

**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 :**

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.

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  $30^\circ$  to  $60^\circ$ , 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  $\mu$ . The standard deviation for this distribution is given by :

- (A)  $\sqrt{\mu}$   
(B)  $\mu^2$   
(C)  $\mu$   
(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 ?
- $O(n)$
  - $O(n \log n)$
  - $O(n^2)$
  - $O(\log n)$
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  $K$  ?
- Divide and Conquer
  - Dynamic Programming
  - Greedy Algorithm
  - Branch and Bound
51. Which of the following is useful in traversing a given graph by breadth first search ?
- Set
  - List
  - Stack
  - Queue
52. Best case time complexity of binary search algorithm is :
- $O(n)$
  - $O(\log n)$
  - $O(n \log n)$
  - $O(n^2)$
53. According to Chomsky classification, Language of finite automata is :
- Type 0
  - Type 1
  - Type 2
  - Type 3
54. How many DFA's exists with two states over input alphabet  $\{0,1\}$  ?
- 16
  - 26
  - 32
  - 64
55. Which of the following statement is false ?
- Context free language is the subset of context sensitive language
  - Regular language is the subset of context sensitive language
  - Recursively enumerable language is the super set of regular language
  - Context sensitive language is a subset of context free language
56. Which of the following can accept even palindrome over  $\{a,b\}$  ?
- Push down Automata
  - Turing machine
  - NFA
  - 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

