1. Which of the following is not a proposition?
(a) India is in Asia
(b) The Intel Pentium - III is a 64-bit processor .
(c) 2 + 2 = 4
(d) X + Y = 30

2. Assume that student waiting times at bus stops are uniformly distributed between 12 and 28 minutes. What is the probability that a randomly selected student has a waiting time between 20 and 25 minutes? Round to 3 decimal places.
(a) 0.500
(b) 0.313
(c)0.188
(d) 0.200

3. A card is selected at random from a normal deck of 52 cards. What is the probability that it is a King?
(a) 1/4
(b) 1/52
(c) 1/13
(d) 1/26

4. Which of following is the order of the recurrence relation? $8\,a_r + 4a_{r+1} + 8\,a_{r+2} = 0$

(a) 2
(b) 1
(c) 3
(d) 0

5. A partial ordered relation is transitive, reflexive and
(a) Antisymmetric
(b) Asymmetric
(c) Symmetric
(d) None of these

6. Which of the following is FALSE about Lattices?
(a) It is Poset.
(b) It is a Boolean algebra.
(c)Every pair of elements has a LUB and GLB.
(d) It satisfies the property of comutativity, Absorption and Associativity.

7. Which one of following is an invertible function on the set A = {a, b, c}
(a) {(a,a), (b,a), (c,c)}
(b) {(a,b), (b,b), (c,c)}
(c) {(a,b), (b,a), (c,c)}
(d) {(a,c), (b,c), (c,c)}

8. Let P(S) denotes the powerset of set S. Which of the following is always true?
(a) P(P(S))=P(S)
(b) P(S)∩S = P(S)
(c) P(S) ∩ P(P(S)) = {Ø}
(d) S ∈ P(S)

9. In a contest in which there are 8 participants, in how many ways can 5 distinct prizes be awarded?
(a) 112
(b) 6720
(c) 6840
(d) 672

10. How many words can be formed out of the letters of the word 'PECULIAR' beginning with P and ending with R?
(a) 100
(b) 120

720

(d) 620

11. Which of the following statement is FALSE about undirected graphs?

(a) The sum of degrees of all the vertices in a graph is even.

(b) There is an even number of vertices of odd degree.

(c) The degree of a vertex is the number of edges incident on it.

(d) The self loop is counted once, when degree is counted.

12. Which of the following statement is true:

(a) Every graph is not its own subgraph

(b) The terminal vertex of a graph are of degree two.

(c) A tree with n vertices has n edges.

(d) A single vertex in graph G is a subgraph of G.

13. The binary representation of the decimal number 39 is

(a)1000111

(b) 100111

(c)101011

(d) 100101

14: Which of the following flip-flops does not have race around difficulty?

(a) JK flip-flops

(b) Master slave JK flip-flop

(c) S-R flip-flop converted to J-K flip-flop

(d) D flip-flops

15. In a four variable Karnaugh map eight adjacent cells give a

(a) Two variable term

(b) Single variable term

(c) Three variable term

(d) four variable term

16. The sum of two Hexadecimal numbers 23D and 9AA gives the hexadecimal number

(a) BE7

(b) BE5

(c) BF6

(d) AF7

17. The difference between a binary tree and a binary search tree is that

(a) a binary search tree has two children per node whereas a binary tree can have none, one, or two children per node

(b) in binary tree nodes are inserted based on the values they contain

(c) Every binary tree is a binary srach tree but vice versa is not true.

(d) in binary search tree nodes are inserted based on the values they contain

18. PQR -* QRP+-* is a postfix expression with the assumption P = 4, Q = 6 and R = 5. If the above postfix expression is evaluated, the final stack value is

(a) -11

(b) -9

(c) -12

(e) 6

19. A given grammar is called ambiguous if

(a) two or more productions have the same non-terminal on the left hand side

(b) brackets are not present in the grammar

(c) there is a sentence with more than one derivation tree corresponding to it

(d) a derivation tree has more than one associated sentence

20. Which of the following languages over {a, b, c} is accepted by a deterministic PDA?

(a) {wbwR|w ∈ {a, c}*}
(b) {wwR|w ∈ {a, b, c}*}
(c) {anbncn|n ≥ 1}
(d) {w|w is a palindrome over {a, b, c}}

21. Regular expression (a | b) (a | b) denotes the set
(a) { a, b, ab, aa }
(b) { aa, ab, ba, bb }
(c) { a, b, ba, bb }
(d) { a, b,b,a }

22. Which of the following conversion is not possible (algorithmically)?
(a) nondeterministic TM to deterministic TM
(b) nondeterministic FSA to deterministic FSA
(c) nondeterministic PDA to deterministic PDA
(d) regular grammar to context-free grammar

23. Analysis which determines the meaning of a statement once its grammatical structure becomes known is termed as
(a) Structure analysis
(b) Syntax analysis
(c) Lexical analysis
(d) Semantic analysis

24. Consider the grammar: S → AaAb | BbBa , A → ε , B → ε ,Compute FIRST for all grammar symbols and FOLLOW for all nonterminals. Identify the statement below that is not true.
(a) b is in FIRST(B)
(b) b is in FOLLOW(A)
(c) b is in FOLLOW(B)
(d) ε is in FIRST(A)

25.If all edges have the same weight in an undirected graph, which algorithm will find the shortest path between two nodes more efficiently?
(a) Dijkstra
(b) Bellman-Ford
(c) Depth-First Search
(d) Breadth-First Search

26.In a paged memory system, let w=0,4,1,4,1,5,1,6,2,6,3,6,2,6,4,5 be a page reference stream. Assuming that the main memory can have only three page frames and all the page frames are initially empty, how many page faults will the given reference stream incur if the First-in First-out page replacement strategy is used?
(a)8
(b)9
(c) 10
(d)11

27. Which of the following statements about memory management is false?
(a) Variable-partition memory allocation minimizes internal fragmentation when compared with fixed-partition memory allocation.
(b) In a virtual memory system, a process can use the CPU only when a part of the address space is loaded into the primary memory.

(c) With dynamic address relocation, an address in the address space is bound to a physical memory address at compile time.
(d) In a fixed-partition memory strategy, mismatches between memory requests and the size of the memory partitions can cause internal fragmentation.

28. In a deadlock prevention strategy, the hold and wait condition can be violated by
(a) allocating resources required by a process when the process is created on a all or none basis.

(b) allocating a single resource at a time.

(c) forcing a process to release a single resource it currently holds before it requests any new resources.

(d) allocating resources to processes only when requested by the processes.

29. Which directory implementation is used in most Operating System?

(a) Single level directory structure

(b) Two level directory structure

(c) Tree directory structure

(d) Acyclic directory structure

30. The correct order of the corresponding OSI layers for a Router, Media Access Control, Repeater and FTP is

(a) Network, Data Link, Physical and Application.

(b) Network, Data Link, Application and Physical.

(c) Physical, Data Link, Session and Transport.

(d) Presentation, Network, Transport and Application.

31. The IEEE equivalent for Token Ring Networks is

(a) IEEE 802.4

(b) IEEE 802.3

(c) IEEE 802.5

(d) IEEE 802.12

32. Sliding Window Protocol is

(a) used to manage the protocols in the Operating Systems.

(b) used to filter the packets in firewalls.

(c) used to exchange messages among remote hosts.

(d) a data link layer function.

33. Which of the following algorithm not represent a public key cryptosystem?

(a) DES

(b) AES

(c) Blowfish

(d) RSA

34. A computer on a LAN is configured with the IP address 10.16.193.0 and the subnet mask 255.255.240.0. 131. What is the network address of this LAN?

(a) 10.16.193.0

(b) 10.16.192.0

(c) 255.255.240.0

(d) 10.16.0.1

35. A deletion anomaly means

(a) Unauthorized user is not allowed to delete data from the database.

(b) Unintentional loss of data due to deletion of other data.

(c) A constraint that does not allow to delete some rows from a table.

(d) All of the above

36. Which of the following data model has the highest level of abstraction?

(a) hierarchical

(b) ER model

(c) Relational

(d) Network

37. In a B-tree of order 5, the following keys are inserted as follows: 7,8,1,4,13,20,2,6 and 5. How many elements are present in the root of the tree?

(a) 4

(b) 3

(c) 2

(d) 1

38. The difference between a dense index and a sparse index is that

(a) a dense index contains keys and pointers for a subset of the records whereas a sparse index contains keys and pointers for every record .

(b) a dense index can only be a primary index whereas a sparse index can only be a secondary index

(c) a dense index contains keys and pointers for each record whereas a sparse index contains keys and pointers for a subset of the records

(d) no difference

39. A derived attribute

(a) must be stored physically within the database

(b) has many values

(c) need not be physically stored within the database

(d) must be based on the value of three or more attributes

40. Which of the following statements about binary trees is FALSE?

(a) Every non-empty tree has exactly one root node.

(b) Every non-root node has exactly one parent.

(c) Every node has at most two children.

(d) Every binary tree has at least one node.

CSE.

1. d
2. b
3. c
4. a.
5. a
6. b
7. c
8. d
9. b
10. c
11. d
12. d
13. b
14. b
15. b
16. a
17. d
18. c
19. c
20. a
21. b
22. c
23. d
24. a
25. d
26. b
27. c
28. a
29. c
30. a
31. c
32. d
33. d
34. b
35. b
36. b
37. c
38. b
39. c
40. d