

Toc H Institute of Science & Technology, Arakkunnam
Department of Computer Science and Engineering
CST 308-Comprehensive course work

Question Bank

Sub: 1. Discrete Mathematical Structures		
Rl. No	Question with four Options	Right Answer
	<p>Sample: The program which interacts with the inner part of the kernel is called a) protocols b) Shell c) Device driver d) Compiler</p>	<p>Sample: b) Shell</p>
1	<p>Which of the following is not a combining preposition? a) Conjunction b) Disjunction c) Negation d) Bijunction</p>	d) Bijunction
2	<p>A set is countable if it consists of ? A) Infinite set B) Integers set C) Finite or denumerable set</p>	C) finite or denumerable set
3	<p>let X and Y be the sets.Then the set (X-Y) union (Y-X) union (X intersection Y) is equal to A)X union Y B)X^c union Y^c C)X intersection Y D)X^c intersection Y^c</p>	A)X union Y
4	<p>Pushing an element into stack already having 5 elements and stack size of 5,then stack becomes a) Overflow b) Crash c) underflow d) user flow</p>	Overflow
5	<p>If X and Y be the sets. Then the set (X - Y) union (Y- X) union (X intersection Y) is equal to?</p>	A) X union Y

	A) $X \cup Y$ B) $X^c \cup Y^c$ C) $X \cap Y$ D) $X^c \cap Y^c$	
6	The truth value of '4+3=7 or 5 is not prime'. a) False b) True	B) True Explanation: Compound statement with 'or' is true when either of the statement is true. Here the first part of the statement is true, hence the whole is true.
7	The proposition $\sim p \vee q$ is equivalent to a. $p \rightarrow q$ b. $q \rightarrow p$ c. $p \leftrightarrow q$ d. $p \vee q$	a. $p \rightarrow q$
8	Which of the propositions are equivalent to $p \Rightarrow q$ (1) $\sim q \Rightarrow \sim p$ (2) $\sim p \vee q$ (3) $\sim(p \wedge \sim q)$ a) All b) Only (1), and (2) c) Only (2), and (3) d) Only (1), and (3)	a) All
9	The number of edges in a complete graph with n vertices is equal to a) $n(n-1)$. b) $n(n-1)/2$. c) n^2 . d) $2n-1$	• B) $n(n-1)/2$
10	1. Which of the following statement is a proposition? a) Get me a glass of milkshake b) God bless you! c) What is the time now? d) The only odd prime number is 2	d) The only odd prime number is 2
11		
12	If $f(x) = x+1$ and $g(x)=x+3$ then $f \circ f \circ f \circ f$ is: A) g B) $g+1$ C) g^4	B) $g+1$

	D) None of the above	
13	<p>Suppose that R_1 and R_2 are reflexive relations on a set A. Which of the following statements is correct ?</p> <p>a. $R_1 \cap R_2$ is Reflexive and $R_1 \cup R_2$ is irreflexive b. $R_1 \cap R_2$ is irReflexive and $R_1 \cup R_2$ is reflexive c. Both $R_1 \cap R_2$ and $R_1 \cup R_2$ are reflexive d. Both $R_1 \cap R_2$ and $R_1 \cup R_2$ are irreflexive</p>	c. Both $R_1 \cap R_2$ and $R_1 \cup R_2$ are reflexive
14	<p>The contrapositive of $p \rightarrow q$ is</p> <p>a) $q \rightarrow p$ b) $\sim q \rightarrow \sim p$ c) $\sim p \rightarrow \sim q$ d) None of the above</p>	b) $\sim q \rightarrow \sim p$
15	<p>The structure $(S, +, *)$ is called a Ring if</p> <p>a) $(S, *)$ is a semigroup b) $*$ is distributive over $+$. c) Both d) None of the above</p>	c) Both
16	<p>Let A and B be any two arbitrary events then which one of the following is true ?</p> <p>$P(A \text{ intersection } B) = P(A) \cdot P(B)$ $P(A \text{ union } B) = P(A) + P(B)$ $P(AB) = P(A \text{ intersection } B) \cdot P(B)$ $P(A \text{ union } B) \geq P(A) + P(B)$ Answer = D</p>	
17	<p>Which of the following two sets are equal?</p> <p>a) $A=\{1,2\}$ and $B=\{1\}$ b) $A=\{1,2\}$ and $B=\{1,2,3\}$ c) $A=\{1,2,3\}$ and $B=\{2,1,3\}$ d) $A=\{1,2,4\}$ and $B = \{1,2,3\}$</p>	c) $A=\{1,2,3\}$ and $B=\{2,1,3\}$
18	<p>$\sim A \vee \sim B$ is logically equivalent to?</p> <p>a) $\sim A \rightarrow \sim B$ b) $\sim A \wedge \sim B$ c) $A \rightarrow \sim B$ d) $B \vee A$</p>	c) $A \rightarrow \sim B$

19	<p>Which of the following statement is a proposition?</p> <p>a) Get me a glass of milkshake b) God bless you! c) What is the time now? d) The only odd prime number is 2</p>	d) The only odd prime number is 2
20	<p>Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?</p> <p>a) 24400 b) 21300 c) 210 d) 25200</p>	d) 25200
21	<p>The set O of odd positive integers less than 10 can be expressed by _____</p> <p>a) {1, 2, 3} b) {1, 3, 5, 7, 9} c) {1, 2, 5, 9} d) {1, 5, 7, 9, 11}</p>	B) Odd numbers less than 10 is {1, 3, 5, 7, 9}.
22	<p>A drawer contains 12 red and 12 blue socks, all unmatched. A person takes socks out at random in the dark. How many socks must he take out to be sure that he has at least two blue socks?</p> <p>a) 18 b) 35 c) 28 d) 14</p>	d) 14
23	<p>A function is said to be _____ if and only if $f(a) = f(b)$ implies that $a = b$ for all a and b in the domain of f.</p> <p>a) One-to-many b) One-to-one c) Many-to-many d) Many-to-one</p>	(b) one-to-one
24	<p>Let P: I am in Bangalore; Q: I love cricket; the $Q \rightarrow P$ is?</p> <p>a) If I love cricket then I am in Bangalore b) If I am in Bangalore then I love cricket c) I am not in Bangalore d) I love cricket</p>	<p>a</p> <p>Explanation: Q is hypothesis and P is conclusion. So the compound statement will be if hypothesis then conclusion</p>
25	<p>How many different 1 – 1 functions f are possible from m-element set X to n-element set Y</p>	The total number of one-one functions to set

		X from set Y = n pm where n = n(X) and m = n(Y).
26	Let P: I am in Delhi.; Q: Delhi is clean.; then $q \wedge p$ (q and p) is? a) Delhi is clean and I am in Delhi b) Delhi is not clean or I am in Delhi c) I am in Delhi and Delhi is not clean d) Delhi is clean but I am in Mumbai	A Delhi is clean and i am in delhi
27	Find the number of relations on an n – element set A	If $n(A) = n$, then $n(\text{relations}) = 2^{n^2}$
28	Let R be a symmetric and transitive relation on a set A. Then, a) R is reflexive and hence a partial order b) R is reflexive and hence an equivalence relation c) R is not reflexive and hence not an equivalence relation d) None of the above	d) None of the above
29	Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed? a) 24400 b) 21300 c) 210 d) 25200	d) 25200
30	If x is a set and the set contains the real number between 1 and 2, then the set is _____. a. Empty set b. Finite set c. Infinite set d. None of the mentioned	c) Infinite set Explanation: X is an infinite set as there are infinitely many real numbers between 1 and 2
31	A relation R in {1,2,3,4,5,6} is given by $\{(1,2),(2,3),(3,4),(4,4),(4,5)\}$. This relation is: A)reflexive B)symmetric C)transitive D)not reflexive, not symmetric and not transitive	D) not reflexive, not symmetric and not transitive

32	A poset (L, \leq) in every subset $\{a,b\}$ consisting of 2 elements has least upper bound and greater lower bound. a)Lattices b)sub lattices c) Homomorphism d) boolean algebra.	A) Lattices
33	A relation is said to be partial order relation, if it satisfy ? A) Reflexive B) Symmetric C) Reflexive and transitive D) Reflexive, antisymmetric and Transitive properties	D) Reflexive antisymmetric and Transitive Properties
34	Probability that two randomly selected cards from a set of two red and two black cards are of same color is ? 1 / 2 1 / 3 2 / 3 None of these	
35	Which among the following can be taken as the discrete object? A)People b) Rational numbers c) Integers d) All of the mentioned	d) All of the mentioned
36	The cardinality of the set $A = \{1, 2, 3, 4, 6\}$ is? a) 5 b) 6 c) Integer d) None of the mentioned	a) 5 it is a number of elements in the sets.
37	The binary relation $\{(1,1), (2,1), (2,2), (2,3), (2,4), (3,1), (3,2)\}$ on the set $\{1, 2, 3\}$ is _____ a) reflective, symmetric and transitive b) irreflexive, symmetric and transitive c) neither reflective, nor irreflexive but transitive d) irreflexive and antisymmetric	C
38	If $f(x)=x+1$ and $g(x)=x+3$ then $f \circ f \circ f \circ f(x)$ is 1. $g(x)$ 2. $g(x)+1$ 3. $g(x)^4 + 1$ 4.none	$2.g(x)+1$
39	The set of positive integers is _____ a) Infinite	Infinite

	b) Finite c) Subset d) Empty	
40		
41	<p>Let x and y be finite sets and $f:X \rightarrow Y$ be a function. Which one of the following statements is true?</p> <ul style="list-style-type: none"> a) For any subsets A and B of X, $f(A \cup B) = f(A) + f(B)$ b) For any subsets A and B of X, $f(A \cap B) = f(A) \cap f(B)$ c) For any subsets A and B of X, $f(A \cap B) = \min(f(A) , f(B))$ d) For any subsets S and T of Y, $f^{-1}(A \cap B) = f^{-1}(A) \cap f^{-1}(B)$ 	D
42	<p>Consider the following statements: P: Good mobile phones are not cheap Q: Cheap mobile phones are not good L: P implies Q M: Q implies P N: P is equivalent to Q Which one of the following about L, M, and N is CORRECT? (A) Only L is TRUE. (B) Only M is TRUE. (C) Only N is TRUE. (D) L, M and N are TRUE.</p>	(D) L, M and N are TRUE.
43	<p>If a set contains 3 elements then the number of subsets are?</p> <p>A) 3 B) 6 C) 8 D) 12</p>	C) 8
44	<p>Power set of empty set has exactly _____ subset</p> <p>A) One B) Two C) Zero D) Three</p>	A) One
45	<p>The truth value '9 is prime then 3 is even'</p> <p>A) False B) True</p>	<p>B) True The first part of the statement is false, hence whole is true</p>
46	What are the solutions for critical section problem?	

	a) Bounded waiting b) progress c) mutual exclusion d) all of above	d
47	If x is a set and the set contains an integer which is neither positive nor negative then the set x is ____. a) Set is Empty b) Set is Non-empty c) Set is Finite. d) Set is both Non- empty and Finite.	d
48	Let P: This is a great website, Q: You should not come back here. Then 'This is a great website and you should come back here.' is best represented by? a) $\sim P \vee \sim Q$ b) $P \wedge \sim Q$ c) $P \vee Q$ d) $P \wedge Q$	Answer: b
49		
50	Let N be the set of natural numbers. Consider the following sets. P: Set of Rational numbers (positive and negative) Q: Set of functions from $\{0, 1\}$ to N R: Set of functions from N to $\{0, 1\}$ S: Set of finite subsets of N . Which of the sets above are countable? (A) Q and S only (B) P and S only (C) P and R only (D) P, Q and S only	Answer: D
51	If a relation with a Schema R is decomposed into two relations R_1 and R_2 such that $(R_1 \cup R_2) = R$ then which one of the following is to be satisfied for a lossless joint decomposition (\rightarrow indicates functional dependency) 1. $(R_1 \cap R_2) \rightarrow R_1$ or $R_1 \cap R_2 \rightarrow R_2$ 2. $R_1 \cap R_2 \rightarrow R_1$ 3. $R_1 \cap R_2 \rightarrow R_2$ 4. $R_1 \cap R_2 \rightarrow R_1$ and $R_1 \cap R_2 \rightarrow R_2$	Answer : 1. $(R_1 \cap R_2) \rightarrow R_1$ or $R_1 \cap R_2 \rightarrow R_2$ +
52	A partially ordered set is said to be a lattice if every two elements in the set have a. a unique least upper bound	Answer: both a and b

	<p>b. a unique greatest lower bound c. both a and b d. none of the above</p>	
53	<p>A _____ is an ordered collection of objects</p> <p>(A) Relation (B) Function (C) Set (D) Proposition</p>	(C)Set
54	<p>What is the cardinality of the set of odd positive integers less than 10?</p> <p>a) 10 b) 5 c) 3 d) 20</p>	(B)5
55	<p>Every poset that is a complete semilattice must always be a</p> <p>a) sublattice b) complete lattice c) free lattice d) partial lattice</p>	<p>B) complete lattice Explanation: A poset is called a complete lattice if all its subsets have both a join and a meet. Every complete lattice is a bounded lattice. Every poset that is a complete semilattice must always be a complete lattice.</p>
56	<p>The set of positive integers under the operation of ordinary multiplication is:</p> <p>A.not a monoid B.not a group C.a group D.an Abelian group</p>	D.an Abelian group
57	<p>What is the Cardinality of the Power set of the set {0, 1, 2}?</p> <p>a) 8 b) 6 c) 7 d) 9</p>	8

Sub: 2. Data Structures

Rl. No	Question with four Options Sample: The program which interacts with the inner part of the kernel is called a) protocols b) Shell c) Device driver d) Compiler	Right Answer Sample: b) Shell
1	The total no. of children of a node in a tree is known as a) Height b) Scale c) Degree d) Depth	c) Degree
2	Which data structure is required to convert the infix to prefix notation? A) Stack B) linked list C) binary tree D) queue	A) Stack
3	How can we initialize an array in C language? A)int arr[2]=(10,20) B)int arr(2)=(10,20) C)int arr[2]={10,20} D)int arr(2)={10,20}	C)int arr[2]={10,20}
4	Which of the following is non-linear data structure? [A] Trees [B] Stacks	A

	[C] Strings [D] All of the above	
5	<p>One can convert a binary tree to its mirror image by traversing it in</p> <p>A) Inorder B) Preorder C) Postorder D) None of the above</p>	C) postorder
6	<p>Visiting root node after visiting left and right sub-trees is called</p> <p>A - In-order Traversal B - Pre-order Traversal C - Post-order Traversal</p>	<p>C) post order traversal</p> <p>Explanation: In Post-order traversal method, the root node is visited last, hence the name.</p>
7	<p>Which of the following is the prefix form of $A+B*C$?</p> <p>A. $A+(BC^*)$ B. $+AB^*C$ C. $ABC+^*$ D. $+A^*BC$</p>	D. $+A^*BC$
8	<p>Consider the following loop</p> <pre>for i = 1 to n for j = 1 to i print "HELLO"</pre> <p>The asymptotic time complexity of above loop is</p> <p>a) $O(n^2)$ b) $O(n \log n)$ c) $O(n^3)$ d) $O(n)$</p>	a) $O(n^2)$
9	<p>Quick sort algorithm is an example of</p> <p>a) greedy approach. b) improved binary search. C) dynamic programming d)divide and conquer</p>	D)divide and conquer
10	<p>1. Merge sort uses which of the following technique to implement sorting?</p> <p>a) backtracking b) greedy algorithm c) divide and conquer d) dynamic programming</p>	c) divide and conquer

11	<p>Consider the following C code. Assume that unsigned long int type length is 64 bits.</p> <pre>unsigned long int fun(unsigned long int n) { unsigned long int i, j = 0, sum = 0; for (i = n; i > 1; i = i/2) j++; for (; j > 1; j = j/2) sum++; return(sum); }</pre> <p>The value returned when we call fun with the input 2 40 is (A) 4 (B) 5 (C) 6 (D) 40</p>	(B)
12	<p>Which of the following has a search efficiency of O(1):</p> <p>A)Tree B) Heap C) Hash Table D) Linked List</p>	C) Hash Table
13	<p>Which of the following is non-linear data structure?</p> <p>[A] Trees [B] Stacks [C] Strings [D] All of the above</p>	Option [A]
14	<p>Using division method, in a given hash table of size 157, the key of value 172 be placed at position</p> <p>a) 19 b) 72 c) 15 d) 17</p>	<p>c) 15</p> <p>Using formula $H(k) = k \bmod m$ $H(k) = 172 \bmod 157$ $H(k) = 15$</p>
15	<p>What is the time complexity of a Merge Sort Algorithm?</p> <p>a) $O(n \log n)$ b) $O(n^3)$ c) $O(n)$ d) $O(n^2)$</p>	a) $O(n \log n)$
16	<p>1 - Which one of the below is not divide and conquer approach?</p> <p>A - Insertion Sort</p>	

	<p>B - Merge Sort</p> <p>C - Shell Sort</p> <p>D - Heap Sort</p> <p>Answer : B</p>	
17	<p>_____ is a pile in which items are added at one end and removed from the other.</p> <p>A) List B) Queue C) Stack D) Array</p>	B)Queue
18	<p>A linear collection of data elements where the linear node is given by means of pointer is called?</p> <p>a) Linked list b) Node list c) Primitive list d) Unordered list</p>	a) Linked list
19	<p>Which of the following is not a disadvantage to the usage of array?</p> <p>a) Fixed size b) There are chances of wastage of memory space if elements inserted in an array are lesser than the allocated size c) Insertion based on position d) Accessing elements at specified positions</p>	d) Accessing elements at specified positions
20	<p>The postfix expression for the infix expression $A+B*(C+D)/F+D*E$ is:</p> <p>a) AB+CD++F/D+E* b) ABCD++F/DE*++ c) A*B+CD/F*DE++ d) A**BCD/F*DE++</p>	b) ABCD+*F/DE*++
21	<p>If the size of the stack is 10 and we try to add the 11th element in the stack then the condition is known as _____</p> <p>A)Underflow B)Garbage collection C)Overflow D)None of the above</p>	C

22	<p>Out of the following tree structure which is efficient considering space and time complexities.</p> <p>a)Incomplete binary tree b)Complete binary tree c)Full binary tree</p>	b)Complete binary tree
23	<p>Minimum number of fields in each node of a doubly linked list is _____</p> <p>(A) 2 (B) 3 (C) 4 (D) None of the above</p>	b)3
24	<p>If the array is already sorted, which of these algorithms will exhibit the best performance</p> <p>A - Merge Sort B - Insertion Sort C - Quick Sort D - Heap Sort</p>	<p>B</p> <p>Explanation: Insertion sort, as it should then work in linear way.</p>
25	How can we describe an array in the best possible way?	Container that stores the elements of similar types
26	<p>What is the value of postfix expression $6324+-*$</p> <p>A)Something between - 5 and 15 B)Something between 5 and - 5 C)Something between 5 and 15 D)Something between 15 and 100</p>	<p>D</p> <p>Something between 15 and 100</p>

27	<p>What is the output of the below code?</p> <pre>#include <stdio.h> int main() { int arr[5]={10,20,30,40,50}; printf("%d", arr[5]); return 0; }</pre> <p>a. Garbage value b. 10 c. 50 d. None of the above</p>	<p>The answer is (a) because the indexing in an array starts from 0, so it starts from arr[0] to arr[4]. If we try to access arr[5] then the garbage value will be printed.</p>
28	<p>Which of the following is not the operation that can be performed on queue?</p> <p>a) Insertion b) Deletion c) Retrieval d) Traversal</p>	<p>d) Traversal</p>
29	<p>One can convert a binary tree to its mirror image by traversing it in</p> <p>E) Inorder F) Preorder G) Postorder H) None of the above</p>	<p>C) postorder</p>
30	<p>Which is the type of data structure where each node can have at most two children ?</p> <p>a) Binary Tree b) Graph c) Linked List d) Array</p>	<p>a) Binary Tree</p>
31	<p>Which of the following is not true about comparison based sorting algorithms?</p> <p>A)The minimum possible time complexity of a comparison based sorting algorithm is $O(n\log n)$ for a random input array B)Any comparison based sorting algorithm can be made stable by</p>	<p>D)Heap Sort is not a comparison based sorting algorithm</p>

	using position as a criteria when two elements are compared C)Counting Sort is not a comparison based sorting algortihm D)Heap Sort is not a comparison based sorting algorithm	
32	Which of the following are not a tree terminology a)root b)edge c)parent d)stem	D) stem
33	Which data structure is mainly used for implementing the recursive algorithm? A) Queue B) stack C) binary tree D) Linked list	E) stack
34	Which of the following highly uses the concept of an array? A.Binary Search tree B.Caching C.Spatial locality D.Scheduling of Processes	
35	The time complexity of enqueue operation in Queue is __ a)O(1) b) O(n) c) O(logn) d) O(nlogn)	a)O(1)
36	Which one of the below mentioned is linear data structure – A - Queue B - Stack C - Arrays D - All of the above	D) All of the above
37	Which of the following is false about a doubly linked list? a) We can navigate in both the directions b) It requires more space than a singly linked list c) The insertion and deletion of a node take a bit longer d) Implementing a doubly linked list is easier than singly linked list	D

38	Time required to concatenate two doubly linked list is	$O(n)$ as we cannot find the last element in the time $O(1)$
39	Which of the following is the correct way of declaring an array? int javatpoint[10]; int javatpoint; javatpoint{20}; array javatpoint[10];	int javatpoint[10];
40		
41	What is time complexity of heap sort algorithm? A) $O(1)$ B) $O(n)$ C) $O(\log n)$ D) $O(n \log n)$	D
42	Consider the basic block given below. a=b+c c=a+d d=b+c e= d - b a=e+b The minimum number of nodes and edges present in the DAG representation of the above basic block respectively are (A) 6 and 6 (B) 8 and 10 (C) 9 and 12 (D) 4 and 4	(A) 6 and 6
43	The postfix form of the expression $(A + B)^*(C * D - E)^*F / G$ is? A) AB+ CD*E – FG /* B) AB + CD* E – F **G / C) AB + CD* E – *F *G / D) AB + CDE * – * F *G /	C) AB + CD* E – *F *G /
44	Which of the following algorithm is not stable? A) Bubble sort B) Quick sort C) Merge sort D) Insertion sort	B) Quick sort
45	Which method can find if two vertices x & y have path between them?	C) Both A and B By using both BFS

	<p>A - Depth First Search</p> <p>B - Breadth First Search</p> <p>C - Both A & B</p> <p>D - None A or B</p>	and DFS, a path between two vertices of a connected graph can be determined.
46	What is worst case time complexity of linear search algorithm? B) O(1) B) O(n) C) O(log n) D) O(n^2)	B
47	Which of the following is an example for a postfix expression? a) $a^*b(c+d)$ b) abc^*+de-+ c) $+ab$ d) $a+b-c$	b
48	Which of the following that determines the need for the Circular Queue? a. Avoid wastage of memory b. Access the Queue using priority c. Follows the FIFO principle d. None of the above	A
49		
50	You have an array of n elements. Suppose you implement a quick sort by always choosing the central element of the array as the pivot. Then the tightest upper bound for the worst case performance is (A) $\Theta(n^2)$ (B) $\Theta(n \log n)$ (C) $\Theta(n \log n)$ (D) $\Theta(n^2)$	Answer: A
51	B+ trees are preferred to binary tree in Database because 1.Disk capacity are greater than memory capacities 2.Disk access is much slower than memory access 3.Disk data transfer rates are much less than memory data transfer rate 4.Disks are more reliable than Memory	Answer : 2.Disk access is much slower than memory access
52	Minimum number of queues required for priority queue implementation? A - 5	Answer : D

	B - 4 C - 3 D - 2	
53	In a min heap : (A) Parent nodes have values greater than or equal to their child (B) Parent nodes have values less than or equal to their child (C) both statements are true (D) both statements are false	(B)Parent nodes have values less than or equal to their child
54	Q 1 – In order traversal of binary search tree will produce – A - unsorted list B - reverse of input C - sorted list D - none of the above	(C)Sorted list
55	What is the worst case run-time complexity of binary search algorithm? A - O(n²) B - O(n log n) C - O(n³) D - O(n)	D) O(n)
56	Which of the following uses memoization? A - Greedy approach	C: Dynamic programming approach

	<p>B - Divide and conquer approach</p> <p>C - Dynamic programming approach</p> <p>D - None of the above!</p>	
57	<p>What is the time complexity of pop() operation when the stack is implemented using an array?</p> <p>a) O(1) b) O(n) c) O(logn) d) O(nlogn)</p>	O(1)

Sub: 3. Computer Organization and Architecture		
Ql. No	Question with four Options	Right Answer
	<p>Sample:</p> <p>The program which interacts with the inner part of the kernel is called</p> <p>a) protocols b) Shell c) Device driver d) Compiler</p>	<p>Sample:</p> <p>b) Shell</p>

1	What is not similar between single bus and multiple bus structures? a) Cost b) Performance c) Transfer d) All of the above	d) All of the above
2	The circuit used to store one bit of data is known as? A) Encoder B) Flip flop C) Or gate D) Decoder	b)Flip-Flop
3	In assembly language programming,minimum number of operands required for an instruction is/are: A)Zero B)One C)Two D)Both (B) and (C)	A)Zero
4	<i>The technique where the controller is given complete access to main memory is _____</i> a) Cycle stealing b) Memory stealing c) Memory Con d) Burst mode	d) Burst mode
5	The addressing mode used in an instruction of the form ADD X Y is: A) Absolute B) Index C) Indirect D) None of these	B) index
6	The program written and before being compiled or assembled is called A. Start Program B. Intermediate program C. Source Program D. Natural Program	C) source program Explanation: The program written and before being compiled or assembled is called Source Program.
7	When CPU is executing a Program that is part of the OS,it is said to be in: A.Interrupt mode B.System mode C.Half mode D.Simplex mode	B. System mode

8	<p>The interrupt servicing mechanism in which the requesting device identifies itself to the processor to be serviced is</p> <ul style="list-style-type: none"> a) Polling b) Vectored interrupts c) Interrupt nesting d) Simultaneous requesting 	b) Vectored Interrupts
9	<p>Floating point representation is used to store</p> <ul style="list-style-type: none"> a) boolean values b) whole numbers. c) real integers d) integers 	C) real integers
10	<p>1. The primary function of the BUS is _____</p> <ul style="list-style-type: none"> a) To connect the various devices to the cpu b) To provide a path for communication between the processor and other devices c) To facilitate data transfer between various devices d) All of the mentioned 	a) To connect the various devices to the cpu
11	<p>The following are some events that occur after a device controller issues an interrupt while process L is under execution.</p> <p>(P) The processor pushes the process status of L onto the control stack. (Q) The processor finishes the execution of the current instruction. (R) The processor executes the interrupt service routine. (S) The processor pops the process status of L from the control stack. (T) The processor loads the new PC value based on the interrupt.</p> <p>Which one of the following is the correct order in which the events above occur? (A) QPTRS (B) PTRSQ (C) TRPQS (D) QTPRS</p>	(A)
12	<p>Cache memory acts between:</p> <ul style="list-style-type: none"> A) CPU & RAM B) RAM & ROM C) CPU & HDD D) NONE 	A) CPU & RAM
13	<p>The _____ is the computational center of the CPU.</p> <ul style="list-style-type: none"> A. Registers B. ALU C. Flip-Flop D. Multiplexer 	B) ALU
14	<p>In DMA transfers, the required signals and addresses are given by the</p> <ul style="list-style-type: none"> a) Processor b) Device Drivers c) DMA Controllers d) The program itself 	c) DMA Controllers: acts as a processor for DMA transfers and overlooks the entire process

15	<p>Consider the control function</p> $x`T1 : A \leftarrow B$ <p>Here, transfer occurs when</p> <ul style="list-style-type: none"> a) x=0 and T1=1 b) x=1 and T1=1 c) x=1 and T1=0 d) Both a and c 	a) x=0 and T1 =1
16	<p>1. Which format is used to store data?</p> <ul style="list-style-type: none"> A. BCH B. BCD C. Binary D. Decimal <p>Ans B</p>	Ans B
17	<p>The address mapping is done, when the program is initially loaded is called:</p> <ul style="list-style-type: none"> A) Dynamic Relocation B) Relocation C) Dynamic as well as Static Relocation D) Static Relocation 	D) Static Relocation
18	<p>The key feature of the RAMBUS tech is _____</p> <ul style="list-style-type: none"> a) Greater memory utilisation b) Efficiency c) Speed of transfer d) None of the mentioned 	c) Speed of transfer
19	<p>The technique where the controller is given complete access to main memory is _____</p> <ul style="list-style-type: none"> a) Cycle stealing b) Memory stealing c) Memory Con d) Burst mode 	d) Burst mode
20	<p>_____ bus structure allow two or more transfer at a time</p> <ul style="list-style-type: none"> a) Single bus structure b) Data bus structure c) Address bus structure d) Multiple bus structure 	d) Multiple bus structure

21	A device/circuit that goes through a predefined sequence of states upon application of input pulses is called..... A)register B)flip flop C)transistor D)counter	D)Counter
22	The condition flag Z is set to 1 to indicate _____ a) The operation has resulted in an error b) The operation requires an interrupt call c) The result is zero d) There is no empty register available	c)The result is zero
23	In a program using subroutine call instruction it is necessary to (a)initialize program counter (b)clear accumulator (c)reset micro processor (d)clear instruction register	d)clear instruction register
24	Which of the following is used to choose between incrementing the PC or performing ALU operations? A. Conditional Units B. Multiplexer C. Control Codes D. Memory bus	B Explanation: The multiplexer circuit is used to choose between the two as it can give different results based on the input.
25	A Stack-organised Computer uses instruction of (A) Indirect addressing (B) Two-addressing (C) Zero addressing (D) Index addressing	(C)
26	The addressing mode where you directly specify the operand value is A) Immediate B)Direct C)Definite D)Relative	A Immediate
27	. _____ register keeps tracks of the instructions stored in program stored in memory. (A) AR (Address Register) (B) XR (Index Register) (C) PC (Program Counter) (D) AC (Accumulator)	(C)
28	The average time required to reach a storage location in memory and obtain its contents is called a) Seek time b) Turnaround time	c) Access time

	c) Access time d) Transfer time	
29	The program written and before being compiled or assembled is called A. Start Program B. Intermediate program C. Source Program D. Natural Program	C) source program Explanation: The program written and before being compiled or assembled is called Source Program.
30	What characteristics of RAM memory makes it not suitable for permanent storage? a) Too slow b) Unreliable c) It is volatile d) Too bulky	c) it is volatile
31	Micro program is A)the name of a source program in micro computers B)set of micro instructions that defines the individual operations in response to a machine-language instruction C)a primitive form of macros used in assembly language programming D)a very small segment of machine code	B)set of micro instructions that defines the individual operations in response to a machine-language instruction
32	Memories that consists of circuits capable of retaining their state as long as power is applied are known as a)Dynamic b)Static c)SRAM d)DRAM	B) static
33	When a subroutine is called, the address of the instruction following the CALL instructions stored in the? A) Stack pointer B) accumulator C) program counter D) stack	D) stack
34	The computer architecture aimed at reducing the time of execution of instructions is _____ a) CISC b) RISC c) ISA	

	d) ANNA	
35	Which of the following are not a machine instructions a) MOV b) ORG c) END d) B and C	d) B and C
36	MFC stands for _____ a) Memory Format Caches b) Memory Function Complete c) Memory Find Command d) Mass Format Command	b) Memory Function Complete
37	The decoded instruction is stored in _____ a) IR b) PC c) Registers d) MDR	A
38	The main memory location which contains the effective address of the operand is	pointer
39	Which memory unit has the lowest access time? a) cache b) registers c) magnetic disk d) main memory	Registers
40		
41	bandwidth of system RAM is approximately a)19200MB/s b)9200MB/s c)192000MB/s d)920MB/s	A
42	B)	D) All of the above
43	Cache memory works on the principle of_____. A)Locality of data B) Locality of memory C)Locality of reference	C)Locality of reference

	D) Locality of reference & memory	
44	The circuit used to store 1 bit of data is known as A) encoder B) OR gate C) flip flop D) decoder	C) flip flop
45	Which format is used to store data? A. BCH B. BCD C. Binary D. Decimal	C) BCD
46	In computers, subtraction is generally carried out by 1. 9's complement 2.10's complement 3.1's complement 4.2's complement	4
47	The location to return to, from the subroutine is stored in _____ a) TLB b) PC c) MAR d) Link registers	d
48	The instruction, Add #45,R1 does _____ a) Adds the value of 45 to the address of R1 and stores 45 in that address b) Adds 45 to the value of R1 and stores it in R1 c) Finds the memory location 45 and adds that content to that of R1 d) None of the mentioned	b
49	An address in main memory is called A. Physical address B. Logical address C. Memory address D. Word address	A. Physical address
50	In the following indexed addressing mode instruction, MOV 5(R1), LOC the effective address is _____ a) EA = 5+R1 b) EA = R1	Answer: D

	c) EA = [R1] d) EA = 5+[R1]	
51	Which of the following is the important characteristics of computers? 1.Speed 2.Accuracy 3.Storage 4.All of the above	Answer: 4.All of the above
52	Which bus is used to connect the monitor to the CPU? A. Single Bus B. SCSI Bus C. Multiple Bus D. Rambus	B. SCSI Bus
53	The addressing modes which uses the PC instead of a general purpose register is (A) Indexed With offset (B) Relative (C) Direct (D) Both indexed with offset and direct	(B)Relative
54	Which of the following is true about Computer Architecture? A. It acts as the interface between hardware and software. B. Computer Architecture tells us how exactly all the units in the system are arranged and interconnected. C. Computer Architecture is concerned with the structure and behaviour of a computer system as seen by the user. D. It involves Physical Components	(A)It act as the interface between hardware and software
55	The I/O devices are connected to the CPU via _____. A. SDRAM's B. Control circuits C. Signals D. BUS	D:BUS

56	<p>The input devices use _____ to store the data received</p> <p>A. Primary Memory B. Secondary Memory C. Buffer D. External Memory</p>	C: Buffer
57	<p>In the case of, Zero-address instruction method the operands are stored in _____</p> <p>a) Registers b) Accumulators c) Push down stack d) Cache</p>	C

Sub: 4. Operating system

Rl. No	Question with four Options Sample: The program which interacts with the inner part of the kernel is called a) protocols b) Shell c) Device driver d) Compiler	Right Answer Sample: b) Shell
1	What portrays the hierarchical representation of data? a) Stack b) Array c) Linked List d) Tree	d) Tree
2	When does page fault occur? A) Page is present in memory B) The deadlock occurs C) The page does not present in memory D) The buffering occurs	C) the page does not present in memory
3	Which of the following is the allocation method of a disk space? A)Contiguous allocation B)Linked allocation C)Indexed allocation D)All of the Above	D)All of the Above
4	In a time sharing operating system, when the time slot given to a process is completed, the process goes from running state to A)Blocked state B)Ready state C) Suspended state D)Terminated state	Ready state
5	Which of the following is a condition that causes deadlock? A) Mutual exclusion B) Hold and wait C) No preemption D) All of these	D) all of these
6	What else is a command interpreter called? A.prompt B.kernel C.shell D.command	C) shell The command interpreter is also called the shell.
7	When a process creates a new process using the fork() operation,which of the following states is shared between the parent process and the child process? A.Stack B.Heap	D.Shared memory segment

	C .Shared memory segments D .NONE of the above	
8	Which of the following is also known as elevator algorithm? (A)SSTF (B) CSCAN (C) SCAN (D)LOOK	C) SCAN
9	The size of the virtual memory is based on which of the following a) CPU. b) RAM c). Address bus. d). Data bus	C)address bus
10	1. A Process Control Block(PCB) does not contain which of the following? a) Code b) Stack c) Bootstrap program d) Data	c) Bootstrap program
11	Consider a system with 3 processes that share 4 instances of the same resource type. Each process can request a maximum of K instances. Resource instances can be requested and released only one at a time. The largest value of K that will always avoid deadlock is ____.	2 to 2
12	Which of the following memory unit the processor can access rapidly: A)Main memory B) Virtual memory C) Cache memory D) Read Only memory	C) Cache memory
13	FIFO scheduling is (A) Fair-share scheduling (B) Deadline scheduling (C) Non-preemptive scheduling (D) Preemptive scheduling	(C) Non-preemptive scheduling
14	A file control block contains the information about a) File Ownership b) File Permissions c) Location of file contents d) All of the mentioned	d) All of the mentioned
15	Which algorithm is defined in Time quantum? a) shortest job scheduling algorithm b) round robin scheduling algorithm c) priority scheduling algorithm d) multilevel queue scheduling algorithm	b) Round Robin Scheduling

16	<p>Which of the following is not an operating system?</p> <p>Windows Linux Oracle DOS</p> <p>Answer: (c) Oracle</p>	
17	<p>The LRU algorithm</p> <p>A) Pages out pages that have been used recently B) Pages out pages that have not been used recently C) Pages out pages that have been least used recently D) Pages out the first page in a given area E) None of the above</p>	C) pages out pages that have been least used recently.
18	<p>Which is the linux Operating System ?</p> <p>a)Private Operating System b)Windows Operating System c)Open-source Operating System d)None of these</p>	c)Open-source Operating System
19	<p>The child process completes execution, but the parent keeps executing, then the child process is known as _____</p> <p>a) Orphan b) Zombie c) Body d) Dead</p>	b) Zombie
20	<p>A _____ allows a process to be pre-empted while it is running in kernel mode.</p> <p>a) Kernel mode b) Pre-emptive kernel mode c) Non pre-emptive kernel mode d) Critical section</p>	b) pre-emptive kernel mode
21	<p>If the page size increases, the internal fragmentation is also?..?</p> <p>A)Decreases B)Increases C)Remains constant D)None of these</p>	(b) Increases
22	<p>1. Which one of the following is not shared by threads?</p> <p>a) program counter b)kerck c) both program counter and stack</p>	c) both program counter and stack

	d) none of the mentioned	
23	BIOS is used? A)By operating system B)By compiler C)By interpreter D)By application software	(a) By operating system
24	Banker's algorithm is used? To prevent deadlock To deadlock recovery To solve the deadlock None of these	(a) To prevent deadlock Explanation: Banker's algorithm is used to prevent the deadlock condition. The banker algorithm is sometimes called the detection algorithm. It is named the banker algorithm because it is used to determine whether a loan can be granted in the banking
25	Who provides the interface to access the services of the operating system? a. API b. System call c. Library d. Assembly instruction	System call

26	<p>In a time sharing operating system, when the time slot given to a process is completed, the process goes from running state to</p> <p>A) Blocked state B) Ready state C) Suspended state D) Terminated state</p>	B Ready state
27	<p>Where are placed the list of processes that are prepared to be executed and waiting?</p> <ul style="list-style-type: none"> a. Job queue b. Ready queue c. Execution queue d. Process queue 	<p>Ready queue</p> <p>The ready queue is a set of all the processes that processes are ready to execute and wait.</p>
28	<p>The Basic Input Output System (BIOS) resides in</p> <ul style="list-style-type: none"> a) RAM b) ROM c) The CPU d) Memory Cache 	b) ROM
29	<p>The size of the virtual memory is based on which of the following</p> <p>b) CPU. b) RAM c). Address bus. d). Data bus</p>	C) address bus
30	<p>What is used to make a connection between two applications?</p> <ul style="list-style-type: none"> a) Kernel b) Thread c) Socket 	c) Socket
31	<p>Which of the following is the major part of time taken when accessing data on the disk?</p> <p>A) Settle time B) Rotational latency C) Seek time D) Waiting time</p>	C) Seek time
32	<p>Each process represented on the OS by a PCB is also called</p>	A) control

	A) Control block B) Process block C) management block D) ALU	lblock
33	Where are placed the list of processes that are prepared to be executed and waiting? A) Job queue B) Ready queue C) Execution queue D) Process queue	B) ready queue
34	When does page fault occur? A.The page is present in memory. B.The deadlock occurs. C.The page does not present in memory. D.The buffering occurs.	
35	Which of the following does not interrupt the running process? a)Timer interrupt b) Device c) Power failure d) Scheduler process	d) Scheduler process
36	What are Multithreaded programs? a) lesser prone to deadlocks b) more prone to deadlocks c) not at all prone to deadlocks d) none of the mentioned	b) more prone to deadlocks
37	The interval from the time of submission of a process to the time of completion is termed as _____ a) waiting time b) turnaround time c) response time d) throughput	B
38	Data blocks of very large file in the unix system are allocated using 1.contiguous allocation 2.linked allocation 3.indexed allocation 4. An extension of indexed allocation	4.extension of indexed allocation
39	A program in execution is called	Process

	a) A Paging b) A Process c) A virtual memory d) A Demand Page	
40		
41	What is POST a) Power on self test b) Power on start test c) Power off self test d) Power off start test	apost
42	Which of the following is not an operating system? a. Windows b. Linux c. Oracle d. DOS	(c) Oracle
43	Piece of code that only one thread can execute at a time is called a) Mutual Exclusion b) Critical Section c) Synchronization d) All of them	b) Critical Section
44	Logical memory is broken into blocks of the same size called A) frames B) pages C) backing store D) none of the mentioned	B) Pages
45	What is the mean of the Booting in the operating system? A)Restarting computer B)Install the program C)To scan	A) Restarting computer

	D)To turn off	
46	If a page number is not found in the translation lookaside buffer, then it is known as a? A) Translation Lookaside Buffer miss B) Buffer miss C) Translation Lookaside Buffer hit D) All of the mentioned	A
47	When the entries in the segment tables of two different processes point to the same physical location _____ a) the segments are invalid b) the processes get blocked c) segments are shared d) all of the mentioned	c
48	The processes that are residing in main memory and are ready and waiting to execute are kept on a list called _____ a) job queue b) ready queue c) execution queue d) process queue	b
49	Banker's algorithm is used in (A) Deadlock prevention (B) Deadlock avoidance (C) Deadlock detection (D) Deadlock recovery	(B) Deadlock avoidance
50	A system contains three programs and each requires three tape units for its operation. The minimum number of tape units which the system must have such that deadlocks never arise is _____. (A)5 (B)8 (C)7 (D)10	Answer: C
51	Usage of Preemption and Transaction Rollback prevents 1.Deadlock situation 2.Data manipulation 3.Unauthorised usage 4.Other	Answer: 1.Deadlock situation
52	What is the fence register used for? To disk protection	Answer: (c) To memory protection

	To CPU protection To memory protection None of these	
53	The degree of multi programming is (A) The number of process executed per unit time (B) The number of process in the ready queue (C) The number of process in the I/O queue (D) The number of process in memory	(D)The number of process in memory
54	What is the maximum length of the filename in DOS? a. 4 b. 5 c. 8 d. 12	(C) 8
55	What is bootstrapping called? Cold boot Cold hot boot Cold hot strap Hot boot	a) Cold boot
56	Which program runs first after booting the computer and loading the GUI? A:Desktop Manager B:File Manager C:Windows Explorer D:Authentication	D:Authentica tion
57	Which of the following do not belong to queues for processes? a) Job Queue b) PCB queue c) Device Queue d) Ready Queue	B

Sub: 5.Database Management Systems

Rl. No	Question with four Options Sample: The program which interacts with the inner part of the kernel is called a) protocols b) Shell c) Device driver d) Compiler	Right Answer Sample: b) Shell
1	DBMS provides the facility of accessing data from a database through a) DDL b) DML c) DBA d) Schema	b)DML
2		

3	<p>Architecture of the database can be viewed as</p> <p>A)Two levels B)Four levels C)Three levels D)One levels</p>	C)Three levels
4	<p>If a multivalued dependency holds and is not implied by the corresponding functional dependency, it usually arises from one of the following sources.</p> <p>a) A many-to-many relationship set b) A multivalued attribute of an entity set c) A one-to-many relationship set d) Both A many-to-many relationship set and A multivalued attribute of an entity set</p>	Both a many-to-many relationship set and A multivalued attribute of an entity set
5		
6	<p>1) Which of the following is generally used for performing tasks like creating the structure of the relations, deleting relation?</p> <p>a. DML(Data Manipulation Language) b. Query c. Relational Schema d. DDL(Data Definition Language)</p>	<p>Answer: D</p> <p>Explanation: The term "DDL" stands for Data Definition Language, used to perform all other essential tasks such as deleting relation and related schemas in defining the structure relation.</p>
7	<p>An entity set that does not have sufficient attributes to form a primary key is a</p> <p>A.strong entity set B.weak entity set C.simple entity set D.primary entity set</p>	B. weak entity set

8	Dependency preservation is not guaranteed in a)3NF (b) BCNF c) 1NF (d) 2NF	b) BCNF
9	The problem of being unable to represent some information, can be solved by introducing. A)pointers b) null values. C) 0 values. D) null pointer	B) null value
10	1. _____ can help us detect poor E-R design. a) Database Design Process b) E-R Design Process c) Relational scheme d) Functional dependencies	d) Functional dependencies
11	Consider the following four relational schemas. For each schema, all non-trivial functional dependencies are listed. The underlined attributes are the respective primary keys. Schema I: Registration (<u>rollno</u> , courses) Field ‘courses’ is a set-valued attribute containing the set of courses a student has registered for. Non-trivial functional dependency: <u>rollno</u> courses Schema II: Registration (<u>rollno</u> , courseid, email) Non-trivial functional dependencies: <u>rollno</u> , courseid email email rollno Schema III: Registration (<u>rollno</u> , courseid, marks, grade) Non-trivial functional dependencies: <u>rollno</u> , courseid marks, grade marks grade Schema IV: Registration (<u>rollno</u> , courseid, credit) Non-trivial functional dependencies: <u>rollno</u> , courseid credit courseid credit Which one of the relational schemas above is in 3NF but not in BCNF? (A) Schema I (B) Schema II (C) Schema III (D) Schema IV	(B)
12	In a relational model, relations are termed as: A)Tuples B) Attributes C) Tables D) Rows	C) Tables

13	<p>There are _____ levels of data independence.</p> <p>a. 2 b. 1 c. 4 d. 3</p>	a) 2
14	<p>Database locking concept is used to solve the problem of</p> <p>a) Lost Update b) Uncommitted Dependency c) Inconsistent Data d) All of the above</p>	d) All of the above
15	<p>In an Entity-Relationship (ER) model, suppose R is a many-to-one relationship from entity set E1 to entity set E2. Assume that E1 and E2 participate totally in R and that the cardinality of E1 is greater than the cardinality of E2. Which one of the following is true about R?</p> <p>(A) Every entity in E1 is associated with exactly one entity in E2. (B) Some entity in E1 is associated with more than one entity in E2. (C) Every entity in E2 is associated with exactly one entity in E1. (D) Every entity in E2 is associated with at most one entity in E1.</p>	(A) Every entity in E1 is associated with exactly one entity in E2.
16	<p>1. _____ can help us detect poor E-R design.</p> <p>a) Database Design Process b) E-R Design Process c) Relational scheme d) Functional dependencies</p> <p>View Answer</p> <p>Answer: d</p>	
17	<p>Which of the following creates a temporary relation for the query on which it is defined?</p> <p>A) With B) From C) Where D) Select</p>	A) With

18	<p>Which of the join operations do not preserve non matched tuples?</p> <ul style="list-style-type: none"> a) Left outer join b) Right outer join c) Inner join d) Natural join 	c) Inner join
19	<p>A _____ consists of a sequence of query and/or update statements.</p> <ul style="list-style-type: none"> a) Transaction b) Commit c) Rollback d) Flashback 	a) Transaction
20	<p>_____ is a process used to gain ownership of shared resources without creating the possibility for deadlock. It breaks up the modification of shared data into "two phases".</p> <ul style="list-style-type: none"> a) One phase locking b) Two phase locking c) Three phases locking d) Multiple phase locking 	b) two phase locking
21	<p>What is the best way to represent the attributes in a large database?</p> <ul style="list-style-type: none"> a) Relational-and b) Concatenation c) Dot representation d) All of the mentioned 	B
22	<p>1. A _____ is a special kind of a store procedure that executes in response to certain action on the table like insertion, deletion or updation of data.</p> <ul style="list-style-type: none"> a) Procedures b) Triggers c) Functions d) None of the mentioned 	b) Triggers
23	<p>Data integrity constraints are used to:</p> <ul style="list-style-type: none"> a) Control who is allowed access to the data b) Ensure that duplicate records are not entered into the table c) Improve the quality of data entered for a specific property (i.e., table column) d) Prevent users from chan 	c) improve quality of data

24	<p>The attribute AGE is calculated from DATE_OF_BIRTH. The attribute AGE is</p> <ul style="list-style-type: none"> a) Single valued b) Multi valued c) Composite d) Derived 	<p>d</p> <p>Explanation: The value for this type of attribute can be derived from the values of other related attributes or entities.</p>
25	<p>Database systems are designed to manage</p> <ul style="list-style-type: none"> A. Small bodies of informations B. Large bodies of informations C. Plain bodies of knowledge D. Complex bodies of knowledge 	<p>(B)</p>
26	<p>If a multivalued dependency holds and is not implied by the corresponding functional dependency, it usually arises from one of the following sources.</p> <ul style="list-style-type: none"> a) A many-to-many relationship set b) A multivalued attribute of an entity set c) A one-to-many relationship set d) Both A many-to-many relationship set and A multivalued attribute of an entity set 	<p>D</p> <p>Both a many-to-many relationship set and A multivalued attribute of an entity set</p>
27	<p>The designer can review the schema to ensure it meets all the functional requirements, at the stage</p> <ul style="list-style-type: none"> A. Conceptual design B. Execution design C. Controlling design D. Initial planning 	<p>Conceptual design</p>
28	<p>In E-R diagram, relationship type is represented by</p> <ul style="list-style-type: none"> a) Ellipse b) Dashed ellipse c) Rectangle d) Diamond 	<p>d) Diamond</p>
29	<p>The problem of being unable to represent some information, can be solved by introducing.</p> <ul style="list-style-type: none"> A) pointers b) null values. C) 0 values. D) null pointer 	<p>B) null value</p>

30	<p>Which relationship relates one record of any object to one record of another object?</p> <ul style="list-style-type: none"> a) One-to-one b) One-to-many c) Many-to-many 	a) One-to-one
31	<p>Who is more concerned about the conceptual level of the DBMS</p> <ul style="list-style-type: none"> a)DBA b)The end user c)The Systems programmer d)Client 	a)DBA
32	<p>Underlying the structure of a database is</p> <ul style="list-style-type: none"> a) Data model b)schema diagram c)Instances d)entity 	A) data model
33	<p>A huge collection of the information or data accumulated form several different sources is known as _____:</p> <ul style="list-style-type: none"> A)Data Management B)Data Mining C)Data Warehouse D)Both B and C 	C)Data Warehouse
34	<p>What is the best way to represent the attributes in a large database?</p> <ul style="list-style-type: none"> a) Relational-and b) Concatenation c) Dot representation d) All of the mentioned 	
35	<p>Which of the following can be considered as the maximum size that is supported by FAT?</p> <ul style="list-style-type: none"> a)8GB b) 4GB c) 4TB d) None of the above 	b) 4GB

36	<p>SELECT * FROM employee WHERE dept_name="Comp Sci";</p> <p>In the SQL given above there is an error . Identify the error.</p> <p>a) Dept_name b) Employee c) “Comp Sci” d) From</p>	<p>c) “Comp Sci” For any string operations single quoted(') must be used to enclose.</p>
37	<p>In which of the following, a separate schema is created consisting of that attribute and the primary key of the entity set.</p> <p>a) A many-to-many relationship set b) A multivalued attribute of an entity set c) A one-to-many relationship set d) All of the mentioned</p>	B
38	<p>Which normal form is based on the idea of full functional dependency</p>	2nf
39	<p>A Database Management System is a type of _____ software.</p> <p>A) It is a type of system software B) It is a kind of application software C) It is a kind of general software D) Both A and C</p>	its a type of system software
40		
41	<p>The collection of tuples stored in a database at a particular moment is called</p> <p>a)schema b)view c>instance d>relation</p>	C

42	<p>Consider the following relational schema:</p> <p>Employee (empId, empName, empDept) Customer (custId, custName, salesRepId, rating)</p> <p>SalesRepId is a foreign key referring to empId of the employee relation. Assume that each employee makes a sale to at least one customer. What does the following query return?</p> <pre>SELECT empName FROM employee E WHERE NOT EXISTS (SELECT custId FROM customer C WHERE C.salesRepId = E.empId AND C.rating <> 'GOOD')</pre> <p>(A) Names of all the employees with at least one of their customers having a 'GOOD' rating. (B) Names of all the employees with at most one of their customers having a 'GOOD' rating. (C) Names of all the employees with none of their customers having a 'GOOD' rating. (D) Names of all the employees with all their customers having a 'GOOD' rating.</p>	(D) Names of all the employees with all their customers having a 'GOOD' rating.
43	<p>The file organization that provides very fast access to any arbitrary record of a file is</p> <p>A) Ordered file B) Unordered file C) Hashed file D) B tree</p>	C) Hashed file
44	<p>Which command is used to remove rows from a table ?</p> <p>A) delete B) remove C) truncate D) both A & B</p>	C) truncate
45	<p>SELECT emp_name FROM department WHERE dept_name LIKE ' _____ Computer Science';</p> <p>In the above-given Query, which of the following can be placed in the Query's blank portion to select the "dept_name" that also contains Computer Science as its ending string?</p> <p>A)& B)_</p>	C)%

	C)% D)\$	
46	<p>Which of the following is a top-down approach in which the entity's higher level can be divided into two lower sub-entities?</p> <p>A) Aggregation B) Generalization C) Specialization D) All of the above</p>	C
47	<pre>WITH max_budget (VALUE) AS (SELECT MAX(budget) FROM department) SELECT budget FROM department, max_budget WHERE department.budget = MAX budget.value;</pre> <p>In the query given above which one of the following is a temporary relation?</p> <p>a) Budget b) Department c) Value d) Max_budget</p>	d
48	<p>Which one of the following given statements possibly contains the error?</p> <p>A. select * from emp where empid = 10003; B. select empid from emp where empid = 10006; C. select empid from emp; D. select empid where empid = 1009 and Lastname = 'GELLER';</p>	D
49		

50	<p>Consider the relations $r(A, B)$ and $s(B, C)$, where $s.B$ is a primary key and $r.B$ is a foreign key referencing $s.B$. Consider the query Q: $r \bowtie (\sigma_{B < 5}(s))$ Let LOJ denote the natural left outer-join operation. Assume that r and s contain no null values. Which one of the following queries is NOT equivalent to Q? (A) $\sigma_{B < 5}(r \bowtie s)$ (B) $\sigma_{B < 5}(r \text{ LOJ } s)$ (C) $r \text{ LOJ } (\sigma_{B < 5}(s))$ (D) $\sigma_{B < 5}(r) \text{ LOJ } s$</p>	Answer: C
51	<p>Views are useful for _____ unwanted information, and for collecting together information from more than one relation into a single view.</p> <ol style="list-style-type: none"> 1.Hiding 2.Deleting 3.Highliting 4. All of the above 	Answer: 1.Hiding
52	<p>In general, a file is basically a collection of all related_____.</p> <ol style="list-style-type: none"> a.Rows & Columns b.Fields c.Database d.Records 	Answer: d.Records
53	<p>Relations produced from an E-R model will always be in</p> <ol style="list-style-type: none"> a) 1NF b) 2NF c) 3NF d) 4NF e) Other 	(C)3NF
54	<p>4NF is designed to cope with</p> <ol style="list-style-type: none"> a)Transitive dependency b)Join dependency c)Multivalued dependency d)None of these 	(c) Multivalued Dependency
55	<p>What do you mean by one to many relationships?</p> <ol style="list-style-type: none"> A)One class may have many teachers B)One teacher can have many classes C)Many classes may have many teachers D)Many teachers may have many classes 	B)one teacher can have many children

56	<p>Which of the following refers to the level of data abstraction that describes exactly how the data actually stored?</p> <p>A:Conceptual Level B:Physical Level C:File Level D:Logical Level</p>	B: Physical Level
57	<p>In SQL the spaces at the end of the string are removed by _____ function.</p> <p>a) Upper b) String c) Trim d) Lower</p>	C

Sub: 6. Formal Languages And Automata Theory

Rl. No	<p style="text-align: center;">Question with four Options</p> <p>Sample: The program which interacts with the inner part of the kernel is called a) protocols b) Shell c) Device driver d) Compiler </p>	<p style="text-align: center;">Right Answer</p> <p>Sample: b) Shell </p>
1	<p>Which language is the most restrictive?</p> <p>a) Context Free b) Regular c) Context Sensitive d) None</p>	<p>b) Regular</p>
2	<p>The language accepted by a Push down Automata:</p> <p>A) Type0 B) Type1 C) Type2 D) Type3</p>	<p>C) type 2</p>
3	<p>All the regular languages can have one or more of the following descriptions:</p> <p>i) DFA ii) NFA iii) e-NFA iv) Regular Expressions Which of the following are correct?</p> <p>A) i, ii, iv B) i, ii, iii C) i, iv D) i, ii, iii, iv</p>	<p>D) i, ii, iii, iv</p>
4	<p>Which of the following are non regular?</p> <p>a) The set of strings in {a,b}* with an even number of b's b) The set of strings in {a, b, c}* where there is no c anywhere to the left of a c) The set of strings in {0, 1}* that encode, in binary, an integer w that is a multiple of 3. Interpret the empty strings e as the number 0. d) None of the mentioned</p>	<p>None of the mentioned</p>
5	<p>Recursively enumerable languages are not closed under</p> <p>A) Union B) Homomorphism C) Complementation D) Concatenation</p>	<p>C) Complementation</p>
6	<p>If all the production rules have single non - terminal symbol on the left side, the grammar defined is :</p> <p>a. context free grammar b. context sensitive grammar c. unrestricted grammar</p>	<p>A) context free grammar</p>

	d. phrase grammar	
7	L = (an bn an n = 1,2,3) is an example of a language that is A.context free B.not context free C.not context free but whose complement is CF D.both(A)and(C)	D.both A and C
8	A grammar whose productions are of the form A → BC is in what normal form? (A) Chomsky normal form (B) Greibach normal form (C) Both (A) and (B) (D) Neither (A) nor (B)	A) Chomsky Normal Form
9	A pushdown automata behaves like a Turing machine when the number of auxiliary memory is A)0. B)1. C)1 or more D)2 or more	D)2 or more
10	Which of the technique can be used to prove that a language is non regular? a) Arden's theorem b) Pumping Lemma c) Ogden's Lemma d) None of the mentioned	b) Pumping Lemma
11	Let N be an NFA with n states. Let k be the number of states of a minimal DFA which is equivalent to N. Which one of the following is necessarily true? (A) k ≥ 2^n (B) k ≥ n (C) k ≤ n^2 (D) k ≤ 2^n	(D)
12	A language L is accepted by FSA if it is: A)CFL B)CSL C)Recursive D)Regular	D) Regular
13	Which of the following denotes Chomskian hierarchy? [A] REG ? CFL ? CSL ? type0 [B] CFL ? REG ? type0 ? CSL [C] CSL ? type0 ? REG ? CFL [D] CSL ? CFL ? REG ? type0	Option A

14	<p>Which of the following regular expression identity is true ?</p> <p>a) $r(*) = r^*$ b) $(r^*s^*)^* = (r+s)^*$ c) $(r+s)^* = r^* + s^*$ d) $r^*s^* = r^* + s^*$</p>	b) $(r^*s^*)^* = (r+s)^*$
15	<p>Consider the following languages over the alphabet $\Sigma = \{0,1,c\}$</p> $L_1 = \{0^n1^n \mid n \geq 0\}$ $L_2 = \{wcw^r \mid w \in \{0,1\}^*\}$ $L_3 = \{ww^r \mid w \in \{0,1\}^*\}$ <p>Here w^r is the reverse of the string w. Which of these languages are deterministic Context-free languages?</p> <p>(A) None of the languages (B) Only L1 (C) Only L1 and L2 (D) All the three languages</p>	c) Only L1 and L2
16	<p>Grammars that can be translated to DFAs:</p> <p>a. Left linear grammar</p> <p>b. Right linear grammar</p> <p>c. Generic grammar</p> <p>d. All of these</p> <p>Answer: (b). Right linear grammar</p>	
17	<p>Which of the following statements is true?</p> <p>A) If a language is context free it can always be accepted by a deterministic push-down automaton. B) The union of two context free language is context free C) The intersection of two context free languages is context free D) The complement of a context free language is context free</p>	B) The union two context free language is context free
18	<p>An e-NFA is _____ in representation.</p> <p>a) Quadruple b) Quintuple c) Triple</p>	b) Quintuple

	d) None of the mentioned	
19	Which of the following does not have left recursions? a) Chomsky Normal Form b) Greibach Normal Form c) Backus Naur Form d) All of the mentioned	b) Greibach Normal Form
20	Write the regular expression of the language $L=\{\epsilon, ab, abab, ababab, \dots\}$ a) $(ab)^*$ b) $(a,b)^*$ c) $(a)^*(b)^*$ d) ab^*	a) $(ab)^*$
21	If $f : \{a, b\}^* \rightarrow \{a, b\}^*$ be given by $f(n) = ax$ for every value of $n \in \{a, b\}$, then f is A. one to one not onto B. one to one and onto C. not one to one and not onto D. not one to one and onto	A
22	A CFG is not closed under a) Dot operation b) Union Operation c) Concatenation d) Iteration	d) Iteration
23	If L_1' and L_2' are regular languages, then $L_1.L_2$ will be a) regular b) non regular c) may be regular d) none of the mentioned	(a) regular
24	Given the following statements: S1: Every context-sensitive language L is recursive. S2: There exists a recursive language that is not context sensitive. Which statement is correct? a. S1 is not correct and S2 is not correct	(d) S1 is correct and S2 is correct

	<p>b. S1 is not correct and S2 is correct c. S1 is correct and S2 is not correct d. S1 is correct and S2 is correct</p>	
25	<p>Grammars that can be translated to DFAs</p> <ul style="list-style-type: none"> a. Left linear grammar b. Right linear grammar c. Generic grammar d. All of these 	Right linear grammar
26	<p>Which of the following are non regular?</p> <ul style="list-style-type: none"> a) The set of strings in $\{a,b\}^*$ with an even number of b's b) The set of strings in $\{a, b, c\}^*$ where there is no c anywhere to the left of a c) The set of strings in $\{0, 1\}^*$ that encode, in binary, an integer w that is a multiple of 3. Interpret the empty strings e as the number 0. d) None of the mentioned 	D None of the mentioned
27	The language accepted by a Push down Automata:	Type2
28	<p>Which of the following strings is not generated by the following grammar $S \rightarrow SaSbS e$</p> <ul style="list-style-type: none"> a) aabb b) abab c) aababb d) aaabb 	d) aaabb
29	<p>A pushdown automata behaves like a Turing machine when the number of auxiliary memory is</p> <p>A)0. B)1. C)1 or more D)2 or more</p>	D)2 or more
30	<p>There exists an initial state, 17 transition states, 7 final states and one dumping state, Predict the maximum number of states in its equivalent DFA?</p> <ul style="list-style-type: none"> a) 226 b) 224 c) 225 d) 223 	<p>a)226 Explanation: The maximum number of states an equivalent DFA can comprise for its respective NFA with k states will be 2^k.</p>
31	Given the language $L = \{ab, aa, baa\}$, which of the following strings are	3)1, 2 and 4

	<p>in L^*?</p> <p>A) abaabaaabaa B) aaaabaaaa C) baaaaabaaaab D) baaaabaa</p> <p>CHOOSE THE CORRECT ANS</p> <p>3 2) 2, 3 and 4 3) 1, 2 and 4 4) 1, 3 and 4</p>	
32	<p>Any production of CFG of the form $A \rightarrow \epsilon$ is</p> <p>a) ϵ production b) unit production c) removal of symbol d) zero production</p>	A) ϵ production
33	<p>The context-free languages are closed for ?</p> <p>A) Intersection B) Union C) Complementation D) Kleene Star</p>	C) Union D) kleene star
34	<p>Which of the following CFG's can't be simulated by an FSM ?</p> <p>A. $S \rightarrow Sa \mid b$</p> <p>B. $S \rightarrow aSb \mid ab$</p> <p>C. $S \rightarrow abX, X \rightarrow cY, Y \rightarrow d \mid aX$</p> <p>D. None of these</p>	
35	<p>Which one of the following is true for this automaton?</p> <p>(A) $b^*ab^*ab^*ab^*$</p>	(B) $b^*a(a+b)^*$

	(B) $b^*a(a+b)^*$ (C) $b^*ab^*ab^*$ (D) $(a+b)^*$	
36	There are _____ tuples in finite state machine. a) 4 b) 5 c) 6 d) unlimited	b) 5
37	Which of the technique can be used to prove that a language is non regular? a) Ardens theorem b) Pumping Lemma c) Ogden's Lemma d) None of the mentioned	B
38	The number of states in a turing machine is _____	infinite
39	Myhill Nerode does the following: a) Minimization of DFA b) Tells us exactly when a language is regular c) Both (a) and (b) d) None of the mentioned	Both a and b
40		
41	Language not accepted in Linear bounded automata a)regular b)context free c)context sensitive d)recursively enumerable	D
42	Which one of the following problems is undecidable? (A) Deciding if a given context-free grammar is ambiguous. (B) Deciding if a given string is generated by a given context-free grammar. (C) Deciding if the language generated by a given context-free grammar is empty. (D) Deciding if the language generated by a given context-free grammar is finite.	(A) Deciding if a given context-free grammar is ambiguous.
43	The context free grammar given by $S \rightarrow XYX$ $X \rightarrow aX \mid bX \mid \lambda$	C). $(a+b)^*(bbb)(a+b)^*$

	<p>$Y \rightarrow bbb$</p> <p>generates the language which is defined by regular expression:</p> <p>a) $(a+b)^*bbb$ b) $abbb(a+b)^*$ c) $(a+b)^*(bbb)(a+b)^*$ d) $(a+b)(bbb)(a+b)^*$</p>	
44	<p>Language of finite automata is</p> <p>A) Type 0 B) Type 1 C) Type 2 D) Type 3</p>	D) Type 3
45	<p>The minimum number of states of the non-deterministic finite automation which accepts the language $\{a b a b n n \geq 0\} \cup \{a b a n n \geq 0\}$ is</p> <p>A) 3 B) 4 C) 5 D) 6</p>	C) 5
46	<p>Palindromes can't be recognized by any FSA because</p> <p>[A] FSA cannot remember arbitrarily large amount of information [B] FSA cannot deterministically fix the midpoint [C] Even if the mid point is known an FSA cannot find whether the second half of the string matches the first half [D] all of the above</p>	D
47		
48	<p>Which one of the following statement is FALSE?</p> <p>[A] context-free languages are closed under union [B] context-free languages are closed under concatenation [C] context-free languages are closed under intersection [D] context-free languages are closed under Kleene closure</p>	C
49	<p>Context free languages are not closed under</p>	(A) Intersection

	(A)Intersection (B) Union (C)Reversal (D)Kleene closure	
50	<p>Consider the following problems. $L(G)$ denotes the language generated by a grammar G. $L(M)$ denotes the language accepted by a machine M.</p> <p>(I) For an unrestricted grammar G and a string w, whether $w \in L(G)$</p> <p>(II) Given a Turing machine M, whether $L(M)$ is regular</p> <p>(III) Given two grammars G1 and G2, whether $L(G1) = L(G2)$</p> <p>(IV) Given an NFA N, whether there is a deterministic PDA P such that N and P accept the same language.</p> <p>Which one of the following statements is correct?</p> <p>(A) Only I and II are undecidable (B) Only III is undecidable (C) Only II and IV are undecidable (D) Only I, II and III are undecidable</p>	Answer: D
51	<p>Ambiguous grammar is defined a grammar having more than one derivation tree</p> <p>1.True 2.False</p>	1.True
52	<p>Which of the following pairs have different expressive power?</p> <p>a. Single-tape-turing machine and multi-dimensional turing machine b. Multi-tape turing machine and multi-dimensional turing machine c. Deterministic push down automata and non-deterministic pushdown automata d. Deterministic finite automata and Non-deterministic finite automata</p>	Answer: (c). Deterministic push down automata and non-deterministic pushdown automata
53	<p>The set that can be recognized by a deterministic FSA is</p> <p>(A) These are closed under union,Kleen closure (B) These are closed under complement, KLeen Closure (C) These are closed under union,instersection (D) These are closed under intersection,complement</p>	(A)These are closed under union,Kleen closure
54	<p>Two finite state machines are said to be equivalent if they:</p> <p>(A)Have the same number of edges (B)Have the same number of states (C)Recognize the same set of tokens</p>	(C)Recognize the same set of tokens

	(D)Have the same number of states and edges	
55	The problem that is undecidable - (A) Finiteness problem for FSA's (B) Membership problem for CFG's (C) Equivalence problem for FSA's (D) Ambiguity problem for CFG's	D)Ambiguity problem for CFG's
56	Grammars that can be translated to DFAs: A.Left linear grammar B.Right linear grammar C.Generic grammar D.All of these	B.Right linear grammar
57	Which of the technique can be used to prove that a language is non regular? a) Ardens theorem b) Pumping Lemma c) Ogden's Lemma d) None of the mentioned	B