GATE CS 2012

EE25BTECH11011 - Banavathu Navya

Q.1 - Q.20 Carry One Mark Each.

1) Which of the following problems are decidable?
   a) Does a given program ever produce an output?
   b) If L is context-free language, then, is L also context-free?
   c) If L is regular language, then, is L also regular?
   d) If L is recursive language, then, is L also recursiv

   a) 1,2,3,4 b) 1,2 c) 2,3,4 d) 3,4

2) Given the language L-ab, aa, baa, which of the following strings are in L*?
   a) abaabaaabaa
   b) aaaabaaaa
   c) baaaaabaaaab
   d) baaaa

   a) 1,2 and 3 b) 2,3 and 4 c) 1,2 and 4 d) 1,3 and 4

3) In the IPv4 addressing format, the number of networks allowed under Class C addresses is

   a) 2^{14} b) 2^{7} c) 2^{21} d) 2^{24}

4) Which of the following transport layer protocols is used to support electronic mail?

   a) SMTP b) IP c) TCP d) UDP

5) Consider a random variable X that takes values +1and −1 with probability 0.5 each. The values of the cumulative distribution function F(x) at x = −1 and +1 are

   a) 0 and $0,5$
   b) 0 and 1
   c) 0.5 and 1
   d) $0,25$ and 0.75

6) Register renaming is done is pipelined processors
   a) as an alternative to register allocation at compile time
   b) for efficient access to function parameters and local variables
   c) to handle certain kinds of hazards
   d) as part of address translation

7) The amount of ROM needed to implement a 4 bit multiplier is

a) 64 bits b) 128 bits c) 1 Kbits d) 2 Kbits

8) Let $W(n)$ and $A(n)$ denote respectively, the worst case and average case running time of an algorithm executed on an input of size n. Which of the following is **ALWAYS TRUE**?

a) $A(n) = \Omega(W(n))$
b) $A(n) = \Theta(W(n))$
c) $A(n) = O(W(n))$
d) $A(n) = o(W(n))$

9) Let G be a simple undirected planar graph on 10 vertices with 15 edges. If G is a connected graph, then the number of bounded faces in any embedding of G on the plane is equal to

a) 3 b) 4 c) 5 d) 6

10) The recurrence relation capturing the optimal execution time of the Towers of Hanoi problem with n discs is

a) T(n)=2T(n-2)+2
b) T(n)=2T(n-1)+n
c) T(n)=2T(n/2)+1
d) T(n)=2T(n-1)+1

11) Which of the following statements are **TRUE**, about an SQL query?

P: An SQL query can contain a `HAVING` clause even if it does not have a `GROUP BY` clause.
Q: An SQL query can contain a `HAVING` clause only if it has a `GROUP BY` clause.
R: All attributes used in the `GROUP BY` clause must appear in the `SELECT` clause.
S: Not all attributes used in the `GROUP BY` clause need to appear in the `SELECT` clause.

a) P and R
b) P and S
c) Q and R
d) Q and S

12) Given the basic ER and relational models, which of the following is INCORRECT?

a) An attribute of an entity can have more than one value
b) An attribute of an entity can be composite
c) In a row of a relational table, an attribute can have more than one value
d) In a row of a relational table, an attribute can have exactly one value or a NULL value

13) What is the complement of the language accepted by the NFA shown below? Assume $\Sigma = \{a\}$ and ε is the empty string.

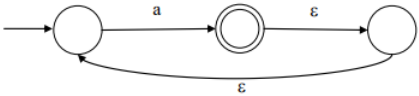

Fig. 13.1

a) $\varnothing$ b) $\{\varepsilon\}$ c) a^* d) $\{a, \varepsilon\}$

14) What is the correct translation of the following statement into mathematical logic? *"Some real numbers are rational"*

a) $\exists x\ (\text{real}(x) \vee \text{rational}(x))$
b) $\forall x\ (\text{real}(x) \rightarrow \text{rational}(x))$
c) $\exists x\ (\text{real}(x) \wedge \text{rational}(x))$
d) $\exists x\ (\text{rational}(x) \rightarrow \text{real}(x))$

15) Let A be the 2×2 matrix with elements $a_{11} = a_{12} = a_{21} = +1$ and $a_{22} = -1$. Then the eigenvalues of the matrix A^{19} are

a) 1024 and -1024
b) $1024\sqrt{2}$ and $-1024\sqrt{2}$
c) $4\sqrt{2}$ and $-4\sqrt{2}$
d) $512\sqrt{2}$ and $-512\sqrt{2}$

16) The protocol data unit (PDU) for the application layer in the Internet stack is

a) Segment b) Datagram c) Message d) Frame

17) Consider the function $f(x) = \sin(x)$ in the interval $x \in \left[\frac{\pi}{4}, \frac{7\pi}{4}\right]$. The number and location(s) of the local minima of this function are

a) One, at $\frac{\pi}{2}$
b) One, at $\frac{3\pi}{2}$
c) Two, at $\frac{\pi}{2}$ and $\frac{3\pi}{2}$
d) Two, at $\frac{\pi}{4}$ and $\frac{3\pi}{2}$

18) A process executes the code

```
fork();
fork();
fork();
```

The total number of child processes created is

a) 3 b) 4 c) 7 d) 8

19) The decimal value 0.5 in IEEE single precision floating point representation has

a) fraction bits of $000\ldots000$ and exponent value of 0
b) fraction bits of $000\ldots000$ and exponent value of -1
c) fraction bits of $100\ldots000$ and exponent value of 0
d) no exact representation

20) The truth table

X	Y	$f(X, Y)$
0	0	0
0	1	0
1	0	1
1	1	1

represents the Boolean function

a) X b) $X + Y$ c) $X \oplus Y$ d) Y

21) The worst case running time to search for an element in a balanced binary search tree with n^2 elements is

a) $\Theta(n \log n)$ b) $\Theta(n^{2^n})$ c) $\Theta(n)$ d) $\Theta(\log n)$

22) Assuming $P \neq NP$, which of the following is TRUE?

a) NP-complete = NP
b) NP-complete $\cap$ P = $\varnothing$
c) NP-hard = NP
d) P = NP-complete

23) What will be the output of the following C program segment?

```
char inChar = 'A';
switch (inChar) {
    case 'A': printf("Choice A\n");
    case 'B':
    case 'C': printf("Choice B");
    case 'D':
    case 'E':
    default : printf("No Choice");
}
```

a) No choice
b) Choice A
c) Choice A Choice B No choice
d) Program gives no output as it is erroneous

24) Which of the following is TRUE?

a) Every relation is 3NF is also in BCNF
b) A relation R is in 3NF if every non-prime attribute of R is fully functionally dependent on every key of R
c) Every relation in BCNF is also in 3NF
d) No relation can be in both BCNF and 3NF

25) Consider the following logical inferences:
I_1 : If it rains then the cricket match will not be played. The cricket match was played. Inference: There was no rain.

I_2 : If it rains then the cricket match will not be played. It did not rain.
Inference: The cricket match was played.
Which of the following is **TRUE**?

a) Both I_1 and I_2 are correct inferences
b) I_1 is correct but I_2 is not a correct inference
c) I_1 is not correct but I_2 is a correct inference
d) Both I_1 and I_2 are not correct inferences

Q.26 - Q.55 Carry Two Marks Each.

26) Which of the following graphs is isomorphic to

Fig. 26.1: isomorphic

a)

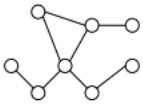

Fig. 26.2: A

b)

Fig. 26.4: C

c)

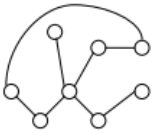

Fig. 26.3: B

d)

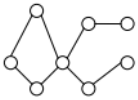

Fig. 26.5: D

27) Consider the following transactions with data items P and Q initialized to zero:

T_1 :
read(P);
read(Q);
if $P = 0$ then $Q := Q + 1$;
write(Q);

T_2 :
read(Q);
read(P);
if $Q = 0$ then $P := P + 1$;
write(P);

Any non-serial interleaving of T_1 and T_2 for concurrent execution leads to:

a) a serializable schedule
b) a schedule that is not conflict serializable
c) a conflict serializable schedule
d) a schedule for which a precedence graph cannot be drawn

28) The bisection method is applied to compute a zero of the function $f(x) = x^4 - x^3 - x^2 - 4$ in the interval $[1, 9]$. The method converges to a solution after ___ iterations.

a) 1 b) 3 c) 5 d) 7

29) Let G be a weighted graph with edge weights greater than one, and let G' be the graph constructed by squaring the weights of edges in G. Let T and T' be the minimum spanning trees of G and G', respectively, with total weights t and t'. Which of the following statements is **TRUE**?

a) $T' = T$ with total weight $t' = t^2$
b) $T' = T$ with total weight $t' < t^2$
c) $T' \neq T$ but total weight $t' = t^2$
d) None of the above

30) What is the minimal form of the Karnaugh map shown below? Assume that X denotes a don't care term.

cd \ ab	00	01	11	10
00	1	X	X	1
01	X			1
11				
10	1			X

Fig. 30.1: Karnaugh map

a) $\bar{b}\bar{d}$ b) $\bar{b}\bar{d} + \bar{b}\bar{c}$ c) $\bar{b}\bar{d} + a\bar{b}\bar{c}d$ d) $\bar{b}\bar{d} + \bar{b}\bar{c} + \bar{c}\bar{d}$

31) Consider the 3 processes, $P1, P2, P3$ shown in the table.

Process	Arrival Time	Time Units Required
$P1$	1	5
$P2$	1	7
$P3$	3	4

The completion order of the 3 processes under the policies FCFS and RR2 (round robin scheduling with CPU quantum of 2 time units) are:

a) FCFS: P1, P2, P3 RR2: P1, P2, P3 c) FCFS: P1, P2, P3 RR2: P1, P3, P2
b) FCFS: P1, P3, P2 RR2: P1, P3, P2 d) FCFS: P1, P2, P3 RR2: P1, P2, P3

32) `Fetch_And_Add(X,i)` is an atomic Read-Modify-Write instruction that reads the value of memory location *X*, increments it by the value *i*, and returns the old value of *X*. It is used in the pseudocode shown below to implement a busy-wait lock. *L* is an unsigned integer shared variable initialized to 0. The value 0 corresponds to lock being available, while any non-zero value corresponds to lock not being available.

```
AcquireLock(L) {
    while (Fetch_And_Add(L,1))
        L = 1;
}

ReleaseLock(L) {
    L = 0;
}
```

This implementation

a) fails as *L* can overflow
b) fails as *L* can take on a non-zero value when the lock is actually available
c) works correctly but may starve some processes
d) works correctly without starvation

33) Suppose a fair six-sided die is rolled once. If the value on the die is 1, 2, or 3, the die is rolled a second time. What is the probability that the sum total of values that turn up is at least 6?

a) $\frac{10}{21}$ b) $\frac{5}{12}$ c) $\frac{2}{3}$ d) $\frac{1}{6}$

34) An Internet Service Provider (ISP) has the following chunk of CIDR-based IP addresses available with it: 245.248.128.0/20 The ISP wants to give half of this chunk of addresses to Organization A, and a quarter to Organization B, while retaining the remaining with itself. Which of the following is a valid allocation of addresses to A and B?

a) 245.248.136.0/21 and 245.248.128.0/22
b) 245.248.128.0/21 and 245.248.128.0/22
c) 245.248.132.0/22 and 245.248.132.0/21
d) 245.248.136.0/24 and 4245.248.132.0/21

35) Suppose a circular queue of capacity $(n-1)$ elements is implemented with an array of n elements. Assume that the insertion and deletion operations are carried out using `REAR` and `FRONT` as array index variables, respectively. Initially, `REAR = FRONT = 0`. The conditions to detect *queue full* and *queue empty* are:

a) **full:** $(REAR + 1) \bmod n = FRONT$ **empty:** $REAR = FRONT$

b) **full:** $(REAR + 1) \bmod n = FRONT$ **empty:** $(FRONT + 1) \bmod n = REAR$
c) **full:** $REAR = FRONT$ **empty:** $(REAR + 1) \bmod n = FRONT$
d) **full:** $(FRONT + 1) \bmod n = REAR$ **empty:** $REAR = FRONT$

36) Consider the program given below, in a block-structured pseudo-language with lexical scoping and nesting of procedures permitted.

```
Program main;
Var ...
    Procedure A1;
        Var ...
        Call A2;
    End A1;

    Procedure A2;
        Var ...
        Procedure A21;
            Var ...
            Call A1;
        End A21;

        Call A21;
    End A2;

    Call A1;
End main.
```

Consider the calling chain: Main $\rightarrow$ $A1$ $\rightarrow$ $A2$ $\rightarrow$ $A21$ $\rightarrow$ $A1$
The correct set of activation records along with their access links is given by:

a)

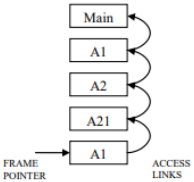

Fig. 36.1: A

b)

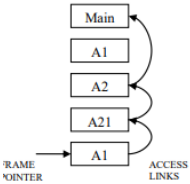

Fig. 36.2: B

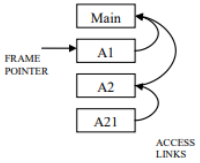

Fig. 36.3: C

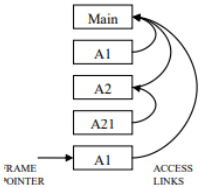

Fig. 36.4: D

c)

37) How many onto (or surjective) functions are there from an n-element ($n \geq 2$) set to a 2-element set?

a) 2^n b) $2^n - 1$ c) $2^n - 2$ d) $2(2^{n-1} - 1)$

38) Let G be a complete undirected graph on 6 vertices. If vertices of G are labeled, then the number of distinct cycles of length 4 in G is equal to

a) 15 b) 30 c) 90 d) 360

39) A list of n strings, each of length n, is sorted into lexicographic order using the merge-sort algorithm. The worst-case running time of this computation is

a) $O(n \log n)$ b) $O(n^2 \log n)$ c) $O(n^2 + \log n)$ d) $O(n^2)$

40) Consider the directed graph shown in the figure below. There are multiple shortest paths between vertices S and T. Which one will be reported by Dijkstra's shortest path algorithm?

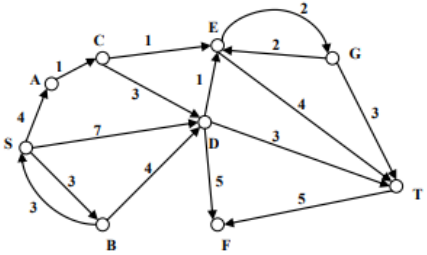

Fig. 40.1: Graph

a) SDT b) SBDT c) SACDT d) SACET

41) A file system with 300 GByte disk uses a file descriptor with 8 direct block addresses, 1 indirect block address and 1 doubly indirect block address. The size of each disk

block is 128 Bytes and the size of each disk block address is 8 Bytes. The maximum possible file size in this file system is

a) 3 KBytes
b) 35 KBytes
c) 280 KBytes
d) Dependent on the size of the disk

42) Consider the virtual page reference string: $1, 2, 3, 2, 4, 1, 3, 2, 4, 1$ on a demand paged virtual memory system running on a computer system that has main memory size of 3 page frames which are initially empty.
Let LRU, FIFO, and OPTIMAL denote the number of page faults under the corresponding page replacement policy. Then

a) OPTIMAL < LRU < FIFO
b) OPTIMAL < FIFO < LRU
c) OPTIMAL = LRU
d) OPTIMAL = FIFO

43) Suppose $R_1(A, B)$ and $R_2(C, D)$ are two relation schemas. Let r_1 and r_2 be the corresponding relation instances. B is a foreign key that refers to C in R_2.
If data in r_1 and r_2 satisfy referential integrity constraints, which of the following is **ALWAYS TRUE**?

a) $\Pi_B(r_1) - \Pi_C(r_2) = \emptyset$
b) $\Pi_B(r_1) - \Pi_C(r_2) \neq \emptyset$
c) $\Pi_C(r_2) - \Pi_B(r_1) = \emptyset$
d) $\Pi_C(r_2) - \Pi_B(r_1) \neq \emptyset$

44) Consider a source computer (S) transmitting a file of size 10^6 bits to a destination computer (D) over a network of two routers (R_1 and R_2) and three links (L_1, L_2, and L_3).
L_1 connects S to R_1, L_2 connects R_1 to R_2, and L_3 connects R_2 to D.
Let each link be of length 100 km and signals travel over each link at a speed of 10^8 meters per second. Assume that the link bandwidth on each link is 1 Mbps. Let the file be broken down into 1000 packets each of size 1000 bits.
Find the total sum of transmission and propagation delays in transmitting the file from S to D.

a) 1005 ms b) 1010 ms c) 3000 ms d) 3003 ms

45) Consider an instance of TCP's Additive Increase Multiplicative Decrease (AIMD) algorithm where the window size at the start of the slow start phase is 2 MSS and the threshold at the start of the first transmission is 8 MSS. Assume that a timeout occurs during the fifth transmission.
Find the congestion window size at the end of the tenth transmission.

a) 8 MSS b) 14 MSS c) 7 MSS d) 12 MSS

46) Consider the set of strings on $\{0, 1\}$ in which *every substring of 3 symbols has at most two zeros*. For example, 001110 and 01001 are in the language, but 100010 is not. All strings of length less than 3 are also in the language. A partially completed DFA that accepts this language is shown below.

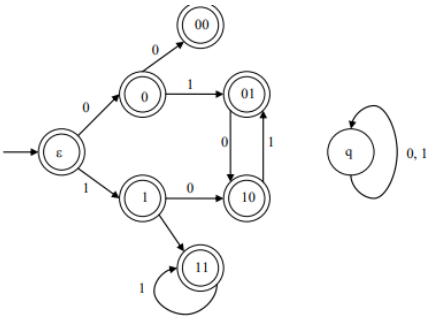

Fig. 46.1: set of strings

The missing arcs in the DFA are to be determined.

(A)

	00	01	10	11	q
00	1	0			
01				1	
10	0				
11			0		

(B)

	00	01	10	11	q
00		0			1
01		1			
10				0	
11		0			

(C)

	00	01	10	11	q
00		1			0
01		1			
10			0		
11		0			

(D)

	00	01	10	11	q
00		1			0
01				1	
10	0				
11			0		

47) The height of a tree is defined as the number of edges on the longest path in the tree. The function shown in the pseudocode below is invoked as `height(root)` to compute the height of a binary tree rooted at the tree pointer `root`.

```
int height (treeptr n)
{
   if (n == NULL) return -1;
   if (n -> left == NULL)
      if (n -> right == NULL) return 0;
      else return B1; // Box 1
   else {
      h1 = height(n -> left);
      if (n -> right == NULL) return (1 + h1);
      else {
         h2 = height(n -> right);
         return B2; // Box 2
```

```
        }
    }
}
```

The appropriate expressions for the two boxes B1 and B2 are:

(A) B1: $(1 + \text{height}(n \rightarrow \text{right}))$ B2: $(1 + \max(h1, h2))$

(B) B1: $\text{height}(n \rightarrow \text{right})$ B2: $(1 + \max(h1, h2))$

(C) B1: $\text{height}(n \rightarrow \text{right})$ B2: $\max(h1, h2)$

(D) B1: $(1 + \text{height}(n \rightarrow \text{right}))$ B2: $\max(h1, h2)$

Common Data Questions

Common Data for Questions 48 and 49:

Consider the following C code segment.

```
int a, b, c = 0;
void prtFun(void);

main()
{
    static int a = 1; /* Line 1 */
    prtFun();
    a += 1;
    prtFun();
    printf("\n␣%d␣%d", a, b);
}

void prtFun(void)
{
    static int a = 2; /* Line 2 */
    int b = 1;
    a += ++b;
    printf("\n␣%d␣%d", a, b);
}
```

48) What output will be generated by the given code segment?

(A)
3 1
4 1
4 2

(B)
4 2
6 1
6 1

(C)
4 2
6 2
2 0

(D)
3 1
5 2
5 2

49) What output will be generated by the given code segment if:
Line 1 is replaced by `auto int a = 1;` Line 2 is replaced by `register int a = 2;`

(A)
3 1
4 1
4 2

(B)
4 2
6 1
6 1

(C)
4 2
6 2
2 0

(D)
4 2
4 2
2 0

Common Data for Questions 50 and 51:

Consider the following relations A, B and C:

Id	Name	Age
12	*Arun*	60
15	*Shreya*	24
99	*Rohit*	11

Id	Name	Age
15	*Shreya*	24
25	*Hari*	40
98	*Rohit*	20
99	*Rohit*	11

Id	Phone	Area
10	2200	02
99	2100	01

50) How many tuples does the result of the following relational algebra expression contain? Assume that the schema of $A \cup B$ is the same as that of A.
$(A \cup B) \bowtie_{A.Id>40 \vee C.Id<15} C$

a) 7 b) 4 c) 5 d) 9

51) How many tuples does the result of the following SQL query contain?

```
SELECT A.Id
FROM A
WHERE A.Age > ALL (SELECT B.Age
                   FROM B
                   WHERE B.Name = 'Arun');
```

a) 4 b) 3 c) 0 d) 1

Linked Answer Questions

Statement for Linked Answer Questions 52 and 53:

For the grammar below, a partial LL(1) parsing table is also presented along with the grammar. Entries that need to be filled are indicated as E1, E2, and E3. ϵ is the empty string, $ indicates end of input, and | separates alternate right hand sides of productions.

$S \rightarrow aAB \mid bAaB \mid \epsilon A \quad \rightarrow SB \rightarrow S$

	a	b	$\$$
S	$E1$	$E2$	$S \rightarrow \epsilon$
A	$A \rightarrow S$	$A \rightarrow S$	error
B	$B \rightarrow S$	$B \rightarrow S$	$E3$

52) The FIRST and FOLLOW sets for the non-terminals A and B are:

a) $FIRST(A) = \{a, b, \epsilon\} = FIRST(B)$, $FOLLOW(A) = \{a, b\}$, $FOLLOW(B) = \{a, b, \$\}$

b) $FIRST(A) = \{a, b, \$\}$, $FIRST(B) = \{a, b, \epsilon\}$, $FOLLOW(A) = \{a, b\}$, $FOLLOW(B) = \{\$\}$

c) $FIRST(A) = \{a, b, \epsilon\} = FIRST(B)$, $FOLLOW(A) = \{a, b\}$, $FOLLOW(B) = \emptyset$

d) $FIRST(A) = \{a, b\} = FIRST(B)$, $FOLLOW(A) = \{a, b\}$, $FOLLOW(B) = \{a, b\}$

53) The appropriate entries for E1, E2, and E3 are:

a) $E1 : S \rightarrow aAB,\ A \rightarrow S \quad E2 : S \rightarrow bAaB,\ B \rightarrow S \quad E3 : B \rightarrow S$

b) $E1 : S \rightarrow aAB,\ S \rightarrow \epsilon \quad E2 : S \rightarrow bAaB,\ S \rightarrow \epsilon \quad E3 : S \rightarrow \epsilon$

c) $E1 : S \rightarrow aAB,\ S \rightarrow \epsilon \quad E2 : S \rightarrow bAaB,\ S \rightarrow \epsilon \quad E3 : B \rightarrow S$

d) $E1 : A \rightarrow S,\ S \rightarrow \epsilon \quad E2 : B \rightarrow S,\ S \rightarrow \epsilon \quad E3 : B \rightarrow S$

Statement for Linked Answer Questions 54 and 55:

A computer has a 256 KByte, 4-way set associative, write back data cache with block size of 32 Bytes. The processor sends 32 bit addresses to the cache controller. Each cache tag directory entry contains, in addition to address tag, 2 valid bits, 1 modified bit and 1 replacement bit.

54) The number of bits in the tag field of an address is:

a) 11 b) 14 c) 16 d) 27

55) The size of the cache tag directory is:

a) 160 Kbits b) 14 Kbits c) 16 Kbits d) 27 Kbits

56) The cost function for a product in a firm is given by $5q^2$, where q is the amount of production. The firm can sell the product at a market price of ₹50 per unit. The number of units to be produced by the firm such that the profit is maximized is:

a) 5 b) 10 c) 15 d) 25

57) Choose the most appropriate alternative from the options given below to complete the following sentence:
Despite several _____ the mission succeeded in its attempt to resolve the conflict.

a) attempts b) setbacks c) meetings d) delegations

58) Which one of the following options is the closest in meaning to the word given below?
Mitigate

a) Diminish b) Divulge c) Dedicate d) Denote

59) Choose the grammatically INCORRECT sentence:
a) They gave us the money back less the service charges of Three Hundred rupees.
b) This country's expenditure is not less than that of Bangladesh.
c) The committee initially asked for a funding of Fifty Lakh rupees, but later settled for a lesser sum.
d) This country's expenditure on educational reforms is very less.

60) Choose the most appropriate alternative from the options given below to complete the following sentence:
Suresh dog is the one _____ was hurt in the stampede.

a) that b) which c) who d) whom

Q.61 – Q.65 CARRY TWO MARKS EACH.

61) Wanted Temporary, Part-time persons for the post of Field Interviewer to conduct personal interviews to collect and collate economic data. Requirements: High School-pass, must be available for Day, Evening and Saturday work. Transportation paid, expenses reimbursed.
Which one of the following is the best inference from the above advertisement?
a) Gender-discriminatory
b) Xenophobic
c) Not designed to make the post attractive
d) Not gender-discriminatory

62) A political party orders an arch for the entrance to the ground in which the annual convention is being held. The profile of the arch follows the equation $y = 2x - 0.1x^2$ where y is the height of the arch in meters. The maximum possible height of the arch is:

a) 8 meters b) 10 meters c) 12 meters d) 14 meters

63) An automobile plant contracted to buy shock absorbers from two suppliers X and Y. X supplies 60% and Y supplies 40% of the shock absorbers. All shock absorbers are subjected to a quality test. The ones that pass the quality test are considered reliable. Of X's shock absorbers, 96% are reliable. Of Y's shock absorbers, 72% are reliable. The probability that a randomly chosen shock absorber, which is found to be reliable, is made by Y is

a) 0.288 b) 0.334 c) 0.667 d) 0.720

64) Which of the following assertions are **CORRECT**?
a) Adding 7 to each entry in a list adds 7 to the mean of the list
b) Adding 7 to each entry in a list adds 7 to the standard deviation of the list
c) Doubling each entry in a list doubles the mean of the list
d) Doubling each entry in a list leaves the standard deviation of the list unchanged

a) P, Q b) Q, R c) P, R d) R, S

65) Given the sequence of terms, AD, CG, FK, JP, the next term is

a) OV b) OW c) PV d) PW