Gate 2nd March Evening

Q.1 Let X, Y be finite sets and $F : X \to Y$ be a function. Which of the following statement is TRUE?

(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, $|f(A \cup B)| = f(A) \cap f(B)$

(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, $f^{-1}(S \cap T) = f^{-1}(S) \cap f^{-1}(T)$

1. (d)

Q.2 Consider the following four pipeline systems
P1: Four pipeline stages with delay 1, 2, 2, 1
P2: Four pipeline stages with delay 1, 1.5, 1.5, 1.5
P3: Five pipeline stages with delay 0.5, 1, 1, 0.6, 1
P4: Five pipeline stages with delay 0.5, 0.5, 1, 1, 1.1
Which of the following has peak clock cycle rate?

(a) P1 (b) P2
(c) P3 (d) P4

2. (a)

Q.3 If $\int_0^{2\pi} |x \sin x| dx = K\pi$, then the value of K is _____

3. (4)

$$\Rightarrow \int_0^{2\pi} |x \sin x| dx = K\pi$$

$$\Rightarrow \int_0^{2\pi} |x \sin x| dx + \int_{\pi}^{2\pi} |x \sin x| dx = K\pi$$

$$\Rightarrow \int_0^{\pi} x \sin x \, dx + \int_{\pi}^{2\pi} -(x \sin x) dx = K\pi$$

$$\Rightarrow (-x \sin x + \sin x)\Big|_0^{\pi} - (-x \sin x + \sin x)\Big|_{\pi}^{2\pi} = K\pi$$

$$\Rightarrow 4\pi = K\pi$$

$$\Rightarrow K = 4$$

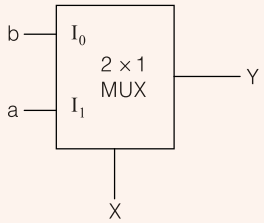
Q.4 Consider the following combinational function block involving four Boolean variables x, y, a, b where x, a, b are inputs and y is the output

```
F (x, y, a, b)
{
    if (x is 1) y = a;
    else y = b;
}
```

Which of the following digital block is most suitable for implementing the function?

(a) Full Adder
(b) Priority Encoder
(c) Multiplexer
(d) Flip Flop

4. (c)



Q.5 Let G be a group with 15 elements. Let L be a subgroup of G. It is known that $L \subset G$ and that the size of L is at least 4. The size of L is _____

5. (5)

Order of subgroup divides order of group (Lagrange's theorem). 3, 5 and 15 be the order of subgroup. As subgroup has at least 4 elements and it is not equal to the given group, also, order of subgroup can't be 3 and 15.

Hence it is 5.

Q.6 The smallest length of the string not generated by the given regular expression is ____

$a^*b^*(ba)^*a^*$

6. (3)

Smallest length is 3 and string is bab.

Q.7 Consider the following statements:
P: Good mobile phones are not cheap
Q: Cheap mobile phones are not good

Which of the following is true?

L: P implies Q
M: Q implies P
N: P is equivalent to Q

(a) Only L is true
(b) Only M is true
(c) Only N is true
(d) L, M, N are true

7. (d)

g: mobile is good

c: mobile is cheap

P: Good mobile phones are not cheap $\cong g \rightarrow \neg c \cong (\neg g \vee \neg c)$

Q: Cheap mobile phones are not good $\cong c \rightarrow \neg g \cong (\neg c \vee \neg g)$

$\therefore$ Both P and Q are equivalent which means P and Q imply each other

Q.8 If V_1 and V_2 are four dimensional subspaces of a six dimensional vector space V then the smallest possible dimension of $V_1 \cap V_2$ is _____

Q.9 Which one of them is good software?

(a) high cohesion, low coupling
(b) low cohesion, high coupling
(c) high cohesion, high coupling
(d) low cohesion, low coupling

9. (a)

Cohesion should be high and coupling should be low.

Q.10 Find the wrong pair

(a) Network layer and routing
(b) Data link layer and bit synchronization
(c) Transport layer and end to end communication
(d) MAC and channel sharing

10. (b)

Q.11 A CIDR 131.23.151.76 transmit a data in given IP addresses. What output will be given with these addresses.

IP address	Output Interface
131.16.0.0/12	3
131.28.0.0/14	5
131.19.0.0/16	2
131.22.0.0/15	1

Q.12 What will be the output for the below code

```
typedef struct treenode * tree ptr;
struct treenode
{
tree ptr left most child, right sibling
};
int dosomething (tree ptr tree)
{
int value = 0;
if (tree ! == NULL)
{
```

```
if (tree → left most child == ϕ)
value = 1;
else
value = dosomething (tree → left most child)
value = value + dosomething (tree → right sibling)
}
return (value);
}
```

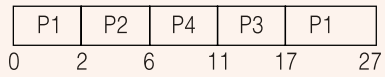
(a) height of tree
(b) number of nodes without right sibling
(c) number of leaf nodes
(d) number of internal nodes

12. (c)

Q.13 Calculate the average waiting time for the processes given below in the table using SRTF algorithm

Process	Arrival Time	Burst Time
P1	0	12
P2	2	4
P3	4	6
P4	6	5

13. (5.5)



Waiting time of P1 = 17 – 2 = 15

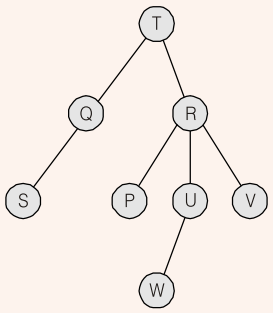
Waiting time of P2 = 2 – 2 = 0

Waiting time of P3 = 11 – 4 = 7

Waiting time of P4 = 6 – 6 = 0

$$\therefore \quad \text{Average waiting time} = \frac{15+7}{4} = \frac{22}{4} = 5.5$$

Q.14 Find inorder from the given tree



(a) SQTPWURV
(b) SQTPRWUV
(c) SQTPRUWV
(d) SQTRPWUV

14. (a)

Left, middle, root, right

SQTPWURV is inorder.

Q.15 In an array middle element is chosen as pivot element. What is the worst case time complexity of quick sort?

(a) $O(n^2)$ (b) O(nlogn)
(c) O(logn) (d) $O(n^3)$

15. (a)

Q.16 Which of the following header fields may change when a data packet is arrived at a node?

(a) TTL (b) Checksum
(c) offset (d)

16. (a)

Q.17 There is 1 second link with battery back up between two nodes. 1000 unique identifiers per second are required for this operation. Design a 50 bit unique code for this system. What is the wrap around time of identifiers?

Q.17 Prime attribute of relation R is

(a) All attribute set are candidate keys (b) Attribute is primary key in R
(c) Attribute of some candidate key (d)

17. (c)

Q.18 Consider the following statements

S1: Table with two attributes is in 1NF, 2NF, 3NF and BCNF
S2: {AB → E, AB → C, D → E, E → C}, so its minimal cover is {AB → C, D → E, E → C}

Which of the above are correct?

(a) S1 only (b) S2 only
(c) S1 and S2 (d) Neither S1 nor S2

18. (a)

Q.19 An array of n-elements are sorted in ascending order. Let L and M are any two numbers. So there is an algorithm which finds the sum of all the numbers of array between L and M. Let m be the count of numbers which are between L and M. The highest upper bound is calculated and found $n^a \times \log^b n + m^a \log^b n$, then the value of 1a + 10b + 100a + 1000b.

Q.20 Given trace is positive and determinant is negative then which of the following is true?

(a) All the eigen values are positive (b) All the eigen values are negative
(c) Atleast one eigen value is positive (d) Atleast one eigen value is negative

20. (a)

Q.21 Which of the following is true

(a) Static allocation area is required for recursion
(b) Garbage collector is required for recursion
(c) Dynamic allocation area is required for recursion
(d) Stack and heap both are required for recursion

21. (c)

Q.22 Consider minterm expansion of the function F

$$F(P, Q, R, S) = \Sigma(0, 2, 5, 7, 8, 10, 13, 15)$$

Where minterms 2, 7, 8, 13 are "do not care" terms. The minimal sum of product form of F is

(a) $Q\bar{S} + \bar{Q}S$ (b) $\bar{Q}\bar{S} + QS$

(c) $\bar{Q}RS + Q\bar{R}S + QR\bar{S} + \bar{Q}\bar{R}S$ (d) $\bar{P}QS + P\bar{Q}S + PQ\bar{S} + \bar{P}\bar{Q}S$

22. (b)

PQ \ RS	00	01	11	10
00	1	00	00	X
01	00	1	X	00
11	00	X	1	00
10	X	00	00	1

Minimal SOP form = $QS + \bar{Q}\bar{S}$

Q.23 Which of the following statement is true about n × n matrix with only real eigen values?

(a) If trace of matrix is positive and the determinant of the matrix is negative, at least one of tis eigen values is negative
(b) If the trace of the matrix is positive, all its eigen values are positive
(c) If the determine of the matrix is positive, all its eigen values are positive
(d) If the product of the trace and determinant of the matrix is positive, all its eigen values are positive.

23. (a)

If either the trace or determinant is positive, there is at least one positive eigen value. Trace of matrix is positive and the determinant of the matrix is negative, this is possible only when there is odd number of negative eigen values. Hence at least one eigen value is negative.

Q.24 Consider $\Sigma = \{a, b\}$ and Σ^* denotes all possible string that can be generated by {a, b}, and $2^{|\Sigma^*|}$ is the power set of Σ^*. Which of the following is true?

(a) $2^{|\Sigma^*|}$ is countable, Σ^* is uncountable (b) $2^{|\Sigma^*|}$ is countable, Σ^* is countable

(c) $2^{|\Sigma^*|}$ is uncountable, Σ^* is countable (d) $2^{|\Sigma^*|}$ is uncountable, Σ^* is uncountable

24. (c)

With diagonalization we can prove that $2^{|\Sigma^*|}$ is uncountable and Σ^* is countable as one to one mapping is possible with natural numbers.

Q.25 Consider the set of all functions, f: {0, 1, ... , 2014} → {0, 1, ... , 2014} such that f(f(i)) = i, 0 ≤ i ≤ 2014.

P: For each such function it must be the case that for every i, f(i) = i
Q: For each such function it must be case that for some i, f(i) = i
R: Each such function must be onto.

Which of the following is correct?

(a) P, Q and R are true
(b) Only Q and R are true
(c) Only P and Q are true
(d) Only R is true

25. (b)

P: For example, let f(0) = 1 and f(1) = 0

$\therefore$ f(f(0)) = f(1) = 0 and

f(f(1)) = f(0) = 1

$\Rightarrow$ f(f(i)) = i but f(i) ≠ i

$\therefore$ P is not true.

For some i, f(i) = i since there are odd number of elements in the set on which function is defined.

Q.26 The value of the integral given below is $\int_0^{\pi} x^2 \cos x \, dx$

(a) -2π
(b) π
(c) $-\pi$
(d) 2π

26. (a)

$$\int_0^{\pi} x^2 \cos x \, dx = x^2 (\sin x) - 2x (-\cos x) + 2(-\sin x)\Big|_0^{\pi}$$

$$= \left(\pi^2 \sin\pi + 2\pi\cos\pi - 2\sin\pi\right) - (0 + 0 - 0)$$

$$= \pi^2 \cdot 0 + 2\pi(-1) - 0 = -2\pi$$

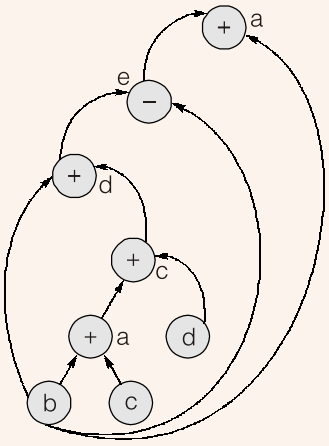
Q.27 Consider a basic block

a = b + c
c = a + d
d = b + c
e = d – b
a = e + b

Maximum number of nodes and edges in DAG generated for the above block

(a) 6, 6
(b) 9, 12
(c) 8, 10
(d) 4, 4

27. (c)



Q.28 Consider a decision problem 2CNFSAT = {∅ | ∅ is satisfiable propositional formula in CNF with at most 2 literals per clauses}

For example:

$\varnothing = (x_1 \vee x_2) \wedge (x_1 \vee \overline{x_3}) \wedge (x_2 \vee x_4)$ a Boolean formula 2 CNFSAT

The decision problem 2 CNFSAT is

(a) NP-complete
(b) Solvable in P time by reduction to directed graph reachability problem
(c) Solves in constant time if every input sequence is satisfiable
(d) NP hard but not NP complete

28. (b)

Q.29 With respect to the numerical evaluation of the definite integral, $K = \int_a^b x^2\,dx$, where a and b are given, which of the following is/ are TRUE?

(I) The value of K obtained using Trapezoidal rule is always greater than or equal to the exact value of the definite integral.
(II) The value of K obtained using Simpson's rule is always equal to the exact value of the definite integral.

(a) I only
(b) II only
(c) Both I and II
(d) Neither I nor II

29. (c)

Let us consider

$$\int_0^1 x^2\,dx = \frac{x^3}{3}\Big|_0^1 = \frac{1}{3} = 0.33333 \text{ (up to 5 decimal)}$$

Let n = 4

x	0	0.25	0.5	0.75	1
$y = x^2$	0	0.0625	0.25	0.5625	1
	y_0	y_1	y_2	y_3	y_4

$$\int_0^1 x^2\,dx = \frac{h}{2}[(y_0 + y_4) + 2(y_1 + y_2 + y_3)] \quad \text{(by trapezoidal rule)}$$

$$= \frac{0.25}{2}[(0+1) + 2(0.0625 + 0.25 + 0.5625)]$$

$$= 0.34375$$

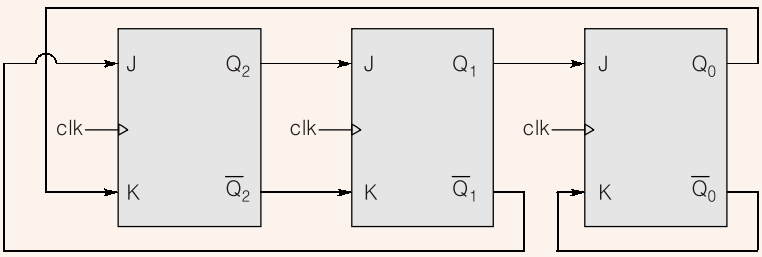
Clearly the value is greater than 0.33333, also for greater values of 'n' there will be slight difference, hence given integral is always greater than 0.33333
Using Simpson's 1/3rd rule

$$\int_0^1 x^2\,dx = \frac{h}{3}[(y_0 + y_4) + 2(y_2) + 4(y_1 + y_3)]$$

$$= \frac{0.25}{3}[(0+1) + 2(0.25) + 4(0.0625 + 0.5625)]$$

= 0.33333 (up to 5 decimals), which is equal to exact value.

Q.30



The above synchronous sequential circuit built using JK flip flops initialized with $Q_2Q_1Q_0 = 000$. The state sequence for this circuit for the next three clock cycles is

(a) 001, 010, 011
(b) 111, 110, 101
(c) 100, 110, 111
(d) 100, 011, 001

30. (c)

Present State			FF inputs						Next State		
Q_2	Q_1	Q_0	J_2	K_2	J_1	K_1	J_0	K_0	Q_2	Q_1	Q_0
			$(\bar{Q}_1)$	(Q_0)	(Q_2)	$(\bar{Q}_2)$	(Q_1)	$(\bar{Q}_0)$			
0	0	0	1	0	0	1	0	1	1	0	0
1	0	0	1	0	1	0	0	1	1	1	0
1	1	0	0	0	1	0	1	1	1	1	1

Q.31 Which of the following decision problem is undecidable?

(a) Ambiguity problem of context free grammer
(b) If the string generated by the context free grammer
(c) If context free grammer generates empty language
(d) If context free grammar generates finite language

31. (a)

There is no algorithm for determining the ambiguity of given CFG, hence it is undecidable.

Q.32 A cache memory has memory access time for read operation as 1ns if cache hit occurs and 5ns for read operation if cache miss occurs. Memory access time for write operation is 2ns if cache hit occurs and 10ns for write operation if cache miss occurs. Suppose 100 instruction fetch operations, 60 memory operand read operations and 40 memory operand write operations are being performed. The cache hit rate is 0.9, what is the average execution time for the instruction?

32. (3.36ns)

For fetch operation $90 \times 1\text{ns} + + 10 \times 5\text{ns} = 140\text{ns}$

Memory operand read operation $54\text{ns} + 30\text{ns} = 84$

Memory operand write operation $72\text{ns} + 40\text{ns} = 112$

Total time for 100 instruction is $140 + 84 + 112 = 336\text{ns}$

Average time is 3.36ns.

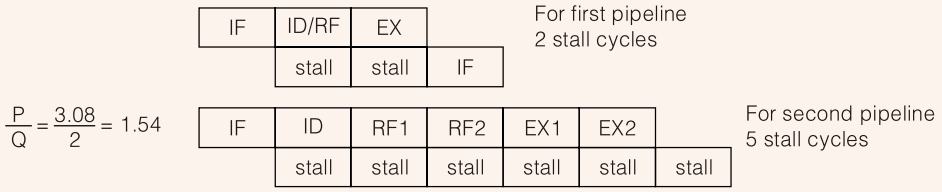
Q.33 Consider the five stage pipeline system with Instruction Fetch (IF), Instruction Decode and Register Fetch (ID/RF), Execute (EX), Memory access (MEM) and Write Back (WB) operations. the respective stages are taking time 1ns, 2.2ns, 2ns, 1ns, 0.75ns. A modification is proposed on this pipeline system and ID/RF stage is further divided in ID, RF1 and RF2 taking 2.2/3ns each, further EX stage is also divided in EX1 and EX2 each taking equal time. If the instruction is a branch instruction, next instruction pointer will be available at the end of EX stage of first pipeline and after EX2 for the second pipeline. All instructions other than branch instruction have average CPI as 1. 20% instructions are branch instructions. If average access time for first pipeline is P and for second is Q, the ration of P and Q is _____

33. (1.54)

$T_{avg} = (1 + \text{stall frequency} \times \text{Stall cycle}) \times T_{clock}$

$TP_{avg} = (1 + 0.2 \times 2) \times 2.2ns = 3.08ns$

$TQ_{avg} = (1 + 0.2 \times 5) \times 1ns = 2ns$



Q.34 If G is a forest with n vertices and k connected components, how may edges does G have?

(a) $\lfloor n/k \rfloor$ (b) $\lfloor k/n \rfloor$

(c) $n - k$ (d) $n - k + 1$

34. (c)

Forest is collection of trees and in a forest each tree will form one connected component. Assume that there are k connected components where each is having n_1, n_2, n_3....n_k vertices respectively.

Total number of edges in a forest with n vertices and k connected components will be as follows:

$$(n_1 - 1)+(n_2 - 1)+(n_3 - 1)+. . . .(n_k - 1)$$
$$= (n_1 + n_2 + n_3 + ...+ n_k) - (1 + 1 + 1+. . . \text{k times})$$
$$= n - k$$

Q.35 Let δ denotes the minimum degree of vertex in a graph. For all planar graphs on n vertices with $\delta \geq 3$, which of the following is TRUE?

(a) In any planer embedding, the number of faces is at least n/2 + 2
(b) In any planer embedding, the number of faces is less than n/2 + 2
(c) There is a planer embedding in which the number of faces is less than n/2 + 2
(d) There is a planer embedding in which the number of faces is at most n/δ+1

35. (a)

Q.36 The correct formula for the sentence "not all rainy days are cold" is

(a) $\forall d\ (\text{rainy}\ (d) \wedge \sim \text{Cold}\ (d))$ (b) $\forall d\ (\sim \text{rainy}\ (d) \rightarrow \text{Cold}\ (d))$

(c) $\exists d\ (\sim \text{rainy}\ (d) \rightarrow \text{Cold}\ (d))$ (d) $\exists d\ (\text{rainy}\ (d) \wedge \sim \text{Cold}\ (d))$

36. (d)

Not all rainy days are cold: $\sim (\forall d\ (\text{rainy}\ (d) \rightarrow \text{Cold}\ (d)))$

$\equiv \sim (\forall d\ (\sim \text{rainy}\ (d) \vee \text{Cold}\ (d)))$

$\equiv \exists d\ (\text{rainy}\ (d) \wedge \sim \text{Cold}\ (d))$

Q.37 Consider the following language defined over $\Sigma = \{0, 1, c\}$

$L_1 = \{0^n 1^n \mid n \geq 0\}$
$L_2 = \{wcw^r \mid w \in \{0, 1\}^*\}$
$L_3 = \{ww^r \mid w \in \{0, 1\}^*\}$

Which of the above language can be recognized by deterministic pushdown automata?

(a) None of the language
(b) Only L1
(c) L_1 and L_2
(d) All the language

37. (c)

L_1 and L_2 are deterministic CFLs and so those can be recognized by deterministic PDA where as L_3 is not deterministic CFL.

Q.38 Let S be as sample space and mutually exclusive events A and B be such that $A \cup B = S$. If P(.) denotes the probability of the event, the maximum value of P(A) P(B) is _____

38. (0.25)

$$A \cup B = S$$
$$\therefore \quad P(A \cup B) = P(S) = 1$$
$$\Rightarrow \quad P(A) + P(B) - P(A \cap B) = 1$$
$$\Rightarrow \quad P(A) + P(A) = 1 \quad [\because A \text{ and } B \text{ are M.E.}]$$
$$\text{Let} \quad P(A) = x$$
$$P(B) = 1 - x$$
$$\therefore \quad y = P(A)\,P(B) = x(1-x) \Rightarrow y = x - x^2$$

$$\frac{dy}{dx} = 1 - 2x = 0 \Rightarrow x = \frac{1}{2}; \frac{d^2y}{dx^2} = -2 < 0; \left(\frac{d^2y}{dx^2}\right)_{x=\frac{1}{2}} = -2 < 0$$

$$\therefore \quad y \text{ has maximum at } x = \frac{1}{2}$$

$$\therefore \quad y_{max} = \frac{1}{2} \times \frac{1}{2} = \frac{1}{4} = 0.25$$

Q.39 Let $\oplus$ denotes the exclusive XOR operator. Let '1', '0' denote constants. Consider following Boolean expression for F over two variables P and Q:

$$F(P, Q) = ((1 \oplus P) \oplus (P \oplus Q)) \oplus ((P \oplus Q) \oplus (Q \oplus 0))$$

The equivalent expression for F is

(a) $P + Q$
(b) $\overline{P + Q}$
(c) $P \oplus Q$
(d) $\overline{P \oplus Q}$

39. (d)

$$F(P, Q) = ((1 \oplus P) \oplus (P \oplus Q)) \oplus ((P \oplus Q) \oplus (Q \oplus 0))$$

$$= \left(\overline{P} \oplus (P\overline{Q} + \overline{P}Q)\right) \oplus \left(P \oplus Q) \oplus (Q \oplus 0)\right)$$

$$= \left[\overline{P}\left(PQ + \overline{P}\,\overline{Q}\right) + \left(P\overline{Q} + \overline{P}Q\right)\right] \oplus \left[\left(PQ + \overline{P}\,\overline{Q}\right) + \left(P\overline{Q} + \overline{P}Q\right)\overline{Q}\right]$$

$$= PQ + \overline{P}\,\overline{Q} = \overline{P \oplus Q}$$

Q.40 There are two elements x, y in a group (G, *) such that every element in the group can be written as product of some number of x's and y's in some order. It is known that

$$x*x = y*y = x*y*x*y = y*x*y*x = e$$

where e is the identity element. The maximum number of elements in such a group is _____

40. (4)

$\{1, a, a^{-1}, a \times a^{-1}\}$ is a group

Q.41 Consider the equation: $(7526)_8 - (Y)_8 = (4364)_8$, where $(X)_N$ stands for X to the base N. Find Y.

(a) 1634 (b) 1737
(c) 3142 (d) 3162

41. (c)

$$\begin{array}{r} 7526_8 \\ -3142_8 \\ \hline 4364_8 \end{array}$$

Q.42 Consider the following C program

```
C = 100;
for (i = 1; i <= n; i++)
{
      for (j = 1; j <= n; j++)
{
      temp = A[i] [j] + C;
      A[i] [j] = A [j] [i];
      A[j] [i] = temp –C;
}
}
for (i=1; i<=n; i++)
{
for (j = 1; j<=n; j++)
      {
         printf("%d", A[i] [j]);
      }
```

printf ("\n");
}

After execution of the above code, what is the output?

(a) Matrix A itself
(b) Transpose of A
(c) #
(d) None of these

42. (a)

Q.43 There are 3 processes in which every process require 3 resources, what is the minimum number of resource required to ensure that no deadlock will occur?

43. (7)

Q.44 TLB hit rate is 0.6 and TLB access time is 10ms and disk access time is 80ms. Find average access time in ms?

44. (122)

$0.6 \times [10 + 80] + 0.4[10 + 80 + 80] = 122$

Q.45 4404 bytes data segment and 20 byte header with capacity of channel 1500 bytes. What is the last fragment?

(a) MF = 0, offset = 370,1444
(b) #
(c) #
(d) MF = 0, offset = 2960

45. (a)

Q.46 With 100 slots chaining is used for conflict resolution. What is the probability that first places are not filled after three entries?

46. (0.912673)

$$\frac{97 \times 97 \times 97}{100 \times 100 \times 100}$$

Q.47 By the beginning of 20^{th} century, several hypothesis were being proposed, suggesting a paradigm shift in our understanding of the universe. However the clinching evidence was provided by experimental measurements of the positions of a star which was directly behind our sun.

Which of the following inference(s) may be drawn from the above paragraph?

(i) Our understanding of the universe changes based on the position of stars
(ii) Paradigm shift usually occur at the beginning of centuries
(iii) Star are important objects in the universe
(iv) Experimental evidence was important in confirming this paradigm shift

(a) i, ii and iv
(b) iii only
(c) i and iv
(d) iv only

47. (c)

Q.48 The table below has question wise data on the performance of students in an examination. The marks for each question are also listed. There is no negative or partial marking in the examination.

Question No.	Marks	Ans. correctly	Ans. wrongly	Not attempted
1	2	21	17	6
2	3	15	27	2
3	2	23	18	3

What is the average of the marks obtained by the class in the examination?

(a) 1.34 (b) 1.74
(c) 3.02 (d) 3.91

48. (c)

Average marks: $\frac{(2\times 21)+(3\times 15)+(2\times 23)}{44}=\frac{133}{44}\approx 3.02$

Q.49 $\underset{\text{(I)}}{\text{While trying to collect}}$ an envelop $\underset{\text{(II)}}{\text{from under the table}}$, $\underset{\text{(III)}}{\text{Mr. X fell down}}$ and $\underset{\text{(IV)}}{\text{was losing consciousness}}$.

Which of the above underlined parts of the sentences is NOT appropriate?

(a) I (b) II
(c) III (d) IV

49. (d)

Q.50 If she _____ how to calibrate the instrument, she _____ done the experiment.

(a) knows, will have (b) knew, had
(c) had known, could have (d) should have know, would have

50. (c)

Q.51 Choose the word that opposite in meaning to the word "coherent".

(a) sticky (b) well-connected
(c) rambling (d) friendly

51. (c)

Q.52 Which number does not belong to the series below?

2, 5, 10, 17, 26, 37, 50, 64

(a) 17 (b) 37
(c) 64 (d) 26

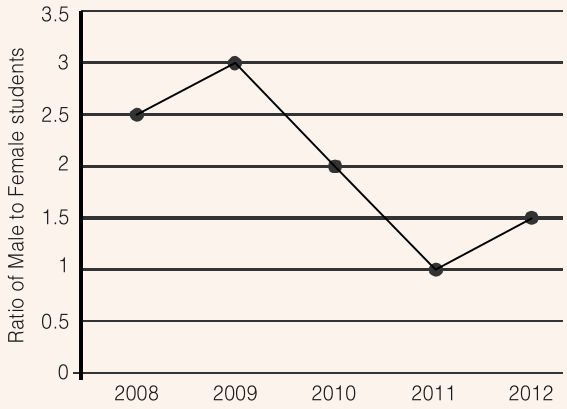
52. (c)

Q.53 The Gross Domestic Product (GDP) in Rupees grew at 7% during 2012-2013. For international comparison, the GDP is compared in US dollars (USD) after conversion based on the market exchange rate. During the period 2012-2013 the exchange rate for USD increased from Rs 50/USD to Rs 60/USD.India's GDP in USD during the period 2012-2013 GLOBALY (international level)

(a) increased by 5%
(b) decreased by 13%
(c) decreased by 20%
(d) decreased by 11%

53. (b)

Q.54 The ratio of Male to Female students in a college for 5 years is plotted in the following line graph. If the number of female students in 2011 and 2012 is equal, what is the ratio of male students in 2012 to male students in 2011?



(a) 1 : 1
(b) 2 : 1
(c) 1.5 : 1
(d) 2.5 : 1

54. (c)

Q.55 A dance program is scheduled for 10.00 am. Some students are participating in the program and they need to come 1 hour earlier than the start of the event. These students should be accompanied by a parent. Other students and parents should come in time for the program. The instruction you think that is appropriate for this is

(a) Students should come at 9.00 am and parents should come at 10.00 am
(b) Participating students should come at 9.00 am accompanied by a parent and other parents and students should come by 10.00 am
(c) Students who are not participation should come by 10.00 am and they should not bring their parents. Participating students should come at 9.00 am.
(d) Participating students should come before 9.00 am. Parents who accompany them should come at 9.00 am. All other should come at 10.00 am.

55. (b)

If there are any queries please contact:

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