

ENTRANCE EXAMINATION – (2023 – 24)**SET C**

ROLL NO

M 5 2 1 7 1 2 3

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**SSF JAMIA MILLIA ISLAMIA
NEW DELHI**

Signature of Invigilator

Time: 1 HOUR 30 MINUTES

Total Marks: 100

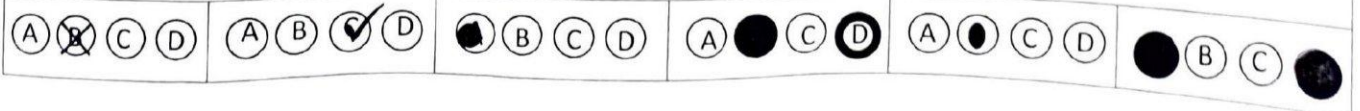
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- This Question Booklet contains the cover page and a total of 100 Multiple Choice Questions of 1 mark each
- Space for rough work has been provided at the beginning and end. Available space on each page may also be used for rough work.
- There is negative marking in Multiple Choice Questions. For each wrong answer, 0.25 marks will be deducted.
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- There are four options to each question marked A, B, C and D. Select one of the most appropriate options and fill up the corresponding oval/circle in the OMR Response Sheet provided to you. The correct procedure for filling up the OMR Response Sheet is mentioned below.

CORRECT METHOD

(A)	●	(C)	(D)
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WRONG METHOD



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- Q1. What is the maximum efficiency of pure ALOHA at $G = 0.5$?
- a. 18.44%
 - b. 50%
 - c. 72.44%
 - d. 99.5%
- Q2. Consider a source computer (S) transmitting a file of size 10^6 bits to a destination computer (D) over a network of two routers (R1 and R2) and three links (L1, L2 and L3). L1 connects S to R1; L2 connects R1 to R2; and L3 connects R2 to D. Let each link be of length 100km. Assume signals travel over each link at a speed of 10^8 meters per second. Assume that the link bandwidth on each link is 1Mbps. Let the file be broken down into 1000 packets each of size 1000 bits. Find the total sum of transmission and propagation delays in transmitting the file from S to D?
- a. 1005 ms
 - b. 1011 ms
 - c. 2005 ms
 - d. 2010 ms
- Q3. What is the maximum size of data that the application layer can pass on to the TCP layer below:
- a. 1500 Bytes
 - b. 2^8 Bytes
 - c. 2^{16} Bytes
 - d. Any Size
- Q4. Consider two computers C1 and C2 which are configured as follows. C1 has IP address 203.197.2.53 and Netmask 255.255.128.0 while C2 has IP address 203.197.75.201 and Netmask 255.255.192.0. Now identify the TRUE statement from the followings
- a. C1 and C2 both assume they are on the same network
 - b. C1 assumes C2 is on same network, but C2 assumes C1 is on a different network
 - c. C2 assumes C1 is on same network, but C1 assumes C2 is on a different network
 - d. C1 and C2 both assume they are on different networks.
- Q5. The maximum length (in bytes) of an IPv4 datagram is
- a. 32
 - b. 1024
 - c. 65535
 - d. 512

Q6. In specific, if the systems use separate protocols, which one of the following devices is used to link two systems?

- a. Repeater
- b. Gateway
- c. Bridge
- ✓d. Hub

Q7. Which of the following algorithms is not used in asymmetric-key cryptography?

- a. RSA algorithm
- b. Diffie-Hellman algorithm
- c. Electronic code book algorithm
- d. Elliptic Curve Cryptography

Q8. Which of the followings are the controlled access protocols

- a. ALOHA, CSMA, CSMA/CA, CSMA/CD
- b. Reservation, polling, token passing
- c. FDMA, TDMA, CDMA
- ✓d. All of the above

Q9. Which normalization form is based on the transitive dependency

- a. 1NF
- b. 2NF
- c. 3NF
- ✓d. BCNF

Q10. Select the correct definition of a 'Relation' from the followings

- a. Subset of Cartesian product of list of Domains
- b. Subset of Cartesian product of list of Tuples
- ✓c. Subset of Cartesian product of list of Attributes
- d. Subset of Cartesian product of list of keys

Q11. Which of the following can replace the below query?

```
SELECT name, course_id
FROM instructor, teaches
WHERE instructor_ID= teaches_ID;
```

- a. Select name, course_id from instructor natural join teaches;
- ✓b. Select name, course_id from teaches, instructor where instructor_id = course_id;
- c. Select name, course_id from instructor;
- d. Select course_id from instructor join teaches;

Q12. Which of the following set should be associated with weak entity set for weak entity to be meaningful?

- a. Owner set
- ✓b. Neighbour set
- c. Strong entity set
- d. Identifying set

Q13. The top level of the hierarchy of a Database consists of _____ each of which can contain

- a. Schemas, Catalogs
- b. Schemas, Environment
- c. Environment, Schemas
- d. Catalogs, Schemas

Q14. Consider the following Query

```
SELECT dept_name, ID, avg (salary)
FROM instructor
GROUP BY dept_name;
```

Now, identify the incorrect statement from the following

- a. Dept_id should not be used in group by clause
- b. Group by clause is not valid in this query
- c. Avg(salary) should not be selected
- d. None of the these

Q15. An index is clustered, if

- a. It is on a set of fields that form a candidate key.
- b. It is on a set of fields that include the primary key.
- c. The data records of the file are organized in the same order as the data entries of the index.
- d. The data records of the file are organized not in the same order as the data entries of the index.

Q16. Relation R has eight attributes ABCDEFGH. Fields of R contain only atomic values.

$F = \{CH \rightarrow G, A \rightarrow BC, B \rightarrow CFH, E \rightarrow A, F \rightarrow EG\}$ is a set of functional dependencies (FDs) so that F^+ is exactly the set of FDs that hold for R.

Now identify how many candidate keys does the relation R have?

- a. 3
- b. 4
- c. 5
- d. 6

2013

Q17. Suppose the following functional dependencies hold on a relation U with attributes P, Q, R, S, and T:

$P \rightarrow QR$
 $RS \rightarrow TS$

Which of the following functional dependencies cannot be inferred from the above functional dependencies?

- a. $PS \rightarrow T$
- b. $R \rightarrow T$
- c. $P \rightarrow R$
- d. $PS \rightarrow Q$

2021

Q18. Consider the Database table by name Loan_Records is given below.

<u>Borrower</u>	<u>Bank_Manager</u>	<u>Loan_Amount</u>
Ahmad	Sunder	10000.00
Aman	Gopal	5000.00
David	Sunder	7000.00

Now evaluate the output of the following SQL query?

```
SELECT Count(*)
FROM ( ( SELECT Borrower, Bank_Manager
        FROM Loan_Records) AS S
      NATURAL JOIN (SELECT Bank_Manager, Loan_Amount
                  FROM Loan_Records) AS T);
```

2011

- a. 3
- b. 5
- c. 6
- d. 9

Q19. In functional dependency, the Armstrong inference rules refers to

- a. Reflexivity, Augmentation and Decomposition
- b. Augmentation, Transitivity, Reflexivity and Decomposition
- c. Reflexivity, Transitivity and Decomposition
- d. Transitivity, Augmentation and Reflexivity

I SW

Q20. BCNF is not used for cases where a relation has

- a. Two (or more) candidate keys
- b. Two candidate keys and composite
- c. The candidate key overlap
- d. Two mutually exclusive foreign keys

I SW

Q21. Consider the set $L = \{ab, aa, baa\}$,

Now identify that which of the following string is NOT in L^* ?

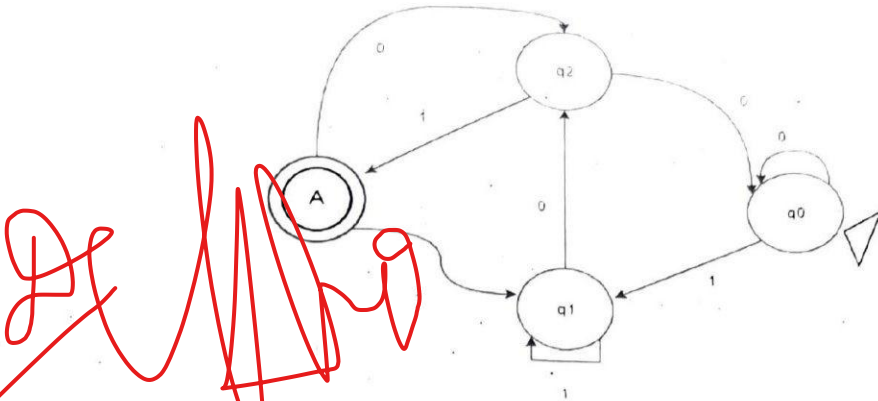
- a. baaaaabaaaa
- b. abaabaaabaa
- c. aaaabaaaa
- d. baaaaabaa

I SW

Q22. A Language for which no DFA exist is

- a. Regular Language
- b. Non-Regular Language
- c. May be Regular
- d. Cannot be said

Q23. What does the following DFA accepts



- a. x is a string such that it ends with '01'
- b. x is a string such that it starts with '01'
- c. x is a string such that it has odd 1's and even 0's
- d. x is a strings such that it has starting and ending character as 1

Q24. How many languages are over the alphabet R?

- a. countably infinite
- b. countably finite
- c. uncountable finite
- d. uncountable infinite

Q25. For a minimal DFA accepting binary numbers whose decimal equivalent is divisible by 4, will have the following no of states

- a. 2
- b. 4
- c. 6
- d. 8

0 1 2 3

Q26. The maximum number of transitions which can be performed over a state in a DFA whose $\Sigma = \{a, b, c\}$ is

- a. 5
- b. 4
- c. 3
- d. 1

In a Deterministic Finite Automaton (DFA), each state can have only one transition for each input symbol in the alphabet. Therefore, the maximum number of transitions that can be performed over a state in a DFA is equal to the number of input symbols in the alphabet. In your case, the alphabet consists of {a, b, c}, so the maximum number of transitions from any state would be 3 (since there are three input symbols in the alphabet) 1. This limitation ensures that DFAs remain deterministic and have a clear transition behavior for each input symbol.

Q27. The sum of minimum and maximum number of final states for a DFA n states is equal to:

- a. n
- b. 2n
- c. 2n - 1
- d. n + 1

Minimum Number of Final States:
The minimum number of final states in a DFA is zero or one.
If the language recognized by the DFA is empty (i.e., it accepts no strings), then there are no final states. Otherwise, there must be at least one final state to accept the strings in the language.
Maximum Number of Final States:
The maximum number of final states in a DFA is equal to the total number of states (n). Each state can be designated as a final state, even if it is not necessary for recognizing the language.
Sum of Minimum and Maximum Number of Final States:
The sum of the minimum and maximum number of final states is given by: [\text{Sum} = \text{Minimum} + \text{Maximum} = 1 + n = n + 1]

Q28. In non-deterministic PDA, there are more than one out going edges from which of the following states?

- a. READ or POP
- b. START or READ
- c. POP or REJECT

In a non-deterministic PDA (NPDA), certain states can have more than one outgoing edge for the same input symbol. Let's analyze the given options:
READ or POP: This option does not specify a particular state, so we cannot determine if it has multiple outgoing edges.
START or READ: The START state is typically the initial state of a PDA, and it usually has only one outgoing edge for each input symbol. However, the READ state could potentially have multiple outgoing edges.
POP or REJECT: The REJECT state is typically a non-accepting state, and it usually has only one outgoing edge for each input symbol. The POP state could potentially have multiple outgoing edges.
Based on the common conventions, the state that is likely to have more than one outgoing edge is the READ state.

Q29. Which of the following strings is not generated by the following grammar?

$$S \rightarrow SaSbS \mid \epsilon$$

- a. ababab
- b. abaabbab
- c. aababb
- d. aaabbbab

Q30. Which of the following regular expression identity is true??

- a. $(RS)^*R = R(SR)^*$
- b. $(R^* + S^*)^* = (RS)^*$
- c. $(R + S)^* = R^* + S^*$
- d. $R^*S^* = R^* + S^*$

Q31. The following context free grammar (CFG)

$$\begin{aligned} S &\rightarrow aB \mid bA \\ A &\rightarrow b \mid aS \mid bAA \\ B &\rightarrow b \mid bS \mid aBB \end{aligned}$$

Generates strings of terminals that have

- a. Odd number of a's and odd number b's
- b. Even number of a's and even number of b's
- c. Equal number of a's and b's
- d. Odd number of a's and even number of a's

Q32. For two regular languages $L_1 = (0 + 1)^* 0$ and $L_2 = 1(0 + 1)^*$

The intersection of L_1 and L_2 is given by

- a. $(0 + 1)^* 01$
- b. $01(0 + 1)^*$
- c. $0(0 + 1)^* 1$
- d. $1(0 + 1)^* 0$

Q33. Consider the followings statements with respect to an LL(0) Parser

- i. Each LL(0) parser will have its LL(1) counterpart
- ii. Each LL(1) parser will have its LL(0) counterpart
- iii. All columns of each row in the LL(0) table have the entry of the same production
- iv. No element from the tape is read to take a decision about the next step

Select the TRUE Statement(s) from the above

- a. Only i
- b. Both ii & iii
- c. Both i & iv
- d. i, iii & iv

Q34. Which Statement(s) is/are FALSE with regards to FIRST and FOLLOW evaluation

- i. Epsilon can be a member of FOLLOW set
 - ii. The FIRST of a Variable can be an empty set
 - iii. The FIRST of the Start Symbol will have \$ (end marker of the sentence)
 - iv. The production $A \rightarrow BCD$ can be used to evaluate the follow of D
- a. Only ii
 - b. Both i & iii
 - c. i, ii, & iii
 - d. i, iii & iv

Q35. Which of the following is a Valid Three Address Code statement?

- a. $t1 = x + y[1]$
- b. $\text{if } x > y \ \&\& \ y < z \ \text{Goto Label1}$
- c. Goto Label2
- d. $\text{Call}(\text{Func1}, \text{arg1}, \text{arg2}, \text{arg3})$

Q36. Which of the following data structure has minimum access time in case of symbol table implementation in a Compiler?

- a. Self Organising List
- b. Hash Table
- c. Search Tree
- d. Linear Linked List

Q37. Assume that the SLR parser for a grammar G has n_1 states and the LALR parser for G has n_2 states.

- a. n_1 is necessarily less than n_2
- b. n_1 is necessarily equal to n_2
- c. n_1 is necessarily greater than n_2
- d. none of the mentioned

Q38. Match the following.

- | | |
|------------------------|----------------------|
| P. Regular expression | 1. Syntax analysis |
| Q. Pushdown automata | 2. Code generation |
| R. Dataflow analysis | 3. Lexical analysis |
| S. Register allocation | 4. Code optimization |

- a. P-4, Q-1, R-2, S-3
- b. P-3, Q-4, R-1, S-2
- c. P-2, Q-1, R-4, S-3
- d. P-3, Q-1, R-4, S-2

Q39. The Context Free grammar $A \rightarrow AA \mid (A) \mid \epsilon$ is not suitable for predictive-parsing because the grammar is

- a. Ambiguous
- b. Left recursive

- c. Right recursive
- d. Not Left Factored

Q40. Consider the following Context Free grammar.

$$E \rightarrow E + n \mid E \times n \mid n$$

For a sentence $n + n \times n$, the handles in the right-sentential form of the reduction in exact order are

- a. $n, E + n$ and $E + n \times n$
- b. $n, E + n$ and $E + n \times n$
- c. $n, n + n$ and $n + n \times n$
- d. $n, E + n$ and $E \times n$

Q41. In a bottom-up evaluation of a syntax directed definition its inherited attributes can do which of the following?

- a. Always evaluated
- b. Can be evaluated if the definition is L attributed
- c. Can be evaluated if the definition has synthesized attributes
- d. Never be evaluated

Q42. Some code optimizations in compilers are carried out on the intermediate code because

- a. They enhance the portability of the compiler to other target processors
- b. Program analysis is name accurate on intermediate code than on machine code
- c. The information from data flow analysis cannot otherwise be used for optimization
- d. The information from the front end cannot otherwise be used for optimization

Q43. An LALR(1) parser for a grammar can have shift-reduce (S-R) conflicts if and only if

- a. The SLR(1) parser for G has S-R conflicts
- b. The LR(0) parser for G has S-R conflicts
- c. The LALR(1) parser for G has reduce-reduce conflicts
- d. The LR(1) parser for G has S-R conflicts

Q44. Which of the following sets of component(s) is/are sufficient to implement any arbitrary Boolean function?

- a. XOR gates, NOT gates
- b. AND gates
- c. 2 to 1 multiplexers
- d. Three-input gates that output $(A.B) + C$ for the inputs A, B and C .

Q45. Which one of the following is NOT a valid identity?

- a. $x \oplus y = (xy + x'y)'$
- b. $x \oplus y = x + y$, if $xy = 0$
- c. $(x \oplus y) \oplus z = x \oplus (y \oplus z)$
- d. $(x + y) \oplus z = x \oplus (y + z)$

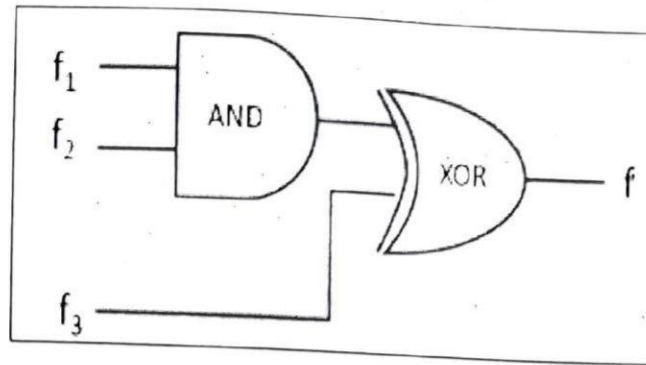
Q46. Consider three 4-variable functions f_1, f_2 and f_3 , which are expressed in sum-of-minterms as

$$f_1 = \Sigma(0, 2, 5, 8, 14)$$

$$f_2 = \Sigma(2, 3, 6, 8, 14, 15)$$

$$f_3 = \Sigma(2, 7, 11, 14)$$

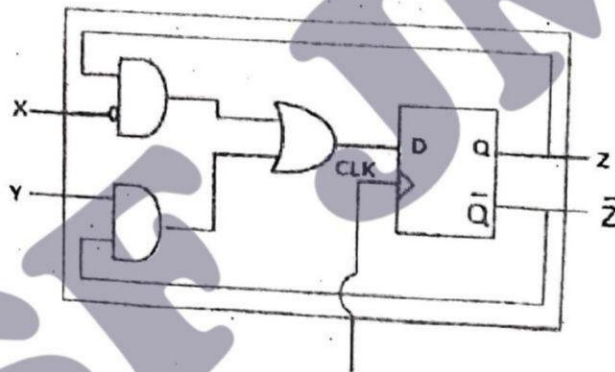
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For the following circuit with one AND gate and one XOR gate, the output function f can be expressed as:

- a. $\Sigma(7, 8, 11)$
- b. $\Sigma(2, 14)$
- c. $\Sigma(0, 2, 3, 5, 6, 7, 8, 11, 14, 15)$
- d. $\Sigma(2, 7, 8, 11, 14)$

Q47. A sequential circuit using D flip-flop and logic gates is shown in Figure, where X and Y are the inputs and Z is the output.



The circuit is

- a. S-R Flip-flop with inputs $X=R$ and $Y=S$
- b. S-R Flip-flop with inputs $X=S$ and $Y=R$
- c. J-K Flip-flop with inputs $X=J$ and $Y=K$
- d. J-K Flip-flop with inputs $X=K$ and $Y=J$

Q48. The size of the data count register of a DMA controller is 16 bits. The processor needs to transfer a file of 29,154 kilobytes from disk to main memory. The memory is byte addressable. The minimum number of times the DMA controller needs to get the control of the system bus from the processor to transfer the file from the disk to main memory is

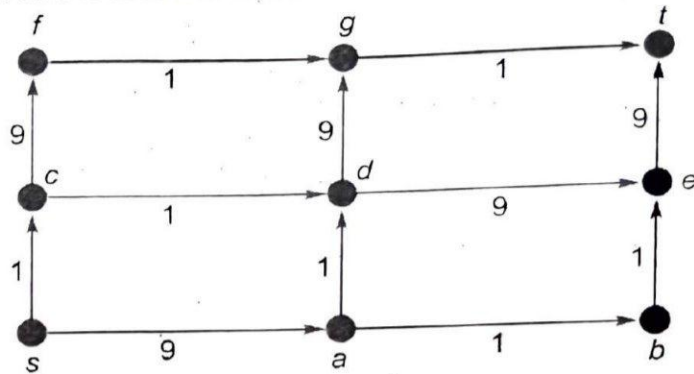
- a. 3644
- b. 3645
- c. 456
- d. 1823

Q49. If a node has K children in B tree, then the node contains exactly _____ keys.

- a. K^2
- b. \sqrt{K}

- c. $K+1$
- d. $K-1$

Q50. In a directed acyclic graph with source vertex s , the quality score of a directed path is defined to be the product of the weights of the edges on the path. Further, for a vertex v other than s , the quality score of v is defined to be the maximum among the quality scores of all the paths from s to v . The quality score of s is assumed to be 1.



The sum of the quality scores of all vertices on the graph shown above is _____

- a. 929
- b. 729
- c. 81
- d. 1023

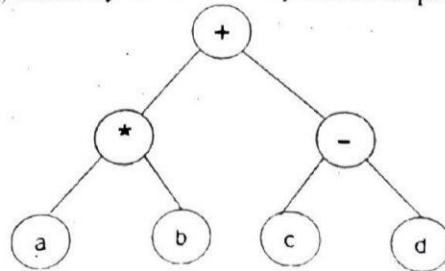
Q51. When in order traversing a tree resulted in EACKFHDBT; Its PRE-order traversal would be:

- a. FAEKCDBHG
- b. FAEKCDHGB
- c. EAFKHDCGB
- d. FAEKDCHBG

Q52. Circular Queue is also known as:

- a. Ring Buffer
- b. Oval Link
- c. Two Way Queue
- d. Curved Queue

Q53. From the given Expression tree, identify the correct postfix expression from the list of options



- a. $ab*cd* +$
- b. $ab*cd - +$
- c. $abcd -*+$

Q54. The extra key inserted at the end of the array is called a:

- a. End key.
- b. Sentinel.
- c. Stop key.
- d. Transposition.

Q55. An algorithm is made up of two independent time complexities $f(n)$ and $g(n)$. Then the complexities of the algorithm is in the order of:

- a. $f(n) \times g(n)$
- b. $\text{Min}(f(n), g(n))$
- c. $\text{Max}(f(n), g(n))$
- d. $f(n) + g(n)$

Q56. Which of the following algorithm solves the all-pair shortest path problem?

- a. Dijkstra's algorithm
- b. Floyd's algorithm
- c. Prim's algorithm
- d. Warshall's algorithm

Q57. Which allows deletion at only one end of the list but allows insertion at both ends of the list?

- a. Deque
- b. Circular queue
- c. Output restricted deque
- d. Input restricted deque

Q58. To implement the Sparse matrix dynamically, the following data structure is used:

- a. Trees
- b. Graphs
- c. Priority Queues
- d. Linked List

Q59. The minimal number of moves required to solve a Tower of Hanoi puzzle, where n is the number of disks is

- a. n
- b. n^2
- c. $2n$
- d. $2n-1$

Q60. Consider the following Operations on a stack :

- push() - It is used to push an element into the stack
- pop() - It is used to pop the top element of the stack

top() - It returns the top element of the stack

Now, evaluate the output after performing the following sequence of these operations to a stack which was initially empty?

push(11) → push(12) → pop() → push(13) → pop() → pop() → top()

- a. 11
- ✓ b. 12
- c. 13
- d. Stack Underflow

Q61. If the address of A[1][1] and A[2][1] are 2100 and 2110 respectively and each element occupies 2 bytes then the array has been stored in order

- a. row major
- b. matix major
- c. column major
- d. none of these

Q62. In the Deque implementation using singly linked list, what would be the time complexity of deleting an element from the rear end

- a. $O(n^2)$
- b. $O(1)$
- c. $O(n \log n)$
- d. $O(n)$

In summary, the time complexity for deleting an element from the rear end of a deque is $O(n)$ due to the need to move elements individually within the linked list structure¹.

Q63. Find Output for the following code

```
#include<stdio.h>
main() {
    int a = 10;
    if((fork ( ) == 0))
        a++;
    printf ("%d\t", a);
}
```

- a. 10 11
- b. 10
- c. 11
- d. 11 11

Q64. Find Output for the following code

```
#include <stdio.h>
int temp=20;

main() {
    printf("%d ",temp);
    func( );
    printf("%d ",temp);
}
```



```

}

func() {
    static int temp=10;
    printf("%d ",temp);
}

```

- a. 10 10 20
- b. 10 20 10
- c. 20 10 20
- d. 20 20 10

Q65. Find Output for the following code

```

#include <stdio.h>
int main ()
{
    int a, b;
    a = b = 4;
    b = a++;
    printf ("%d %d %d %d", a++, --b, ++a, b--);
}

```

- a. 6 3 6 4
- b. 6 2 7 4
- c. 5 4 6 3
- d. Syntax Error

Q66. Find Output for the following code

```

#include <stdio.h>
int main ()
{
    static int num = 8;
    printf ("%d ", num = num - 2);
    if (num != 0)
        main ();
}

```

- a. 6 4 2 0
- b. 8 6 4 2
- c. Error as static value cannot be changed
- d. Error as main() cannot be called

Q67. If same message is passed to objects of several different classes and all of those can respond in a different way, what is this feature called?

- a. Inheritance
- b. Overloading
- c. Polymorphism
- d. Overriding

Q68. Which among the following is true?

- a. The private members can't be accessed by public members of the class
- b. The private members can be accessed by public members of the class
- c. The private members can be accessed only by the private members of the class
- d. The private members can't be accessed by the protected members of the class

Q69. In access control in a protected derivation, visibility modes will change as follows

- a. Private, public and protected become protected
- b. Only public becomes protected
- c. Public and protected become protected
- d. Only private becomes protected

Q70. The Master theorem

- a. can be used if the sub problems are of equal size
- b. cannot be used for divide and conquer algorithms
- c. assumes the sub problems are unequal sizes
- d. cannot be used for asymptotic complexity analysis

Q71. What are the worst case and average case complexities of a binary search tree?

- a. $O(n)$, $O(n)$
- b. $O(\log n)$, $O(\log n)$
- c. $O(\log n)$, $O(n)$
- d. $O(n)$, $O(\log n)$

Q72. Match List I with List II and choose the correct answer from the options given below

List I (Graph Algorithm)		List II (Time Complexity)	
(p)	Dijkstra's algorithm	(i)	$O(E \lg E)$
(q)	Kruskal's algorithm	(ii)	$\Theta(V^3)$
(r)	Floyd-Warshall algorithm	(iii)	$O(V^2)$
(s)	Topological sorting	(iv)	$\Theta(V+E)$

- a. (p)-(i), (q)-(iii), (r)-(ii), (s)-(iv)
- b. (p)-(i), (q)-(iii), (r)-(iv), (s)-(ii)
- c. (p)-(iii), (q)-(i), (r)-(ii), (s)-(iv)
- d. (p)-(iii), (q)-(i), (r)-(iv), (s)-(ii)

Q73. What shall be the output of the following Code:

```
#include <stdio.h>
int main(){
    fork();
    fork();
    printf("code ");
}
```

- a. code code code code

- b. code code code
- c. code code
- d. code

Q74. The first-fit, and the worst-fit Allocation techniques are associated with:

- a. Linked allocation of memory
- b. Indexed allocation of memory
- c. Contiguous allocation of memory
- d. All of the above

Q75. Cascading termination refers to the termination of all child processes if the parent process terminates:

- a. Both Normally or abnormally
- b. Only Abnormally
- c. Only Normally
- d. None of the mentioned

Q76. Consider the followings statements with respect to Real time Operating systems:

- i. process scheduling can be done only once
- ii. all processes have the same priority
- iii. kernel is not required
- iv. a task must be serviced by its deadline period

Which of the statements mentioned above are correct?

- a. Only i
- b. Only ii
- c. Only iv
- d. Both ii & iv

Q77. Consider the following Code:

```
main()
{
    if(fork(>0)
        sleep(100);
}
```

This code shall generate:

- a. Infinite Processes
- b. Zombie Process
- c. Orphan Process
- d. None of These

Q78. Which of the following commands in UNIX is used to send a signal?:

- a. Kill
- b. Send
- c. Sigsend

d. Sigproc

- Q79.** An operating system contains 3 user processes each requiring 2 units of resource R. The minimum number of units of R such that no deadlock will ever occur is:
- a. 6
 - b. 5
 - c. 4
 - d. 3
- Q80.** At a particular time of computation, the value of a counting semaphore is 7. Then 20 P operations and 'x' V operations were completed on this semaphore. If the final value of the semaphore is 5. x will be:
- a. 22
 - b. 18
 - c. 14
 - d. 10
- Q81.** A machine has 64 bit virtual address and 48 bit physical address. Pages are 16K. How many entries are needed for a conventional page table:
- a. 2^{50}
 - b. 2^{34}
 - c. 2^{14}
 - d. 2^{48}
- Q82.** The page replacement policy that sometimes leads to more page faults when the size of the memory is increased is
- a. FIFO
 - b. LRU
 - c. Optimal
 - d. No such Policies Exist
- Q83.** Determine the number of page faults when references to pages in the order - 1, 2, 4, 5, 2, 1, 2, 4. Assume that the main memory can accommodate 3 pages and the main memory already has the pages 1 and 2, with page 1 having been brought earlier than page 2, (Assume LRU algorithm is used)
- a. 5
 - b. 3
 - c. 2
 - d. 4
- Q84.** A CPU yields 32-bit virtual addresses, and the page size is 4 kilobytes. Here, the processor consists of a TLB (translation lookaside buffer). It is a 4-way set associative, and it can hold a total of 128-page table entries. The TLB tag's minimum size is:

- a. 22 Bits
- b. 15 Bits
- c. 12 Bits
- d. 08 Bits

Q85. Out of all the following, which one isn't a form of memory

- a. translation lookaside buffer
- b. instruction cache
- c. instruction register
- d. instruction opcode

Q86. Out of these statements, which ones are/is true?

- i. The shortest remaining time in the first scheduling may lead to starvation
 - ii. Preemptive scheduling will not lead to starvation
 - iii. In terms of responsive time, Round robin is comparatively much better than FCFS:
- a. Only i
 - b. Only iii
 - c. Both ii & iii
 - d. Both i & iii

Q87. With respect to Computer Memory, which of the following registers is also known as Memory Buffer Register:

- a. Memory Data Registers
- b. Memory Address Registers
- c. Main Data Registers
- d. Prime Memory Registers

Q88. Which of the following architectures is power efficient?

- a. IANA
- b. ISA
- c. RISC
- d. CISC

Q89. The VLIW architecture follows which of the following approaches to achieve parallelism

- a. SISD
- b. MIMD
- c. MISD
- d. SIMD

Q90. The small extremely fast, RAM's are known as:

- a. Heaps
- b. Accumulators
- c. Stacks
- d. Queues

- Q91. When generating physical addresses from a logical address the offset is stored in
- Translation look-aside buffer
 - Relocation register
 - Page table
 - Shift register
- Q92. $(2FA0D)_{16}$ is equivalent to :
- $(570\ 257)_8$
 - $(192\ 686)_{10}$
 - 0010 1111 0000 1010 1101
 - Both a and b are correct
- Q93. In a memory-mapped I/O system, which of the following will not be there?
- LDA
 - IN
 - ADD
 - OUT
- Q94. The fetched instruction is stored in the CPU register known as:
- MARC Memory Instruction Register
 - MDRC memory Data Register
 - PC Program counter
 - IRC Instruction register
- Q95. When 2 or more bits in a data unit has been changed during the transmission, the error is called
- Random error
 - Burst error
 - Parity error
 - Double error
- Q96. Which of the following is not correct in relation to multi-destination routing?
- is same as broadcast routing
 - contains the list of all destinations
 - there are multiple receivers
 - data is not sent by packets
- Q97. An endpoint of an inter-process communication flow across a computer network is called
- socket
 - pipe
 - port
 - Sentinel
- Q98. The ASCII encoding of binary data is called

- a. base 8 encoding
- b. base 16 encoding
- c. base 32 encoding
- ✓d. base 64 encoding

Q99. In tunnel mode, the IPSec protects the:

- ✓a. Only IP header
- b. Only IP payload
- c. Only IP trailer
- d. Entire IP packet

Q100. Port no 143 refers to which of the following protocols:

- a. SMTP
- ✓b. FTP
- c. IMAP
- d. POP

SSSF JMI