

30004

QUESTION PAPER
SERIES CODE

A

Test Centre : _____

Roll No. : _____

Name of the Candidate : _____

S A U

Entrance Test for M.Sc. (Computer Science), 2016

[PROGRAMME CODE : MCS]

Question Paper

Time : 3 hours

Maximum Marks : 100

INSTRUCTIONS FOR CANDIDATES

Candidates must carefully read the following instructions before attempting the Question Paper :

- (i) Write your Name, Roll Number and Name of the Test Centre in the space provided for the purpose on the top of this Question Paper and on the OMR Sheet.
- (ii) This Question Paper has Three Parts : Part—A, Part—B and Part—C.
- (iii) Part—A (Objective-type) has 20 questions of 1 mark each. All questions are compulsory.
- (iv) Part—B (Objective-type) has 30 questions of 1 mark each. All questions are compulsory.
- (v) Part—C (Objective-type) has 50 questions of 1 mark each. All questions are compulsory.
- (vi) **A wrong answer will lead to the deduction of one-fourth ($\frac{1}{4}$) of the marks assigned to that question.**
- (vii) *Symbols have their usual meanings.*
- (viii) **Please darken the appropriate circle of 'Question Paper Series Code' and 'Programme Code' on the OMR Sheet in the space provided.**
- (ix) All questions should be answered on the OMR Sheet.
- (x) Answers written inside the Question Paper will **NOT** be evaluated.
- (xi) Calculators and Log Tables may be used. **Mobile Phones are not allowed.**
- (xii) Pages at the end of the Question Paper have been provided for Rough Work.
- (xiii) **Return the Question Paper and the OMR Sheet** to the Invigilator at the end of the Entrance Test.
- (xiv) **DO NOT FOLD THE OMR SHEET.**

/5-A

INSTRUCTIONS FOR MARKING ANSWERS ON THE 'OMR SHEET'

Use BLUE/BLACK Ballpoint Pen Only

1. Please ensure that you have darkened the appropriate circle of 'Question Paper Series Code' and 'Programme Code' on the OMR Sheet in the space provided.

Example :

Question Paper Series Code

Write Question Paper Series Code A or B in the box and darken the appropriate circle.

	A or B
●	
ⓑ	

Programme Code

Write Programme Code in the box and darken the appropriate circle.

Write Programme Code					
MEC	<input type="radio"/>	MAM	<input type="radio"/>	PCS	<input type="radio"/>
MSO	<input type="radio"/>	MLS	<input type="radio"/>	PBT	<input type="radio"/>
MIR	<input type="radio"/>	PEC	<input type="radio"/>	PAM	<input type="radio"/>
MCS	<input checked="" type="radio"/>	PSO	<input type="radio"/>	PLS	<input type="radio"/>
MBT	<input type="radio"/>	PIR	<input type="radio"/>		

2. Use only Blue/Black Ballpoint Pen to darken the Circle. Do not use Pencil to darken the Circle for Final Answer.
3. Please darken the whole Circle. ●
4. Darken ONLY ONE CIRCLE for each question as shown below in the example.

Example :

Wrong	Wrong	Wrong	Wrong	Correct
● (b) (c) ●	⊗ (b) (c) (d)	⊗ (b) (c) ⊗	⊙ (b) (c) ●	ⓐ (b) (c) ●

5. Once marked, no change in the answer is possible.
6. Please do not make any stray marks on the OMR Sheet.
7. Please do not do any rough work on the OMR Sheet.
8. Mark your answer only in the appropriate circle against the number corresponding to the question.
9. **A wrong answer will lead to the deduction of one-fourth (¼) of the marks assigned to that question.**
10. Write your six-digit Roll Number in small boxes provided for the purpose; and also darken the appropriate circle corresponding to respective digits of your Roll Number as shown in the example below.

Example :

ROLL NUMBER					
1	3	5	7	2	0
●	①	①	①	①	①
②	②	②	②	●	②
③	●	③	③	③	③
④	④	④	④	④	④
⑤	⑤	●	⑤	⑤	⑤
⑥	⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	●	⑦	⑦
⑧	⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨	⑨
⑩	⑩	⑩	⑩	⑩	●

PART—A

1. Given P and Q as any two subsets of the universal set, which of the following is true?
 - (a) $P \cup (P \cap Q) = P$
 - (b) $P \cap (P \cup Q) = P$
 - (c) Both (a) and (b)
 - (d) None of the above

2. Let S be a set of all people. If for any two people $x, y \in S$, $x \leq y$ represents "x is an ancestor of y", then the relation \leq is
 - (a) partial order
 - (b) total order
 - (c) Both (a) and (b)
 - (d) None of the above

3. Considering P as a set of people, which of the following relations defined over P is an equivalence relation?
 - (a) Father
 - (b) Sibling
 - (c) Brother
 - (d) Ancestor

4. Considering $A = \{1, 2, 3\}$, $B = \{x, y, z\}$, $f = \{(1, z), (2, y), (3, y)\}$ and $g = \{(1, z), (2, y), (3, x)\}$, which of the following is true?
 - (a) Both f and g are one-to-one
 - (b) Both f and g are onto
 - (c) g is one-to-one, but f is not
 - (d) f is one-to-one, but g is not

5. Considering X and Y as Boolean variables, which of the following statements is false?

- (a) $X + 1 = 1$
- (b) $X + XY = X$
- (c) $X(X + Y) = X$
- (d) $X(X + Y) = Y$

6. Let $S = P + Q$, where $P = \begin{bmatrix} 1 & -3 & 2 \\ 1 & 1 & 2 \\ 1 & 3 & -1 \end{bmatrix}$ and $Q = \begin{bmatrix} 1 & 3 & -2 \\ -1 & 1 & 1 \\ -1 & -3 & 2 \end{bmatrix}$. Then $\det(P + Q)$ equals

- (a) 7
- (b) 4
- (c) 6
- (d) -5

7. Consider the following system :

$$\begin{aligned} -y + 2z &= 2 \\ x - 2y + z &= -4 \\ x - 2y + \lambda z &= 4 \end{aligned}$$

The system has unique solution, if

- (a) $\lambda = 1$
- (b) $\lambda = 0$
- (c) $\lambda \neq 0$
- (d) $\lambda \neq 1$

8. Let P be a (3×3) real matrix and $Q = -2P^{-1}$. Let $\det(P) = -2$, then $\det(Q)$ equals

- (a) 4
- (b) -4
- (c) 8
- (d) -2

9. Let $P = \begin{bmatrix} 3 & 2 \\ 1 & 1 \end{bmatrix}$ satisfy $P^2 + aP + bI = 0$, where I is a 2×2 identity matrix and 0 is a 2×2 zero matrix. Then
- (a) $a = 4, b = 2$
 - (b) $a = -3, b = 3$
 - (c) $a = -4, b = 1$
 - (d) $a = -3, b = 1$

10. If $P = \begin{bmatrix} d_1 & 1 & 2 \\ 0 & d_2 & -3 \\ 0 & 0 & d_3 \end{bmatrix}$, then $\det(P)$ equals
- (a) $d_1 d_2 d_3$
 - (b) $d_1 + d_2 + d_3$
 - (c) $d_1 + d_2 - d_3$
 - (d) zero

11. If $P_r^n = 2520$ and $C_r^n = 21$, then r equals
- (a) 6
 - (b) 8
 - (c) 5
 - (d) 7

12. If $C_3^{(n+2)} = P_2^{(n+3)} - 20$, then n is equal to
- (a) 6
 - (b) 4
 - (c) 5
 - (d) 3

13. If $0 < r < s \leq n$ and $P_r^n = P_s^n$, then $(r + s)$ is equal to

- (a) $(2n - 1)$
- (b) $(2n - 2)$
- (c) 2
- (d) 1

14. Four married couples are to be seated in a row having 8 chairs. The number of ways so that spouses are seated next to each other is

- (a) 72
- (b) 186
- (c) 384
- (d) 516

15. If $\frac{1}{C_m^4} = \frac{1}{C_m^5} + \frac{1}{C_m^6}$, then the value of m is

- (a) 2
- (b) 4
- (c) 3
- (d) 1

16. The value of

$$C_4^{50} + \sum_{r=1}^6 C_3^{56-r}$$

is

- (a) C_3^{56}
- (b) C_4^{55}
- (c) C_3^{55}
- (d) C_4^{56}

17. A factory production line is manufacturing bolts using three machines— A , B and C . Of the total output, machine A is responsible for 25%, machine B for 35% and machine C for the rest. It is known from previous experience with the machines that 5% of the output from machine A is defective, 4% from machine B and 2% from machine C are also defective. A bolt is chosen at random from the production line and found to be defective. What is the probability that it came from machine A ?
- (a) 0.231
(b) 0.362
(c) 0.348
(d) 0.294
18. If A and B are two events associated with an experiment and $P(A) = 0.4$, $P(A \cup B) = 0.7$ and $P(B) = p$, then find the choice of p for which A and B are mutually exclusive.
- (a) 0.3
(b) 0.4
(c) 0.28
(d) 0.11
19. From a batch of 100 items of which 20 are defective, exactly two items are chosen, one at a time, without replacement. Of the following, what is the probability that the second item chosen is also defective?
- (a) 0.38
(b) 0.26
(c) 0.20
(d) 0.32
20. Three urns contain 6 green, 4 black; 4 green, 6 black and 5 green, 5 black balls respectively. A ball is drawn from a randomly selected urn. If the ball drawn is green, find the probability that it is drawn from the first urn.
- (a) 0.40
(b) 0.34
(c) 0.42
(d) 0.36

PART—B

21. X speaks the truth 4 out of 5 times. A die is tossed. X reports that it is a 6. What are the chances that there was actually a 6?

- (a) 0.21
- (b) 0.36
- (c) 0.44
- (d) 0.13

22. A card from a pack of 52 cards is lost. From the remaining cards of the pack, two cards are drawn and are found to be both diamonds. Find the probability of the lost card being a diamond.

- (a) 0.67
- (b) 0.25
- (c) 0.48
- (d) 0.44

23. The value of

$$\lim_{x \rightarrow \infty} \left(\frac{x-1}{x+1} \right)^x$$

is

- (a) 0
- (b) e^{-1}
- (c) e^{-2}
- (d) e^{-3}

24. The set of points where the function $f(x) = [x] + |1 - x|$, $-1 \leq x \leq 3$, where $[x]$ denotes the greatest integer function of x , is not differentiable, is

- (a) $\{-1, 0, 1, 2, 3\}$
- (b) $\{-1, 0, 2\}$
- (c) $\{0, 1, 2, 3\}$
- (d) $\{-1, 0, 1, 2\}$

25. If $s = 4t + \frac{1}{t}$ is the equation of motion of a particle, then its acceleration when velocity vanishes is
- (a) 0
 (b) 16
 (c) 8
 (d) 1
26. $\int e^{\tan^{-1} x} \left(1 + \frac{x}{1+x^2} \right) dx$ is equal to
- (a) $\frac{1}{2} x e^{\tan^{-1} x} + c$
 (b) $\frac{1}{2} e^{\tan^{-1} x} + c$
 (c) $x e^{\tan^{-1} x} + c$
 (d) $e^{\tan^{-1} x} + c$
27. If a curve $y = a\sqrt{x} + bx$ passes through the point (1, 2) and the area bounded by the curve, line $x = 4$ and x -axis is 8 square units, then
- (a) $a = 3, b = -1$
 (b) $a = 3, b = 1$
 (c) $a = -3, b = 1$
 (d) $a = -3, b = -1$
28. If $u = (x + y)(x - y)$, then u satisfies
- (a) $u_{xx} - 2u_{yy} = 0$
 (b) $2u_{xx} + u_{yy} = 0$
 (c) $u_{xx} - u_{yy} = 0$
 (d) $u_{xx} + u_{yy} = 0$

29. If p and q are the order and degree of the differential equation

$$y \frac{dy}{dx} + x^3 \frac{d^2y}{dx^2} + xy = \cos x$$

then

- (a) $p < q$
- (b) $p = q$
- (c) $p > q$
- (d) None of the above

30. The solution of the differential equation $(1 + xy) xdy + (1 - xy) ydx = 0$ is

- (a) $\frac{1}{xy} + \log \frac{y}{x} = c$
- (b) $-xy + \log \frac{y}{x} = c$
- (c) $-\frac{1}{xy} + \log \frac{y}{x} = c$
- (d) $\frac{1}{xy} + \log \frac{x}{y} = c$

31. The solution of the differential equation $xdy - ydx = 0$ represents a

- (a) rectangular hyperbola
- (b) straight line passing through the origin
- (c) parabola whose vertex is at the origin
- (d) circle whose centre is the origin

32. The differential equation $\frac{dy}{dx} + \frac{y^2}{x^2} = \frac{y}{x}$ has the solution

- (a) $x = y(\log x + c)$
- (b) $y = x(\log y + c)$
- (c) $x = (y + c)\log x$
- (d) $y = (x + c)\log y$

33. The orthogonal trajectory of the circle $x^2 + y^2 - ay = 0$ (where a is a parameter) is
- (a) $x^2 + y^2 = cy$
 - (b) $x^2 + y^2 = cx$
 - (c) $x^2 + y^2 = c$
 - (d) $x^2 + y^2 = c(x + y)$
34. The differential equation $y \frac{dy}{dx} + 5x = 20$ belongs to the class
- (a) linear and separable
 - (b) non-linear and separable
 - (c) neither linear nor separable
 - (d) both linear and separable
35. Given that \vec{a} , \vec{b} and \vec{c} are three non-zero vectors which are pair-wise non-collinear, and if $\vec{a} + 3\vec{b}$ is collinear with \vec{c} and $\vec{b} + 2\vec{c}$ is collinear with \vec{a} , then $\vec{a} + 3\vec{b} + 6\vec{c}$ is
- (a) \vec{c}
 - (b) $\vec{0}$
 - (c) $\vec{a} + \vec{c}$
 - (d) \vec{a}
36. The angle between the lines AB and BC with position vectors $A = \hat{i} + 3\hat{j}$, $B = 2\hat{i} - \hat{j}$ and $C = \hat{i} - 2\hat{j}$ is
- (a) $\cos^{-1}(-5/\sqrt{34})$
 - (b) $\cos^{-1}(3/\sqrt{34})$
 - (c) $\cos^{-1}(-3/\sqrt{34})$
 - (d) $\cos^{-1}(5/\sqrt{34})$

37. If $ABCD$ is a quadrilateral, then $\vec{BA} + \vec{BC} + \vec{CD} + \vec{DA}$ is equal to
- $2\vec{BA}$
 - $2\vec{AB}$
 - $2\vec{AC}$
 - $2\vec{BC}$
38. If \vec{a}, \vec{b} are unit vectors such that $|\vec{a} + \vec{b}| = 1$, then $|2\vec{a} + 3\vec{b}|$ is equal to
- 19
 - $\sqrt{19}$
 - $\sqrt{13}$
 - 4
39. The vectors $\vec{a} = 3\hat{i} - 2\hat{j} + 2\hat{k}$ and $\vec{b} = -\hat{i} - 2\hat{k}$ are the adjacent sides of a parallelogram, then the acute angle between its diagonals is
- $\pi/4$
 - $\pi/3$
 - $3\pi/4$
 - $2\pi/3$
40. Find the vectors \vec{a} which are coplanar with the vectors \hat{i} and \hat{j} and perpendicular to the vector $\vec{b} = 4\hat{i} - 3\hat{j} + 5\hat{k}$, such that $|\vec{a}| = |\vec{b}|$ is given by
- $\pm\sqrt{2}(3\hat{i} + 4\hat{j})$
 - $\pm\sqrt{2}(4\hat{i} + 3\hat{j})$
 - $\pm\sqrt{3}(4\hat{i} + 5\hat{j})$
 - $\pm\sqrt{3}(5\hat{i} + 4\hat{j})$
41. Which of the following is absorption law?
- $P \vee (P \wedge Q) \equiv P$
 - $P \wedge (P \vee Q) \equiv P$
 - Both (a) and (b)
 - $P \wedge (P \vee Q) \equiv Q$

42. The negation of the implication $P \rightarrow Q$ is equivalent to
- $P \wedge \neg Q$
 - $\neg P \wedge Q$
 - $P \vee \neg Q$
 - $\neg P \vee Q$
43. If P and Q are any two statements, then for what values of P and Q , $P \rightarrow Q$ is false?
- $P = \text{false}$ and $Q = \text{false}$
 - $P = \text{true}$ and $Q = \text{false}$
 - $P = \text{false}$ and $Q = \text{true}$
 - $P = \text{true}$ and $Q = \text{true}$
44. Which of the following is **not** a statement as per mathematical logic?
- India is a bird.
 - Delhi is a State.
 - What is your name?
 - Man will reach Mars by 2020.
45. Which of the following statements is a tautology?
- If John takes up Computing, then Amar will take up Mathematics.
 - The crop will be destroyed, if there is a flood.
 - Arun is poor but happy.
 - Arun will take up Computing or he will not take up Computing.
46. Which of the following implications is modus ponens?
- $P, P \rightarrow Q \Rightarrow Q$
 - $\neg Q, P \rightarrow Q \Rightarrow \neg P$
 - $\neg(P \rightarrow Q) \Rightarrow P$
 - $P \rightarrow Q, Q \rightarrow R \Rightarrow P \rightarrow R$

47. Let $X = \{1, 2, 3, 4\}$. If
 $R = \{(x, y) | x \in X \wedge y \in X \wedge ((x - y) \text{ in an integral non-zero multiple of } 2)\}$, and
 $S = \{(x, y) | x \in X \wedge y \in X \wedge ((x - y) \text{ in an integral non-zero multiple of } 3)\}$
then the value of $R \cap S$ is
- (a) $\{(1, 3), (2, 4)\}$
(b) $\{(3, 1), (4, 2)\}$
(c) \varnothing
(d) None of the above
48. Which one of the following relations is transitive?
- (a) $\{(1, 1)\}$
(b) $\{(1, 2), (2, 3), (1, 3), (2, 1)\}$
(c) $\{(1, 2), (4, 3), (2, 2), (2, 1), (3, 1)\}$
(d) None of the above
49. If two sets R and S are both denumerable, then which one of the following statements is true?
- (a) $R \cup S$ is also denumerable
(b) $R \times S$ is also denumerable
(c) Both (a) and (b)
(d) None of the above
50. Which one of the following statements is correct?
- (a) $P \vee (P \wedge Q) \Leftrightarrow P$
(b) $P \wedge (P \vee Q) \Leftrightarrow P$
(c) $\neg(P \wedge Q) \Leftrightarrow \neg P \vee \neg Q$
(d) All of the above

PART—C

51. A Boolean algebra is
- (a) finite, complemented but not distributive lattice
 - (b) finite but not complemented lattice
 - (c) finite, complemented and distributive lattice
 - (d) not distributive lattice
52. The minimized expression for the Boolean expression $XYZ' + X'YZ' + XY'Z' + X'Y'Z'$ is
- (a) Z'
 - (b) XY'
 - (c) $Y'Z$
 - (d) $X + Z'$
53. A lattice (L, \leq) is said to be a complete lattice if and only if every non-empty subset S of L has
- (a) a greatest lower bound but no least upper bound
 - (b) a least upper bound but no greatest lower bound
 - (c) neither a greatest lower bound nor a least upper bound
 - (d) a greatest lower bound and a least upper bound
54. In a survey of 85 people, it is found that 31 speak English, 43 speak Hindi and 39 speak Urdu. Also 13 speak both English and Urdu, 15 speak English and Hindi, 20 speak Urdu and Hindi, and 12 speak none of the three languages. What is the number of people who speak all the three languages?
- (a) 4
 - (b) 8
 - (c) 16
 - (d) 32

55. Which of the following statements is false?
- (a) If a number n is odd, then n^2 is odd.
 - (b) A number n is even if and only if n^2 is even.
 - (c) The power set of an infinite set is also infinite.
 - (d) The product of any two odd integers is not always odd.
56. The maximum number of edges in a graph with n nodes will be
- (a) $n(n-1)$
 - (b) $n(n-1)/2$
 - (c) $n(n+1)$
 - (d) $n(n+1)/2$
57. Queue is a
- (a) linear data structure
 - (b) non-linear data structure
 - (c) random-access data structure
 - (d) self-sorted data structure
58. To search the number 5 in a list of the following numbers stored in a binary search tree
50, 21, 89, 13, 40, 23, 12, 70, 42, 65, 9, 10, 8
the maximum number of comparisons will be
- (a) 2
 - (b) 4
 - (c) 6
 - (d) 8

59. Which of the following statements is false?
- (a) Binary search is faster than linear search.
 - (b) Binary search needs data to be ordered.
 - (c) Linear search can be applied on unordered data.
 - (d) Linear search cannot be applied on ordered data.
60. The height of the expression tree for the arithmetic expression $(A + B * C) - ((D * E + F) / G)$ is
- (a) 1
 - (b) 2
 - (c) 3
 - (d) 5
61. In a binary search tree, the inorder successor of a node having two children will be
- (a) a non-leaf node having two children
 - (b) the root node only
 - (c) either a leaf node or a non-leaf node having only left child
 - (d) either a leaf node or a non-leaf node having only right child
62. Which of the following properties ensure(s) that an algorithm terminates after a finite number of steps?
- (a) Finiteness
 - (b) Definiteness
 - (c) Effectiveness
 - (d) Input and output

63. Which of the following is a non-comparison sort?
- (a) Selection sort
 - (b) Bucket sort
 - (c) Insertion sort
 - (d) Quicksort
64. For sorting an already sorted list, which of the following sorting methods will be most efficient?
- (a) Merge sort
 - (b) Quicksort
 - (c) Heap sort
 - (d) Insertion sort
65. The minimum number of nodes in a complete binary tree of height h is
- (a) $2^h - 1$
 - (b) 2^h
 - (c) 2^{h-1}
 - (d) $2^{h-1} - 1$
66. Heap tree is a
- (a) full binary tree
 - (b) complete binary tree
 - (c) Both (a) and (b)
 - (d) ternary tree
67. To sort a list of n objects using quicksort, the additional auxiliary memory requirement is
- (a) n
 - (b) $\log n$
 - (c) $n \log n$
 - (d) n^2

68. If initially there are n elements in a stack, then time complexity of `push()` operation can be
- (a) $O(n)$
 - (b) $O(n \log n)$
 - (c) $O(1)$
 - (d) $O(n^2)$
69. Which of the following is a valid application of linked list data structure?
- (a) Dynamic memory management
 - (b) Polynomial representation
 - (c) Sparse matrix manipulation
 - (d) All of the above
70. In a binary search tree, the degree of inorder successor of a node of two children may be
- (a) 0 or 1
 - (b) 0 or 2
 - (c) 1 or 2
 - (d) 2
71. What is the output of the following C code?
- ```
#include <stdio.h>
main(){
 int array [3]={7};
 int i;
 for (i=0; i<3; i++)
 printf ("%d, ", array [i]);
}
```
- (a) 7, 0, 0
  - (b) 7, garbage, garbage
  - (c) 7, null, null
  - (d) Compiler error

72. What is the output of the following C code?

```
#include <stdio.h>
main(){
 int a=5;
 int b=10;
 {
 int a=2;
 a++;
 b++;
 }
 printf ("%d, %d", a, b);
}
```

- (a) 5, 10
- (b) 6, 11
- (c) 5, 11
- (d) 6, 10

73. What is the output of the following C code?

```
#include <stdio.h>
main(){
 int a=-20;
 int b=-3;
 printf ("%d", a%b);
}
```

- (a) 2
- (b) -2
- (c) 18
- (d) -18

74. What is the output of the following C code?

```
#include <stdio.h>
main(){
 int a=25, b=20, c=15;
 if (a>b>c)
 printf ("True");
 else
 printf ("False");
}
```

- (a) True
- (b) False
- (c) Run-time error
- (d) Compiler error

75. What is the output of the following C code?

```
#include <stdio.h>
main(){
 int array [2][2][3]={0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11};
 printf ("%d", array [1][0][2]);
}
```

- (a) 5
- (b) 6
- (c) 7
- (d) 8

76. Recursion is memory-intensive, because

- (a) recursive functions tend to declare many local variables
- (b) previous function calls are still open when the function calls itself and the activation records of these previous calls still occupy space on the call stack
- (c) many copies of the function code are created
- (d) it requires large data values

77. Linear search is highly inefficient compared to binary search when dealing with

- (a) small, unsorted arrays
- (b) small, sorted arrays
- (c) large, unsorted arrays
- (d) large, sorted arrays

78. What is the output of the following C code?

```
#include <stdio.h>
void main(){
 int x=15, y=25;
 fun (&x, &y);
 printf ("%d, %d\n", x, y);
}

fun (int *p, int *q){
 *p=(*p+*q)-(*q=*p);
}
```

- (a) 15, 15
- (b) 15, 25
- (c) 25, 15
- (d) 25, 25

79. What would be the equivalent pointer expression for referring the array element  $a[i][j][k][l]$ ?

- (a)  $*(a + i + j + k)$
- (b)  $*(*(* (a + i + j) + k) + l)$
- (c)  $*(*(* (a + i) + j) + k) + l$
- (d)  $*(*(*(* (a + i) + j) + k) + l)$

80. What is the output of the following C code?

```
#include <stdio.h>
main(){
 char c=125;
 c=c+10;
 printf ("%d", c);
}
```

- (a) 135
- (b) Garbage values
- (c) -121
- (d) -8

81. What is the output of the following C code?

```
#include <stdio.h>
#define x 2+3
main(){
 int i;
 i=x*x*x;
 printf ("%d", i);
}
```

- (a) 17
- (b) 25
- (c) 125
- (d) None of the above

82. Assume the following C variable declaration :

```
int *A[10], B[10][10];
```

Of the following expressions

- I. A[2]
- II. A[2][3]
- III. B[1]
- IV. B[2][3]

which will not give compile-time errors if used as left-hand side of an assignment statement in a C program?

- (a) I, II and IV only
- (b) II, III and IV only
- (c) II and IV only
- (d) IV only

83. The C language consists of \_\_\_\_\_ number of keywords.

- (a) 24
- (b) 32
- (c) 40
- (d) 56

84. What is the result of  $4 \ll 3$ ?

- (a) 16
- (b) 32
- (c) 56
- (d) 60

85. What is the result of the following 'printf' statement?

```
printf ("%d", printf ("SAUEXAM"));
```

- (a) SAUEXAM
- (b) SAUEXAM7
- (c) Syntax error
- (d) Garbage values

86. Which one of the following is true?

(a)  $(110110.110)_2 = (54.75)_{10}$

(b)  $(110110.110)_2 = (45.57)_{10}$

(c)  $(110110.110)_2 = (54.57)_{10}$

(d)  $(110110.110)_2 = (55.75)_{10}$

87. Which one of the following is true?

(a)  $(110111.01)_2 = (38.C)_{16}$

(b)  $(110111.01)_2 = (37.3)_{16}$

(c)  $(110111.01)_2 = (38.4)_{16}$

(d)  $(110111.01)_2 = (37.4)_{16}$

88. Which one of the following is true?

(a)  $(1038.50)_{10} = (40E.08)_{16}$

(b)  $(1038.50)_{10} = (40E.80)_{16}$

(c)  $(1038.50)_{10} = (40F.08)_{16}$

(d)  $(1038.50)_{10} = (40F.80)_{16}$



89. Which one of the following ASCII codes is false?

(a) A = 1000001

(b) a = 1100001

(c) O = 1001111

(d) @ = 1100000

90. The program that converts assembly language statements into machine language statements is a/an

(a) compiler

(b) assembler

(c) translator

(d) None of the above

91. Which of the following is a binary representation of machine instructions?

(a) High-level language

(b) Assembly language

(c) Machine language

(d) Both (b) and (c)

92. Which of the following is not considered as a classic component of a computer?

(a) Processor

(b) Memory

(c) Program

(d) I/O

93. The total time required by a computer to complete a task is called
- (a) execution time
  - (b) processing time
  - (c) response time
  - (d) All of the above
94. The number of tasks completed by a processor per unit time is called
- (a) task set
  - (b) throughput
  - (c) Both (a) and (b)
  - (d) None of the above
95. If the clock rate of a computer is 2 GHz, it produces
- (a)  $2 \times 10^{12}$  clock cycles/second
  - (b)  $2 \times 10^9$  clock cycles/second
  - (c)  $2 \times 10^{15}$  clock cycles/second
  - (d)  $2 \times 10^6$  clock cycles/second
96. One terabyte is equal to
- (a)  $2^{12}$  bytes
  - (b)  $10^{12}$  bytes
  - (c)  $2^{52}$  bits
  - (d) None of the above

97. A command that a computer understands and obeys is called a/an
- (a) program
  - (b) instruction
  - (c) thread
  - (d) None of the above
98. Suppose there are  $N$  stages in a pipelined datapath. The maximum performance improvements possible is
- (a)  $2N - 1$
  - (b)  $N - 1$
  - (c)  $2N$
  - (d)  $N$
99. Which of the following is false for a sequential logic circuit?
- (a) It contains a combinational logic circuit within it
  - (b) It contains a storage element within it
  - (c) It must have a clock input for its functioning
  - (d) Both (a) and (c)
100. Stack pointer represents
- (a) address of the latest stack access
  - (b) address of the earliest stack access
  - (c) address of the bottom location of the stack
  - (d) None of the above

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SPACE FOR ROUGH WORK