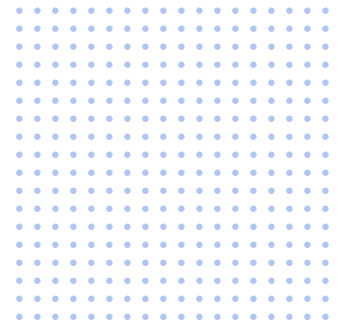




FOR KUET EXAM PREPARATION

KUET 2023 Question Paper - MCA

EXAM	YEAR	TYPE	SUBJECT
KUET	2023	Question Paper	MCA

Sr. No.

ENTRANCE TEST-2023**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.

SM-29566-A

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[Turn over

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) $2(n \log(n+1))$
 - (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 ?
- The language $\{w|w \in a, b)^*, w \text{ has an odd number of } b\text{'s}\}$.
 - The language $\{w|w \in (a, b)^*, w \text{ has an even number of } b\text{'s}\}$.
 - The language $\{w|w \in (a, b)^*, w \text{ has an even number of } b\text{'s and odd number of } a\text{'s}\}$.
- (i) and (ii) only
 - (i) only
 - (ii) only
 - All of these
13. _____ are special-interest groups that quickly test, evaluate, and standardize new technologies.
- Forums
 - Regulatory agencies
 - Standards organizations
 - 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.
- MPLS, ATM, or Frame Relay
 - CTLNS, ATM, or Slot
 - ATM, PDTN, or Slot
 - LAN, ATM, or Frame Relay
15. Process to process delivery of the entire message is done by :
- Physical layer
 - Transport layer
 - Session layer
 - Presentation layer
16. _____ overcame the registered number issue by assigning each organization one network number from the IPv4 address space.
- Tracking
 - Subnetting
 - Packeting
 - 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. |
- i-a, ii-b, iii-c
 - i-a, ii-c, iii-b
 - i-b, ii-c, iii-a
 - i-c, ii-a, iii-b
18. _____ executes must frequently and makes the fine-grained decision of which process to execute the next.
- Long-term scheduling
 - Medium-term scheduling
 - Short-term scheduling
 - 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.
- demand paging
 - main paging
 - prepaging
 - postpaging
20. _____ provides a larger size of virtual memory but require virtual memory which provides multidimensional memory.
- Paging method
 - Segmentation method
 - Paging and segmentation method
 - 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) Soundnims
 (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**SM-29566-A****8**
⊗**88**