ min.
- (A) 18 (B) 12
(C) 38 (D) 9
14. A and B can do work in 12 days, B and C in 15 days, C and A in 20 Days. How long would each take separately to do the same work ? Values of A, B and C are :
- (A) 10, 20 and 30 (B) 20, 30 and 60
(C) 30, 20 and 60 (D) 60, 30 and 20
15. In a certain class, the ratio of passing grades to failing grades is 7 to 5. How many of the 36 students failed the course ?
- (A) 20 (B) 15
(C) 10 (D) 25
16. A's father is B's son-in-law. C, A's sister, is the daughter of P. How is P related to B ?
- (A) Brother (B) Father
(C) Grandfather (D) Cannot be determined
17. A is the son of B. C, B's sister has a son D and a daughter E. F is the maternal uncle of D. How is E related to F ?
- (A) Sister (B) Mother
(C) Cousin (D) Niece

18. What is the 38th term of the following sequence 1, 3, 9, 27, 81, ... ?
- (A) 1×3^{37} (B) 2×3^{37}
(C) 1×3^{38} (D) 2×3^{38}
19. Each term in the following sequence is - 4 times the previous term. The value of xy is given by?
 $x, y, -64, 256, \dots$
- (A) -64 (B) -4
(C) 64 (D) -16
20. Captain is related to Soldier as Leader is related to :
- (A) Follower (B) Chair
(C) Party (D) Minister
21. Video is related to Cassette as Computer is related to :
- (A) Reels (B) Recording
(C) Floppy (D) Files
22. Choose the pair group of words for Jackal: Dog.
- (A) Crow : Bat (B) Orange : Lemon
(C) Tiger : Wolf (D) None of the above
23. Find the odd Man out for the word FRIENDSHIP :
- (A) FRIEND (B) SHIP
(C) FRESH (D) DRIP
24. In a certain code language BOY is written as \$*. and HOUR is written as @*£0.
How is RUBY written in Char Code?
- (A) 0 £ \$. (B) £ \$. 0
(C) . £ \$ 0 (D) None of the above
25. If FRIEND is coded as HUMJTK, how is CANDLE written in that code ?
- (A) FYOBC (B) DCQHQB
(C) DEQJQM (D) EDRIRL

26. Rahim walks 9 kms East, turns South - West and walks another 8 Kms. He again takes a turn towards North-West and walks another 8 kms. In which direction from his starting point is he standing now ?

- (A) North East (B) South East
(C) West (D) East

27. In rule method the null is represented by :

- (A) $[\]$ (B) ϕ
(C) $[x: x=x]$ (D) $[x: x \neq x]$

28. If A and B are having 99 elements in common, then number of elements common to each of the sets $A \times B$ and $B \times A$ are :

- (A) 2^{99} (B) 99^2
(C) 100 (D) 9

29. Solution of $|3x - 2| \geq 1$ is :

- (A) $[1/3, 1]$ (B) $(1/3, 1)$
(C) $\{1/3, 1\}$ (D) $(-\infty, 1/3] \cup [1, \infty)$

30. If $a^2 + b^2 + c^2 = 1$ then $bc + ca + ab$ lies in the interval :

- (A) $[-1/2, 1]$ (B) $[0, 1/2]$
(C) $[0, 1]$ (D) $[1, 2]$

31. If coefficients of $(2r+1)$ th term and $(r+2)$ th term are equal in the expansion of $(1+x)^{43}$ then the value of r will be :

- (A) 13 (B) 14
(C) 15 (D) 16

32. The system of equations :

$$\alpha x + y + z = \alpha - 1$$

$$x + \alpha y + z = \alpha - 1$$

$$x + y + \alpha z = \alpha - 1$$

has no solution if α is

- (A) Not-2 (B) 1
(C) -2 (D) either -2 or 1

33. $f(x) = ||x| - 1|$ is not differentiable at :
- (A) 0 (B) $\pm 1, 0$
 (C) 1 (D) ± 1
34. Which of the statements is true ?
- (A) A differentiable function is an increasing function
 (B) An increasing function is continuous
 (C) A continuous function is differentiable
 (D) A differentiable function is continuous
35. Derivative of $f(x) = x|x|$ is :
- (A) $2x$ (B) $-2x$
 (C) $2x^2$ (D) $2|x|$
36. Area inside Parabola $y^2 = 4ax$ between the lines $x = a$ and $x = 4a$ is equal to :
- (A) $4a^2$ (B) $8a^2$
 (C) $28 a^2/3$ (D) $35 a^2/3$
37. The solution of $(xy \cos xy + \sin xy) dx + x^2 \cos xy dy = 0$ is :
- (A) $x \sin(xy) = k$ (B) $x/y \sin(xy)$
 (C) $xy \sin(xy) = k$ (D) None of the above
38. The solution of differential equation $x dy + y dx = 0$ represents :
- (A) Rectangular Hyperbola
 (B) Straight Line Passing through origin
 (C) Parabola whose vertex is at origin
 (D) Circle whose center is at origin
39. The lines :
- $(p - q)x + (q - r)y + (r - p) = 0$
 $(r - q)x + (r - p)y + (p - q) = 0$
 $(r - p)x + (p - q)y + (q - r) = 0$ are
- (A) Parallel (B) Perpendicular
 (C) Concurrent (D) None of the above

40. The value of x for maximum value of $(\sqrt{3} \sin x + \cos x)$ is :
- (A) 30° (B) 45°
(C) 60° (D) 90°
41. If a dice is thrown 5 times then the probability of getting 6 exactly 3 times is :
- (A) $125/388$ (B) $125/3888$
(C) $625/23328$ (D) $250/2332$
42. A coin is tossed 3 times. The probability of getting exactly 2 heads is :
- (A) $3/8$ (B) $1/2$
(C) $1/4$ (D) None of these
43. The ratio of surface area of spheres be 4 : 5 the ratio of their volumes is :
- (A) 4 : 25 (B) 25 : 4
(C) 125 : 8 (D) 8 : 125
44. In which major piece of equipment is the highest residual charge stored ?
- (A) Power Unit of the System (B) The Chip
(C) The UPS (D) The CRT Monitor
45. Which of the following would be the correct description for WORM virus ?
- (A) It infects the boot sector
(B) It propagates through internet and email
(C) It has no effect increasing the internet traffic
(D) It alters the folder structure
46. Which is reserved address for private networks ?
- (A) 10.0.0.0 to 10.255.255.255 (B) 128.0.0.0 to 191.255.255.255
(C) 150.0.0.0 to 150.255.255.255 (D) 202.40.55.0 to 202.40.55.255
47. Error detection at Data Link Level is achieved by :
- (A) Bit Stuffing (B) Cyclic Redundancy Codes
(C) Hamming Codes (D) Both (B) & (C)

48. What is the use of Web Font in HTML ?
- (A) Core font used to develop web pages
 - (B) Enables use of fonts over web without installation
 - (C) Special font developed by Microsoft
 - (D) All of the above
49. An interface that provides a method for transferring binary information between internal storage and external devices is called :
- (A) I/O Interface
 - (B) I/O Bus
 - (C) Input Interface
 - (D) Output Interface
50. MRI indicates :
- (A) Memory Reference Information
 - (B) Memory Reference Instruction
 - (C) Memory Register Instruction
 - (D) Memory Register Information
51. The process of accessing data stored in a serial access memory is similar to manipulating data on a :
- (A) Heap
 - (B) Stack
 - (C) Binary Tree
 - (D) Queue
52. Consider the following recursive C function that takes two arguments.
unsigned int foo(unsigned int n, unsigned int r) {if(n>0)return((n%r)+foo(n/r,r)); else return 0;} What is value of function foo when it called as foo(512,2) ?
- (A) 2
 - (B) 4
 - (C) 8
 - (D) 16
53. What will be the output of following program ?
- ```
main()
{
int x=15;
printf("\n%d%d%d", x!=15, x=20, x<30);
}
```
- (A) Error
  - (B) 0, 0,1
  - (C) 0, 20,1
  - (D) 15, 20, 30

54. A binary tree in which if all its levels except possibly the last, have the maximum number of nodes and all the nodes at the last level appear as far left as possible, is known as :
- (A) Full Binary Tree (B) AVL Tree  
(C) Complete Binary Tree (D) Threaded Tree
55. An entity instance is a single occurrence of a/an :
- (A) Relationship Type (B) Entity and Relationship type  
(C) Entity Type (D) None of the above
56. Which of the following relational algebra operations do not require the participating tables to be union-compatible ?
- (A) Union (B) Intersection  
(C) Difference (D) Join
57. Which of the following statements is true ?
- (A) Paging is faster than Segmentation  
(B) Segmentation is faster than Paging  
(C) Paging and Segmentation have equal speed  
(D) None of the above
58. In order to allow only one process to enter its critical section, binary semaphore are initialized to :
- (A) -1 (B) 2  
(C) 1 (D) 0
59. What will be the result of the expression  $13 \& 25$  ?
- (A) 38 (B) 9  
(C) 25 (D) 12
60. In C++ the operator that cannot be overloaded is :
- (A) ++ (B) ~  
(C) :: (D) ()

## Master of Computer Applications /A

1. A matrix  $A = [a_{ij}]$  of order  $2 \times 3$  whose elements are such that  $a_{ij} = i + j$ , is :

(A)  $\begin{bmatrix} 2 & 3 & 4 \\ 3 & 4 & 5 \end{bmatrix}$

(B)  $\begin{bmatrix} 2 & 3 & 4 \\ 5 & 4 & 3 \end{bmatrix}$

(C)  $\begin{bmatrix} 2 & 3 & 4 \\ 5 & 5 & 4 \end{bmatrix}$

(D) None of these

2. If  $A = \begin{bmatrix} -1 & 2 \\ 3 & -4 \end{bmatrix}$ , then element  $a_{21}$  of  $A^2$  is :

(A) 22

(B) -15

(C) -10

(D) 7

3. If  $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$  then  $A^2 + 2A$  equals :

(A) A

(B) 2A

(C) 3A

(D) 4A

4. If  $\Delta = \begin{vmatrix} 1 & 3 & 1 \\ 2 & -1 & 1 \\ 0 & 4 & 2 \end{vmatrix}$ , the value of  $\begin{vmatrix} 4 & 12 & 4 \\ 8 & -4 & 4 \\ 0 & 16 & 8 \end{vmatrix}$  is :

(A)  $12\Delta$

(B)  $64\Delta$

(C)  $42\Delta$

(D)  $4\Delta$

5. If  $\tan A = 1/2$  and  $\tan B = 1/3$ , then the value of  $A + B$  i.e.  $\tan^{-1}1/2 + \tan^{-1}1/3$  is :

(A)  $\pi/6$

(B)  $\pi$

(C) Zero

(D)  $\pi/4$



6. Which of the following is correct ?
- (A)  $2 \sin A \cos B = \sin(A + B) + \cos(A + B)$   
 (B)  $2 \sin A \cos B = \sin(A - B) - \sin(A + B)$   
 (C)  $2 \sin A \sin B = \cos(A + B) - \cos(A - B)$   
 (D)  $2 \sin A \sin B = \cos(A - B) - \cos(A + B)$
7.  $2 \sin\left(\frac{5\pi}{12}\right) \sin\left(\frac{\pi}{12}\right)$  equals :
- (A)  $-1/2$  (B)  $1/2$   
 (C)  $1/4$  (D)  $1/6$
8. A tower is  $100\sqrt{3}$  m high. Find the angle of elevation of its top from a point 100 m away from its foot :
- (A)  $\theta = 60^\circ$  (B)  $\theta = 45^\circ$   
 (C)  $\theta = 30^\circ$  (D)  $\theta = 22\frac{1}{2}^\circ$
9. The angle of depression of a point situated at a distance of 70 m from the base of a tower is  $45^\circ$ . The height of the tower is :
- (A)  $70\sqrt{2}$  m (B) 70 m  
 (C)  $\frac{70}{\sqrt{2}}$  m (D) 35 m
10. The radius of a cylinder is same as that of a sphere. Their volumes are equal. The height of the cylinder is how many times of its radius ?
- (A)  $1/2$  (B)  $2/4$   
 (C)  $2/3$  (D)  $4/3$
11. How many metres of cloth 2.5 m wide will be required to make a conical tent whose base radius is 7 m and height is 24 m ?
- (A) 120 m (B) 180 m  
 (C) 220 m (D) 550 m
12. A metal ring whose radii are 5 cm and 3 cm, then the area of a ring is :
- (A)  $8 \pi \text{ cm}^2$  (B)  $12 \pi \text{ cm}^2$   
 (C)  $16 \pi \text{ cm}^2$  (D)  $24 \pi \text{ cm}^2$

13. The angle  $\theta$  between two lines whose slopes are  $m_1$  and  $m_2$  is :

(A)  $\tan \theta = \frac{m_1 - m_2}{1 + m_1 m_2}$

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14. Length of major axis is three times the length of minor axis, then eccentricity is :

(A)  $1/3$

(B)  $1/\sqrt{3}$

(C)  $1/\sqrt{2}$

(D)  $2\sqrt{2}/3$

15. The equation of a line passing through  $(x_1, y_1)$  and making an angle  $\alpha$  with the line  $y = mx + C$  is given by :

(A)  $y - y_1 = \frac{m \mp \tan \alpha}{1 \pm m \tan \alpha} (x - x_1)$

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16. Sum of all the angles of a hexagon is :

(A)  $180^\circ$

(B)  $360^\circ$

(C)  $720^\circ$

(D)  $900^\circ$

17. The distance between  $P(3, -2)$  and  $Q(-7, -5)$  is :

(A)  $\sqrt{115}$

(B)  $\sqrt{109}$

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18. If the following words are arranged in an alphabetical order, which word will appear in the middle :
- (A) Principal (B) Principle  
(C) Principia (D) Priceless
19. "Dearth" is related to "Scarcity" in the same way as "Substitute" is related to :
- (A) Replace (B) Rumour  
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20. If TEMPLE is coded as VHQNIA, how would you code CHURCH ?
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21. If it is possible to form a word with the first, fourth, seventh and eleventh letters of the word SUPERFLUOUS, write the first letter of that word :
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26. If  $A : B = 3 : 4$ ,  $B : C = 8 : 9$ ,  $C : D = 15 : 16$ , find  $A : B : C : D$ .
- (A) 15 : 20 : 21 : 28 (B) 9 : 15 : 21 : 28  
(C) 5 : 20 : 25 : 48 (D) 30 : 40 : 45 : 48
27. A train 140 m long is running at 60 km/hr. In how much time will it pass a platform 260 m long ?
- (A) 24 sec (B) 42 sec  
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28. After two successive decreases of 20%, the price of television is ₹ 12,800. What is the original price ?
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(C) 38 min (D) 9 min

34. A car covers four successive 3 km stretches at speeds of 10 km/hr, 20 km/hr, 30 km/hr and 60 km/hr respectively. What is the average speed of the car for the inline journey?

- (A) 20 km/hr (B) 30 km/hr  
(C) 35 km/hr (D) 25 km/hr

35. Something that cannot be read is :

- (A) Illegible (B) Eligible  
(C) Invincible (D) Incurable

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40. Inquisitive is synonym of:

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- (A) Sector (B) Track  
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45. A binary system based on Two's Complement arithmetic gives the answer 11011111.  
The decimal equivalent of this answer is :
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(C) -28 (D) None of the above
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47. Repeater operates in which layer of the OSI Model ?
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(C) Network Layer (D) Transport Layer
48. The length of ipv4 address is :
- (A) 32 bits (B) 64 bits  
(C) 256 bits (D) None of the above
49. If a process is executing in its critical section, then no other processes can be executing in their critical section. This condition is called :
- (A) Mutual exclusion (B) Synchronous exclusion  
(C) Asynchronous exclusion (D) None of the above

50. A page fault occurs when :
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  - (B) A page cannot be accessed due to its absence from memory
  - (C) A page is invisible
  - (D) All of these
51. Which of the following can be used as loop back address ?
- (A) 0.0.0.127
  - (B) 1.0.0.127
  - (C) 127.0.0.1
  - (D) 127.0.0.0
52. Output of the following program is :
- ```
main()
{
    int val=7;
    val=(++val)/(val++);
    printf("%d",val);
}
```
- (A) 0
 - (B) 1
 - (C) 2
 - (D) None of the above
53. Which C++ keyword is used to return memory to the pool of available memory ?
- (A) New
 - (B) Delete
 - (C) Return
 - (D) None of the above
54. Which of the following is a group of one or more attributes that uniquely identifies a row ?
- (A) Key
 - (B) Determinant
 - (C) Tuple
 - (D) Relation
55. If the sequence of operations on stack are as follows : push(1), push(2), push(2), push(1), pop, push(1), push(2), pop, pop, pop, push(2), pop the sequence of popped out values are :
- (A) 2,2,2,1,1
 - (B) 2,1,1,2,2
 - (C) 1,2,1,2,2
 - (D) None of the above

56. In operating system which one of the following is used for controlling access by multiple processes to common resource ?

- (A) Thread
- (B) Cache
- (C) Semaphore
- (D) None of the above

57. In an Entity-Relationship Diagram Rectangles represents :

- (A) Entity
- (B) Attribute
- (C) Database
- (D) Table

58. With paging there is no :

- (A) Internal fragmentation
- (B) External Fragmentation
- (C) Either type
- (D) None of these

59. Which of the following state transitions is not possible ?

- (A) Blocked to running
- (B) Ready to running
- (C) Blocked to ready
- (D) Running to blocked

60. The output of the following C program is :

```
main()
{
    int i=2, k=3;
    i++;
    ++k;
    {
        int i=0;
        i=k++;
        printf("%d%d",i,k);
    }
    printf("%d%d",i,k);
}
```

- (A) 4535
- (B) 4554
- (C) 4335
- (D) None of the above

Master of Computer Applications /A

1. A matrix $A = [a_{ij}]$ of order 2×3 whose elements are such that $a_{ij} = i + j$, is :

(A) $\begin{bmatrix} 2 & 3 & 4 \\ 3 & 4 & 5 \end{bmatrix}$

(B) $\begin{bmatrix} 2 & 3 & 4 \\ 5 & 4 & 3 \end{bmatrix}$

(C) $\begin{bmatrix} 2 & 3 & 4 \\ 5 & 5 & 4 \end{bmatrix}$

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2. If $A = \begin{bmatrix} -1 & 2 \\ 3 & -4 \end{bmatrix}$, then element a_{21} of A^2 is :

(A) 22

(B) -15

(C) -10

(D) 7

3. If $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ then $A^2 + 2A$ equals :

(A) A

(B) 2A

(C) 3A

(D) 4A

4. If $\Delta = \begin{vmatrix} 1 & 3 & 1 \\ 2 & -1 & 1 \\ 0 & 4 & 2 \end{vmatrix}$, the value of $\begin{vmatrix} 4 & 12 & 4 \\ 8 & -4 & 4 \\ 0 & 16 & 8 \end{vmatrix}$ is :

(A) 12Δ

(B) 64Δ

(C) 42Δ

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5. If $\tan A = 1/2$ and $\tan B = 1/3$, then the value of $A + B$ i.e. $\tan^{-1}1/2 + \tan^{-1}1/3$ is :

(A) $\pi/6$

(B) π

(C) Zero

(D) $\pi/4$

6. Which of the following is correct ?
- (A) $2 \sin A \cos B = \sin(A + B) + \cos(A + B)$
 - (B) $2 \sin A \cos B = \sin(A - B) - \sin(A + B)$
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- (A) $\theta = 60^\circ$
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13. The angle θ between two lines whose slopes are m_1 and m_2 is :

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  - (C) Tuple
  - (D) Relation
55. If the sequence of operations on stack are as follows : push(1), push(2), push(2), push(1), pop, push(1), push(2), pop, pop, pop, push(2), pop the sequence of popped out values are :
- (A) 2,2,2,1,1
  - (B) 2,1,1,2,2
  - (C) 1,2,1,2,2
  - (D) None of the above

56. In operating system which one of the following is used for controlling access by multiple processes to common resource ?

- (A) Thread
- (B) Cache
- (C) Semaphore
- (D) None of the above

57. In an Entity-Relationship Diagram Rectangles represents :

- (A) Entity
- (B) Attribute
- (C) Database
- (D) Table

58. With paging there is no :

- (A) Internal fragmentation
- (B) External Fragmentation
- (C) Either type
- (D) None of these

59. Which of the following state transitions is not possible ?

- (A) Blocked to running
- (B) Ready to running
- (C) Blocked to ready
- (D) Running to blocked

60. The output of the following C program is :

```
main()
{
 int i=2, k=3;
 i++;
 ++k;
 {
 int i=0;
 i=k++;
 printf("%d%d",i,k);
 }
 printf("%d%d",i,k);
}
```

- (A) 4535
- (B) 4554
- (C) 4335
- (D) None of the above