Computer Science and Applications

PAPER – II

Note : This paper contains **fifty** (50) objective-type questions, each question carrying **two** (2) marks. Attempt **all** of them.

1. If x and y are independent Gaussian random variables with average value 0 and with same variance, their joint probability density function is given by :

(A) $p(x, y) = p(x) \cdot p(y)$ (B) $p(x, y) = p(x) + p(y)$

(C) $p(x, y) = p(x + y)$ (D) $p(x, y) = p(x) \cdot p(y) + p(x)$

2. In order that a code is 't' error correcting, the minimum Hamming distance should be :

(A) t (B) $2t - 1$ (C) $2t$ (D) $2t + 1$

3. The Boolean expression $\bar{x}\ \bar{y}\ z + y\,z + x\,z$ is equivalent to :

(A) x (B) y (C) z (D) $x + y + z$

4. The characteristic equation of a JK flip flop is :

(A) $Q_{n+1} = J.Q_n + K.Q_n$ (B) $Q_{n+1} = J.\overline{Q}_n + \overline{K}.Q_n$

(C) $Q_{n+1} = Q_n\ J.K$ (D) $Q_{n+1} = (J + k)Q_n$

5. In order to implement a n variable switching function, a MUX must have :

(A) 2^n inputs (B) $2^n + 1$ inputs (C) 2^{n-1} inputs (D) $2^n - 1$ inputs

6. The throughput of pure ALOHA is given by :

(A) $S = G$ (B) $S = e^{2G}$ (C) $S = Ge^{2G}$ (D) $S = Ge^{-2G}$

7. The Fiber Distributed Data Interface uses :

(A) single mode fibers and LEDs (B) multimode fibers and LEDs

(C) single mode fibers and ILDs (D) multimode fibers and ILDs

8. To employ multi-access in GSM, users are given different :

(A) time slots (B) bandpass filters

(C) handsets (D) frequency bands

9. With a four programs in memory and with 80% average I/O wait, the CPU utilization is ?

(A) 60% (B) 70% (C) 90% (D) 100%

10. Assume N segments in memory and a page size of P bytes. The wastage on account of internal fragmentation is :

(A) NP/2 bytes (B) P/2 bytes (C) N/2 bytes (D) NP bytes

11. **Assertion (A) :** Bit maps are not often used in memory management.
Reason (R) : Searching a bit map for a run of given length is a slow operation.
(A) Both **(A)** and **(R)** are true and **(R)** is correct explanation for **(A)**
(B) Both **(A)** and **(R)** are true but **(R)** is not correct explanation for **(A)**
(C) **(A)** is true **(R)** is false
(D) **(A)** is false **(R)** is true

12. The complete graph with four vertices has k edges where k is :
(A) 3 (B) 4 (C) 5 (D) 6

13. The octal equivalent of hexadecimal $(A.B)_{16}$ is :
(A) 47.21 (B) 12.74 (C) 12.71 (D) 17.21

14. A reduced state table has 18 rows. The minimum number of Flips flops needed to implement the sequential machine is :
(A) 18 (B) 9 (C) 5 (D) 4

15. What is the value of 'b' after the execution of the following code statements :
c = 10;
b = + + c + + + c;
(A) 20 (B) 22 (C) 23 (D) None

16. Which of the following does not represent a valid storage class in 'c' ?
(A) automatic (B) static (C) union (D) extern

17. The friend functions are used in situations where :
(A) We want to have access to unrelated classes
(B) Dynamic binding is required
(C) Exchange of data between classes to take place
(D) None of the above

18. (i) DML includes a query language based on both relation algebra and tuple calculus
(ii) DML includes a query language based on tuple calculus
(iii) DML includes a query language based on relational algebra
(iv) DML includes a query language based on none of the relational algebra and tuple calculus
Which one is correct ?
(A) (i) only (B) (ii) only (C) (iii) only (D) (iv) only

19. Suppose it takes 100 ns to access a page table and 20 ns to access associative memory with a 90% hit rate, the average access time equals :
(A) 20 ns (B) 28 ns (C) 90 ns (D) 100 ns

20. There exists a construct which returns a value 'true' if the argument subquery is :
(A) empty (B) non-empty
(C) in error (D) none of the above

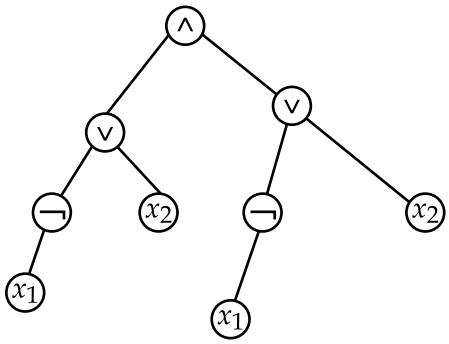
21. Which construct in SQL is used to test whether a subquery has any tuples in its result ?
(A) UNIQUE (B) EXISTS (C) GROUP BY (D) EXCEPT

22. ORACLE supports :
(A) inner join and outer join only
(B) outer join and semi join only
(C) inner join, outer join, semi join only
(D) inner join, outer join, semi join and anti join

23. Which two of the following are equivalent for an undirected graph G ?
(i) G is a tree
(ii) There is at least one path between any two distinct vertices of G
(iii) G contains no cycles and has $(n-1)$ edges
(iv) G has n edges
(A) (i) and (ii)
(B) (i) and (iii)
(C) (i) and (iv)
(D) (ii) and (iii)

24. In a B tree of order m with p nodes the average number of splits is at most :
(A) $1/\left(\left\lceil \frac{m}{2} \right\rceil - 1\right)$ (B) $\left(\left\lceil \frac{m}{2} \right\rceil - 1\right)$ (C) $1/\left\lceil \frac{m}{2} \right\rceil$ (D) None

25. The propositional formula given by the tree :



is :
(A) $\wedge \vee x_2 \vee x_1 \neg x_1 \neg x_1$ (B) $(x_2 \vee \neg x_2) \wedge (x_1 \vee x_2)$
(C) $(\neg x_1 \vee x_2) \wedge (\neg x_1 \vee x_2)$ (D) None

26. Queue is a _____ list.
(A) LIFO (B) LILO (C) FILO (D) FIFO

27. In a full binary tree of height k, there are _____ internal nodes.
(A) $2^k - 1$ (B) 2^{k-1} (C) 2^k (D) $2^k + 1$

28. A binary tree is said to have heap property if the elements along any path :
(A) from leaf to root are non-increasing
(B) from leaf to root are non-decreasing
(C) from root to leaf are non-decreasing
(D) from root to leaf are non-increasing

29. X.25 protocol consists of :
(A) Physical and Frame levels (B) Frame and Packet levels
(C) Physical, Frame and Packet levels (D) None of the above

30. GSM/CDMA systems :
(A) are limited to very low speed data (B) require no local loop wires
(C) are predominantly used for voice (D) all of the above

31. Usually information security in a network is achieved by :
(A) Layering (B) Cryptography
(C) Grade of service (D) None of the above

32 The linker :
(A) is similar to interpreter
(B) uses source code as its input
(C) is required to create a load module
(D) none of the above

33. In which addressing mode the operand is given explicitly in the instruction itself ?
(A) Absolute mode (B) Immediate mode
(C) Indirect mode (D) Index mode

34. A compiler that runs on one machine and produces code for a different machine is called :
(A) Cross compilation (B) One pass compilation
(C) Two pass compilation (D) None of the above

35. Any syntactic construct that can be described by a regular expression can also be described by a :
(A) Context sensitive grammar (B) Non context free grammar
(C) Context free grammar (D) None of the above

36. Find the odd man out :

(A) tail (B) cut (C) wart (D) sed

37. Which of the following changes permission to deny write permission to group and others ?

(A) Chmod go – w filex (B) Chmod go w filex

(C) Chmod go = w filex (D) None of the above

38. Variable partition memory management technique with compaction results in :

(A) Reduction of fragmentation

(B) Minimal wastage

(C) Segment sharing

(D) None of the above

39. Capability Maturity Model is meant for :

(A) Product (B) Process

(C) Product and Process (D) None of the above

40. In the light of software engineering software consists of :

(A) Programs (B) Data

(C) Documentation (D) All of the above

41. Which one of the following ISO standard is used for software process ?

(A) ISO 9000 (B) ISO 9001 (C) ISO 9003 (D) ISO 9000-3

42. Which of the following is used for test data generation ?

(A) White Box (B) Black Box

(C) Boundary-value analysis (D) All of the above

43. Reverse engineering is the process which deals with :

(A) Size measurement (B) Cost measurement

(C) Design recovery (D) All of the above

44. The spacing between character pairs is called :

(A) kerning (B) *x*-height (C) intercap (D) serif

45. When compared with analog cellular systems, an advantage of digital TDMA cellular system is that :

(A) it is less complicated

(B) it requires less of computer memory

(C) it conserves spectrum bandwidth

(D) it costs less

46. E–commerce includes :

(A) B2C (B) B2B

(C) C2C (D) All of the above

47. A clustering technique that permits a convenient graphical display is :

(A) partition based clustering

(B) probabilistic model based clustering

(C) hierarchical clustering

(D) agglomerative clustering

48. After sending a message ,the sender should not be able to, at a later date, deny having sent the message, is referred to as :

(A) Authenticity (B) Non–Repudiability

(C) Auditability (D) Repudiability

49. The device which connects dissimilar LANs of different topologies using different sets of communication protocols so that information can flow from one to another is called :

(A) Router (B) Bridge (C) Gateway (D) Switch

50. We can not delete the _____ icon but we can made it invisible.

(A) Recycle (B) My computer

(C) Internet explorer (D) None of the above

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