



Ashima Garg

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GATE MOCK TEST 2 GATE 2019 - REPORTS

OVERALL ANALYSIS

COMPARISON REPORT

SOLUTION REPORT

ALL(65)

CORRECT(40)

INCORRECT(19)

SKIPPED(6)

Q. 1
 Choose the correct meaning of proverb/idiom
 'To smell a rat'

 [Solution Video](#) | [Have any Doubt ?](#) |

A

To see signs of plague epidemic

B

To get bad smell of a bad dead rat

C

To suspect foul dealings

Your answer is **Correct****Solution :**

(c)

D

To be in a bad mood

QUESTION ANALYTICS

Q. 2
 Choose the option which can be substituted for the given word/sentence.
 'To cause troops, etc. to spread out in readiness for battle'

 [Solution Video](#) | [Have any Doubt ?](#) |

A

Disperse

B

Deploy

Your answer is **Correct****Solution :**

(b)

C

Co-locate

D

Align

QUESTION ANALYTICS

Q. 3
 Choose the correct alternative to the underlined part of the sentence
 He sent a word to me that he would be coming late.



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Solution :

(a)

B

had sent a word

C

sent words

D

No improvement

Your answer is Wrong

QUESTION ANALYTICS

Q. 4

How many two-digit numbers yield a remainder of 1 when divided by both 4 and 14?

Solution Video | Have any Doubt ?

A

0

B

1

C

2

D

3

Your answer is Correct

Solution :

(d)

In order to divide both 4 and 14 by a number, the number must be divisible by their least common multiple, which is 28.

Two-digit multiple of 28 are 28, 56, and 84.

The numbers that have remainder 1 when divided by 4 and 14 are 29, 57 and 85.

QUESTION ANALYTICS

Q. 5

A 6 litre solution is 45% alcohol. How many litres of pure alcohol must be added to produce a solution that is 50% alcohol?

Solution Video | Have any Doubt ?

0.6

Your answer is Correct 0.6

Solution :

0.6

Let x litres of pure alcohol is added.

Then, $(0.45)(6) + x = 0.50(6 + x)$

$2.7 + x = 3 + 0.50x$

$-0.3 = -0.50x$

$x = \frac{3}{5} = 0.6$



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Q. 6

Two number cubes with six faces numbered with the integers from 1 through 6 are tossed. What is the probability that the sum of the exposed faces on the cubes is a prime number?

[Solution Video](#) | [Have any Doubt ?](#) |

A

$$\frac{1}{36}$$

B

$$\frac{1}{8}$$

C

$$\frac{1}{12}$$

D

$$\frac{5}{12}$$

Your answer is Correct

Solution :

(d)

Favourable events - (1,1), (1,2), (1,4), (2,3), (2,5), (5,6), (3,4), (1,6). Except the event (1,1) every other event must be counted twice due to the fact that the number might appear on either of dice, so total number of favourable events is 15.

Total events = $6^2 = 36$

$$\text{Probability} = \frac{15}{36} = \frac{5}{12}$$

QUESTION ANALYTICS

Q. 7

A faulty wall clock is known to gain 15 minutes every 24 hours. It is synchronized to the correct time at 9 AM on 14th August. What will be the correct time to the nearest minute when the clock shows 2 PM on 18th August of the same year?

[Solution Video](#) | [Have any Doubt ?](#) |

A

12:45 PM

B

12:58 PM

Your answer is Correct

Solution :

(b)

9 AM of 14th August to 2 PM on 18th August = 101 hours

$$\left(24 + \frac{15}{60}\right) \text{ hours of incorrect clock} = 24 \text{ hours of correct clock}$$

$$1 \text{ hour of incorrect clock} = \frac{96}{97} \text{ hours of correct clock}$$

$$101 \text{ hours of incorrect clock} = \frac{96}{97} \times 101 \text{ hours of correct clock}$$

$$= 99 \text{ hours and approx 58 minutes}$$



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 C
 1:00 PM

 D
 2:00 PM

QUESTION ANALYTICS

Q. 8

A team of 6 cooks is chosen from 8 men and 5 women. The team must have at least 2 men and at least 3 women. How many ways can this team be created?

 Solution Video | [Have any Doubt ?](#) |

 A
 140

 B
 320

 C
 560

 D
 700
Your answer is **Correct****Solution :**

(d)

Only possible combinations are a team of 2M, 4W or 3M, 3W.

Possible ways to make a team of 2M, 4W = ${}^8C_2 \times {}^5C_4 = 28 \times 5 = 140$

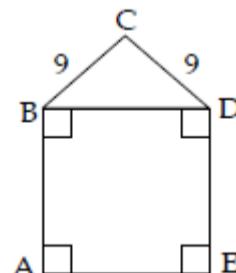
Possible ways to make a team of 3M, 3W = ${}^8C_3 \times {}^5C_3 = 56 \times 10 = 560$

Total possible ways = $140 + 560 = 700$

QUESTION ANALYTICS

Q. 9

As shown in the figure below, two sides of triangle BCD are each 9 feet long. Triangle BCD shares side BD with square ABDE, and angle CBD measures 45°. What is the total area of figure ABCDE in square feet?
 (Note: Figure not drawn to scale.)


 Solution Video | [Have any Doubt ?](#) |

 A
 121.5

 B
 $40.5 + 81\sqrt{2}$

 C
 202.5

Correct Option

Solution :



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The area of the triangle must be exactly one quarter of the area of the square. If you don't see directly, imagine the triangle being flipped down into the square. Therefore, the total area

$$\left(162 + \frac{162}{4} \right) \text{ sq. feet} = 202.5 \text{ sq feet.}$$

D

221

Your answer is Wrong

QUESTION ANALYTICS

Q. 10

A farmer can plow his wheat field in 12 days. After working for 5 days, his daughter joins him and together they finish plowing the field in 4 days. How many days would it take the daughter to plow the wheat field alone?

 Solution Video | [Have any Doubt ?](#)

16

Your answer is Correct 16

Solution :

16

Farmer works for $5 + 4 = 9$ daysIf he completes entire work in 12 days, he will finish $\frac{9}{12}$ or $\frac{3}{4}$ th work in 9 days.Remaining work, $1 - \frac{3}{4} = \frac{1}{4}$, is done by daughter in 4 days..So if daughter does $\frac{1}{4}$ work in 4 days, she will complete the whole work in $4 \times 4 = 16$ days

QUESTION ANALYTICS

Q. 11

Let $L(G)$ denote the language generated by the following grammar G .

 $S \rightarrow 0S0 \mid 1S1 \mid A$ $A \rightarrow 0B$ $B \rightarrow \epsilon$ Which of the following strings is not generated by $L(G)$?[Have any Doubt ?](#)

A

010000010

B

011000110

C

1110111

D

110010011

Your answer is Correct

Solution :

(d)

The above grammar generates all the odd palindrome strings whose middle symbol is 0. In option (d), the middle symbol is a 1 and hence is not generated by the above grammar G .



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Q. 12

The time and space complexity of the most efficient algorithm, designed to find the k^{th} node from the end of a linked list which has n elements is equal to

Have any Doubt?

A

 $O(1), O(1)$

Your answer is Wrong

B

 $O(n), O(1)$

Correct Option

Solution :

(b)

There are multiple ways of getting this done in $O(n)$ time and $O(1)$ space.First reverse the given linked list = $O(n)$ time, $O(1)$ spaceNow get the k^{th} node from the beginning of the reversed linked list = $O(k)$ time, $O(1)$ spaceSo time complexity = $O(n)$, space complexity = $O(1)$

Thus, option (b) is correct.

C

 $O(n), O(n)$

D

 $O(n^2), O(1)$

QUESTION ANALYTICS

Q. 13

Consider the following languages:

- I. $\{ w \mid w \in \{0, 1\}^*; w \text{ has equal number of occurrences of '001' and '010'} \}$
- II. $\{ w \mid w \in \{0, 1\}^*; w \text{ has equal number of occurrences of '0' and '1'} \}$

Which of the above language(s) are regular?

Have any Doubt?

A

Both I and II

B

Only I

Correct Option

Solution :

(b)

Only I is regular. And the reason is because, the absolute difference between the no of occurrences of 001 and 010 can be at most 1. Hence we can easily come up with a DFA for this language, which makes it regular.

II is a well known DCFL which is not regular. Therefore only I is regular.
 Hence option (b) is correct.

C

Only II

D

None of these

Your answer is Wrong

QUESTION ANALYTICS

Q. 14



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A

Indirect addressing is faster than relative addressing.

B

Relative addressing is faster than indirect addressing.

Your answer is Correct

Solution :

(b)

Relative addressing uses 1 memory cycle and 1 ALU operation.

C

Both addressing modes can not be compared.

D

Both addressing modes have same speed.

QUESTION ANALYTICS

Q. 15

Consider the following table:

Cache block	Frequency
a	10
b	8
c	15
d	23
e	9

Which of the following is true for the number of bits required to encode a string 'aabbcddddee' using Huffman coding?

Have any Doubt ?

A

20

B

28

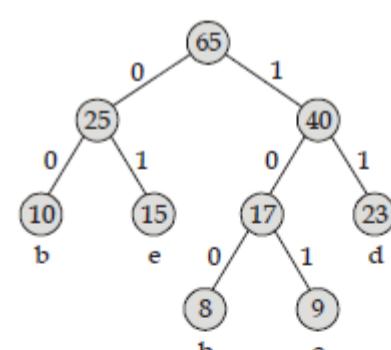
C

24

Your answer is Correct

Solution :

(c)



a = 00 (2 bit), b = 100 (3 bit)

c = 01 (2 bit), d = 11 (2 bit)

e = 101 (3 bit)

Number of bits required for 'aabbcddddee'

$$= 2 \times 2 + 2 \times 3 + 1 \times 2 + 3 \times 2 + 2 \times 3$$

$$= 4 + 6 + 2 + 6 + 6 = 24$$



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QUESTION ANALYTICS

Q. 16

Which of the following represents the correct predicate logic translation of the sentence "One's mother is one's female parent"?

[Have any Doubt ?](#)

A

$$\forall x \forall y [\text{Mother}(x, y) \Rightarrow (\text{Female}(x) \Rightarrow \text{Parent}(x, y))]$$

B

$$\forall x \forall y [\text{Female}(x) \Rightarrow (\text{Parent}(x, y) \Rightarrow \text{Mother}(x, y))]$$

C

$$\forall x \forall y \text{Mother}(x, y) \Leftrightarrow (\text{Female}(x) \wedge \text{Parent}(x, y))$$

Your answer is Correct
Solution :

(c)

$$\forall x \forall y \text{Mother}(x, y) \Leftrightarrow (\text{Female}(x) \wedge \text{Parent}(x, y))$$

Firstly let's see what option (b) really is

 As $p \Rightarrow (q \Rightarrow r)$ is equivalent to $(p \wedge q) \Rightarrow r$, option (b) can be simplified as,

$$\forall x \forall y [(\text{Female}(x) \wedge \text{Parent}(x, y)) \Rightarrow \text{Mother}(x, y)]$$

Now clearly we can see, neither option (a) nor option (b) is sufficient to express the above sentence as we need a biconditional to express this, as the sentence is true both ways.

So (c) is the most appropriate translation for this sentence.

D

None of these

QUESTION ANALYTICS

Q. 17

Which of the following is a CPU scheduling criteria for performance comparison?

- I. CPU utilization and throughput.
- II. Turn around time and waiting time.
- III. Increase/decrease degree of multiprogramming.
- IV. Response time.

[Have any Doubt ?](#)

A

Only I and IV

B

Only I, II and IV

Correct Option
Solution :

(b)

All of I, II, IV is a scheduling criteria but increasing on decreasing degree of multiprogramming is the constraint of long term scheduler.

C

All of I, II, III and IV

Your answer is Wrong

D

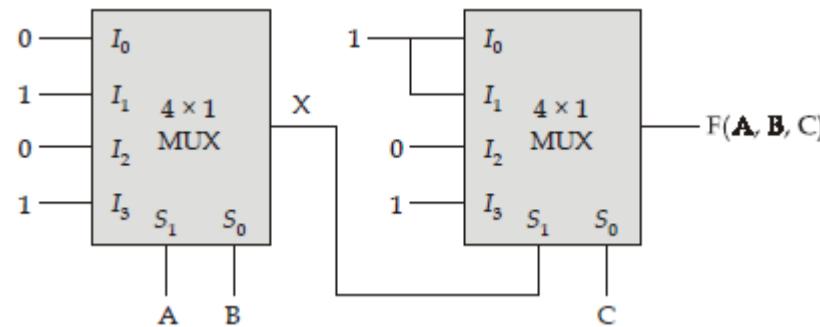
Only II and IV



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Find the output expression of the following circuit:



A

 \bar{C}

B

 \bar{B}

C

 $\bar{A} + \bar{B} + \bar{C}$

D

 $\bar{B} + C$ [Have any Doubt ?](#)

Your answer is Correct

Solution :

(d)

$$\begin{aligned}
 X &= \bar{A}\bar{B}I_0 + \bar{A}B I_1 + A\bar{B}I_2 + AB I_3 \\
 &= \bar{A}\bar{B}(0) + \bar{A}B(1) + A\bar{B}(0) + AB(1) \\
 &= \bar{A}B + AB \\
 &= B(\bar{A} + A) = B \\
 F(A, B, C) &= \bar{S}_1\bar{S}_0I_0 + \bar{S}_1S_0I_1 + S_1\bar{S}_0I_2 + S_1S_0I_3 \\
 &= \bar{B}\bar{C}(0) + \bar{B}C(1) + B\bar{C}(0) + BC(1) \\
 &= \bar{B}\bar{C} + \bar{B}C + BC \\
 &= \bar{B}\bar{C} + C + (\bar{B} + B) \\
 &= \bar{B}\bar{C} + C \\
 &= (C + \bar{C})(C + \bar{B}) = \bar{B} + C
 \end{aligned}$$

QUESTION ANALYTICS

Q. 19

ICMP has error reporting messages. Which of the following error reporting message describes the given statement?

"The packet is discarded due to congestion in the network"
[Have any Doubt ?](#)

A

Destination unreachable

B

Source quench

Your answer is Correct

Solution :

(b)

- In redirection packet is not discarded but it is redirected to a network as the host doesn't belong to this network.
- In source quench packet is discarded due to congestion in the network.
- Destination unreachable means host is not present in the network or the host is not responding to the request, then the packet is discarded.



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 D
 Redirection

[QUESTION ANALYTICS](#)
Q. 20

Consider the following C program:

```
#include <stdio.h>
void printxy(int x, int y) {
    x = 0;
    int *ptr;
    ptr = &x;
    y = *ptr;
    *ptr = 2;
    printf("%d, %d", y, x + y);
}
int main( )
{
    printxy(10, 20);
    return 0;
}
```

The output of the above program will be

[Have any Doubt ?](#)

A

1, 1

B

1, 0

C

2, 2

D

0, 2

Your answer is Correct
Solution :

(d)

After the execution of the above code, we can see that y = 0, x = 2.
Therefore 0, 2 will be the answer.
[QUESTION ANALYTICS](#)
Q. 21
 The maximum value of n such that the probability of getting no head in tossing a fair coin n times is greater than 0.1.

[Have any Doubt ?](#)

A

2

B

3

Your answer is Correct
Solution :

(b)

$$\text{The probability of getting a head, } p = \frac{1}{2}$$



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$$C_0 p^0 q^n > 0.1$$

i.e.

$$\left(\frac{1}{2}\right)^n > 0.1$$

Maximum value,

$$2^n < 10$$

$$n = 3$$

C

4

D

5

QUESTION ANALYTICS

Q. 22

Let \$ be a binary operation defined as $m \$ n = m' n'$, where m and n are boolean variables.
 Consider the following statements.

- I. $(p \$ q) \$ r = p \$ (q \$ r)$
- II. $q \$ p = p \$ q$

Which of the above statements are true?

Have any Doubt ?

A

Both I and II

B

Only I

C

Only II

Correct Option

Solution :

(c)

We can see that \$ is actually NOR operation. And since we know that NOR is commutative but not associative, therefore I is false, and II is true.
 Therefore (c) is the answer.

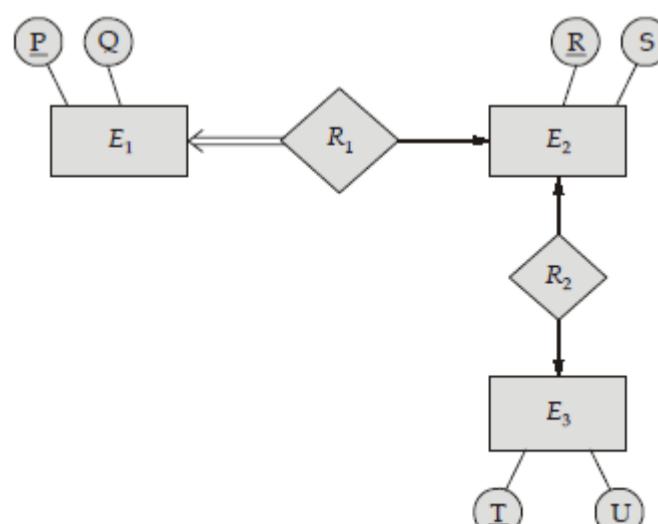
D

None of these

QUESTION ANALYTICS

Q. 23

Consider the following ER diagram:





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2

Correct Option

Solution :

(a)

$$E_1 R_1 E_2 (\underline{P}, Q, \underline{R}, S)$$

1 : 1 relationship and total participation at one end.

 $R_2 E_2 (\underline{R}, T, U) R$ is a foreign key refer to $E_1 R_1 E_2$.

B

3

Your answer is Wrong

C

5

D

1

QUESTION ANALYTICS

Q. 24

Consider the following statements.

- I. A graph which has no cycle of odd length requires at most two colors for proper coloring.
 II. A graph which has a cycle of odd length requires strictly more than two colors for proper coloring.
 Which of the above statement(s) are true?

Have any Doubt ?

A

Both I and II

Your answer is Correct

Solution :

(a)

Both statements are true, as according to I, no odd cycle implies bipartite and every bipartite graph is bichromatic. II is also correct, because, if a graph has an odd cycle implies it is not bipartite, which means it needs at least three colors.

B

I only

C

II only

D

None of these

QUESTION ANALYTICS

Q. 25

Let A, B and C are independent boolean variables. What is the probability for the given boolean expression to be 1.

$$B(\bar{A} + \bar{B}) + A + C(\bar{A} + \bar{C})$$

Have any Doubt ?

A

1

B



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Q. 125

 D
 0.875

Your answer is Correct

Solution :

(d)

$$\begin{aligned}
 & B(\bar{A} + \bar{B}) + A + C(\bar{A} + \bar{C}) \\
 &= \bar{A}\bar{B} + \bar{B}\bar{B} + A + \bar{A}C + C\bar{C} \\
 &= \underline{\bar{A}\bar{B}} + \underline{A} + \bar{A}C \\
 &= (A + \bar{A})(A + B) + \bar{A}C \\
 &= \underline{A + B} + \bar{A}C \\
 &= (A + \bar{A})(A + C) + B \\
 &= A + B + C, \text{ which is zero only when } A, B \text{ and } C \text{ are zero}
 \end{aligned}$$

So, $P(A + B + C = 1) = 1 - \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$
 $= 1 - 0.125 = 0.875$

QUESTION ANALYTICS

Q. 26

 Consider a cache of $2y$ blocks and the main memory of $2y$ blocks. At what set location $(y + 4)^{\text{th}}$ block will be mapped in 2-way set associative _____.

Have any Doubt ?

4

Your answer is Correct

Solution :

4

$$\text{Number of sets} = \frac{\text{Number of block in cache}}{k\text{-way}} = \frac{2y}{2} = y$$

$$\begin{aligned}
 \text{Set location of } y^{\text{th}} \text{ block} &= y \% \text{ number of sets} \\
 \text{Set location of } (y + 4)^{\text{th}} \text{ block} &= (y + 4) \% \text{ number of sets} \\
 &= (y + 4) \% y = 4
 \end{aligned}$$

QUESTION ANALYTICS

Q. 27

When 54 bytes of data is transferred using UDP protocol the efficiency is _____ %. (Upto 2 decimal places)

Have any Doubt ?

87.09 (87.00 - 87.20)

Correct Option

Solution :

87.09 (87.00 - 87.20)

$$\text{Efficiency of transmission at the UDP level} = \frac{\text{Data bytes}}{\text{Total bytes}}$$

Length of UDP header = 8 bytes

$$\begin{aligned}
 \text{Total bytes} &= \text{Total data} + \text{Length of UDP header} \\
 &= 54 + 8 = 62
 \end{aligned}$$

$$\text{Efficiency (\%)} = \frac{54}{62} \times 100 = 87.09$$



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Q. 28
 Evaluate $\lim_{x \rightarrow 0} \frac{xe^x - \log(1+x)}{x^2}$. (Upto 2 decimal places)

[Have any Doubt?](#)

1.50 (1.40 - 1.60)

Your answer is **Correct** 1.50**Solution :**

1.50 (1.40 - 1.60)

$$\text{Given, } \lim_{x \rightarrow 0} \frac{xe^x - \log(1+x)}{x^2} \quad \left(\text{from } \frac{0}{0} \right)$$

Applying L' hospital's rule

$$\lim_{x \rightarrow 0} \frac{(xe^x + e^x \cdot 1) - \frac{1}{1+x}}{2x} \quad \left(\text{from } \frac{0}{0} \right)$$

Applying L' hospital's rule

$$\lim_{x \rightarrow 0} \frac{xe^x + e^x + e^x + \frac{1}{(1+x)^2}}{2} = \frac{0+1+1+1}{2} = 1.5$$

QUESTION ANALYTICS

Q. 29
 Consider a main memory with 4 page frames and the following sequence of page reference:
 0, 1, 4, 2, 1, 0, 5, 8, 2, 4, 5, 8, 3, 5

Total number of page fault that will occur when CPU uses Least Recently Used (LRU) page replacement algorithm _____.

[Have any Doubt?](#)

9

Your answer is **Correct** 9**Solution :**

9

LRU replace the pages which is least recently used

0
1
4
2

0, 1, 4, 2, 1, 0

Initially 4 page faults

Ø	4
1	2
4	5
2	8

Total 4 + 5 = 9 page faults

QUESTION ANALYTICS

Q. 30



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131

Your answer is Correct131

Solution :

131

Total number of ways = 3^5 Required combination = $3^5 - (2^5 + {}^5C_1 \times 2^4)$

$$= 243 - (32 + 80)$$

$$= 131$$

QUESTION ANALYTICS

Q. 31

Consider the following pseudocode for the function foo() as given below.

```
void foo(int n)
{
    if(n == 1) printf("#");
    for(int i = 0; i < n; i++) foo(n - 1);
}
```

The number of times # will be printed when foo(7) is called, is equal to _____.

Have any Doubt ?

5040

Your answer is Correct5040

Solution :

5040

The value returned will be equal to the factorial of 7, that is, 5040.

QUESTION ANALYTICS

Q. 32

Consider the following statements:

S₁: Not every relation possible to decompose into 3NF with dependency preserving.*S₂*: An attribute declared as UNIQUE can have NULL as its value.*S₃*: From A → B we can derive AC → BC which further leads to A → BC.

How many number of statements are correct _____.

Have any Doubt ?

1

Your answer is Correct1

Solution :

1

S₁: The decomposition of 3NF is always lossless and dependency preserving.*S₂*: An attribute declared as UNIQUE can have NULL as its value.*S₃*: A → B

AC → BC

but is can not derive A → BC

Only *S₂* is correct.

QUESTION ANALYTICS

Q. 33

Consider the following statements:

S₁ : Type checking is done during syntax analysis phase.



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1

Correct Option

Solution :

1

 S_1 : Type checking is done during semantic analysis phase. S_2 : A flow graph is a directed graph, in which the flow control information is added to 1 block. S_3 : Every S-attributed grammar is L-attributed grammar. So it is not correct.

Your Answer is 2

QUESTION ANALYTICS

Q. 34

Suppose there are 4 sorted lists of $\frac{n}{2}$ elements each. If we merge these sorted lists into a single list of $2n$ elements. If efficient algorithm is applied for $n = 128$ then number of comparisons required in the worst case is _____.

Have any Doubt ?

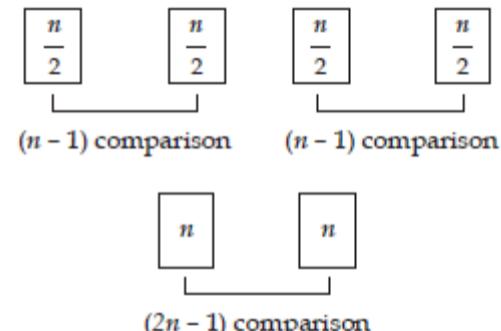
509

Your answer is Correct 509

Solution :

509

$$n = 128, \frac{n}{4} = 32$$



$$\text{Total comparison} = (n - 1) + (n - 1) + (2n - 1)$$

$$= 4n - 3$$

$$n = 128$$

$$= 4 \times 128 - 3 = 209$$

QUESTION ANALYTICS

Q. 35

Consider a 2 dimensional array $A[40 \dots 95, 40 \dots 95]$ in lower triangular matrix representation. If the array is implemented in the memory in the form of row major order and base address of the array is 1000, then the address of $A[66][50]$ will be _____.

Have any Doubt ?

1361

Correct Option

Solution :

1361

$$\text{Location } (A[66][50]) = \frac{1000 + (66 - 40)(66 - 40 + 1)}{2} = 1361$$



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Your Answer is 1401

QUESTION ANALYTICS

Q. 36

Consider the following statements given below:

- S₁* : Consider a unweighted undirected connected graph G(V, E), worst case time complexity check it two particular vertices U, V present in the graph is O(V + E).
- S₂* : Dijkstra's algorithm may produce incorrect result if it contain negative weight cycle.
- S₃* : The worst case running time complexity to search for an element in a balanced binary search tree with (3n)! elements is O(n).

Which of the above statement is correct?

Have any Doubt ?

A

Only *S₁* and *S₃*

B

Only *S₂*

Your answer is Wrong

C

Only *S₂* and *S₃*

D

Only *S₁* and *S₂*

Correct Option

Solution :

(d)

S₁ : For checking two particular vertices present in graph or not. BFS can be used it take O(V + E). *S₁* is correct*S₂* : Negative weight cycle contain cycle whose weight is negative.Dijkstra's algorithm may produce incorrect result if it contain negative weight cycle. *S₂* is correct

QUESTION ANALYTICS

Q. 37

Consider a CSMA/CD network that transmits data at the rate of 50 Mbps over a 2 km cable with no repeaters. If the minimum frame size for this network is 2500 bytes, what is the speed of signal (in km/s)?

Have any Doubt ?

A

10⁶

Correct Option

Solution :

(a)

Given,

$$\text{Bandwidth } (B) = 50 \text{ Mbps} = 50 \times 10^6 \text{ bps}$$

$$\text{Distance } (d) = 2 \text{ km} = 2000 \text{ m}$$

$$\begin{aligned} \text{Length of frame } (L) &= 2500 \text{ bytes} \\ &= 2500 \times 8 \text{ bits} \end{aligned}$$

Let the velocity be 'v m/s'

In CSMA/CD,

$$L = 2 \times T_p \times B$$

$$L = 2 \times \left(\frac{d}{v} \right) \times B$$



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 B
 10^7

 C
 10^5

 D
 10^4

Your answer is Wrong

QUESTION ANALYTICS

Q. 38

Consider the following statement:

 p : CPU manufacturers invest in EUV lithography q : The manufacturer incurs huge losses r : EUV is unsuccessful in improving manufacturing yields

- I. $p \Rightarrow (q \Rightarrow r)$
- II. $p \Rightarrow (r \Rightarrow q)$
- III. $p \Rightarrow (r \wedge q)$
- IV. $p \Rightarrow (\neg r \vee q)$

Which of the following is correct

Have any Doubt ?

A

I and IV

B

II and IV

Your answer is Correct

Solution :
 (b)

"If CPU manufacturers invest in EUV lithography, then they will incur huge losses if EUV is unsuccessful in improving manufacturing yields".

The statement is actually: $p \Rightarrow (r \Rightarrow q) \equiv p \Rightarrow (\neg r \vee q)$
 So II and IV are correct.

C

II and III

D

I and IV

QUESTION ANALYTICS

Q. 39Consider the following synchronization mechanism for two processes P_0 and P_1 and two binary semaphores R and S:**Process P_0 :**

while (1)

{

A

 print ('1');
 print ('0');
Process P_1 :

while (1)

{

C

 print ('0');
 print ('1');



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A

P(S), V(S), P(R), V(R) initially R and S = 1

B

P(S), V(R), P(R), V(S) initially R and S = 1

C

P(S), V(R), P(R), V(S) initially R = 1 and S = 0

Your answer is Correct

Solution :

(c)

To get the output 01100110..... process P_1 execute first then P_0 , sequence must be P(S), V(R), V(S) with initial value of R = 1 and S = 0.

D

P(S), V(S), P(R), V(R) initially R = 1 and S = 0

QUESTION ANALYTICS

Q. 40

Consider the following relations R(A, B, C) and P(A, B, C)

Query 1 : Select * FROM R WHERE EXISTS
$$\begin{aligned} & \text{(Select * FROM P where R.A = P.A} \\ & \text{AND R.B = P.B AND R.C = P.C)} \end{aligned}$$
Query 2 : Select * FROM R WHERE (A, B, C)
NOT IN ((Select * FROM R where
(A, B, C) NOT IN (Select * FORM P))Which of the above query give same result as $R \cap P$?

Have any Doubt ?

A

Only query 1

B

Only query 2

Your answer is Wrong

C

Both query 1 and query 2

Correct Option

Solution :

(c)

Both query 1 and query 2 gives same result which is equivalent to $R \cap P$.

D

Neither query 1 nor query 2

QUESTION ANALYTICS

Q. 41A number N is stored in a 8-bit register as $abcdefgh$. Now a new register r of 10-bit contains $aabccdefgh$. What is the value of the new register r? (Assume registers stores values in 2's complement format).

Have any Doubt ?

A

 $N + 1 + 512 \times a$



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C

$$2N + 1$$

Your answer is Correct

Solution :

(c)

In 8-bit register

$$N = abcdefgh$$

$$= -128a + 64b + 32c + 16d + 8e + 4f + 2g + h$$

In 10-bit register

$$= -512a + 256b + 128c + 64d + 32e + 16f + 8g + 4h + 2i + 1$$

$$= -256a + 128b + 64c + 32d + 16e + 8f + 4g + 2h + 1$$

$$= 2(-128a + 64b + 32c + 16d + 8e + 4f + 2g + h) + 1$$

$$= 2N + 1$$

D

$$-N + 512a + 1$$

QUESTION ANALYTICS

Q. 42

 1000 stations are competing for the use of a single slotted Aloha Channel. The average station makes 72 requests/hour. A Slot is 200 μ sec. What is approximate total channel load?

Have any Doubt ?



A

$$\frac{1}{250}$$

Correct Option

Solution :

(a)

For shared channel average requests for 10000 stations

$$= \frac{10^3 \times 72}{60 \times 60} \text{ requests/sec}$$

$$= 20 \text{ requests/sec}$$

$$\text{Slot time} = 100 \mu\text{sec}$$

$$1 \text{ slot} = 200 \times 10^{-6} \text{ sec}$$

$$\frac{1}{200 \times 10^{-6}} \text{ slots} = 1 \text{ sec}$$

$$\Rightarrow \text{Number of slots} = 5000 \text{ slots/sec}$$

$$G = \text{Channel load} = \frac{\text{Number of requests/sec}}{\text{Number of slots/sec}}$$

$$= \frac{20}{5000} = \frac{1}{250}$$

B

$$\frac{1}{350}$$

C

$$\frac{1}{200}$$

D

$$\frac{1}{300}$$



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Q. 43

Let M and N be minimal DFAs and minimal NFAs respectively, such that M has k_1 states, and N has k_2 states respectively for the same language L. Then which of the following is always correct?

[Have any Doubt ?](#)

A

$$k_1 > k_2$$

B

$$k_1 \geq k_2$$

Your answer is Correct
Solution :

(b)

Assume n represent number of states.

$$n(\text{NFA}) \leq n(\text{DFA}) \text{ for a given language L.}$$

Hence $k_1 \geq k_2$. So, option (b) is correct.

C

$$k_1 < k_2$$

D

$$k_2 \geq k_1$$

QUESTION ANALYTICS

Q. 44

What is the time complexity of given recurrence relation respectively

$$T(n) = 3T\left(\frac{n}{3}\right) + \theta(n)$$

$$T(n) = T(\sqrt{n}) + \log \log n$$

[Have any Doubt ?](#)

A

$$\theta(n \log n), \theta(\log n)$$

B

$$\theta(n \log n), \theta(\log \log n)$$

C

$$\theta(n \log n), \theta(\log^2 \log n)$$

Your answer is Correct
Solution :

(c)

$$T(n) = 3T\left(\frac{n}{3}\right) + \theta(n)$$

Apply Master theorem

$$a = 3, b = 3$$

$$T(n) = (n \log n)$$

$$T(n) = T(\sqrt{n}) + \log \log n$$

Let,

$$n = 2^k$$

$$T(2^k) = T(2^{k/2}) + \log k$$

Let,

$$2^k = m$$

$$T(m) = T\left(\frac{m}{2}\right) + \log_2 \log m$$



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D
 $\Theta(\log n)$, $\Theta(\log \log n)$

QUESTION ANALYTICS

Q. 45

Consider the following implementations for rotating an array $A[1...n]$ of size n by k positions, where $1 \leq k \leq n$. Note that the procedure $\text{reverse}(A, i, j)$ reverses the order of elements in A between positions i and j in A (both inclusive).

Implementation I:

```
reverse(A, 1, k);
reverse(A, 1, n);
reverse(A, k + 1, n);
```

Implementation II:

```
reverse(a, k + 1, n);
reverse(a, 1, k);
reverse(a, 1, n);
```

Implementation III:

```
reverse(a, 1, k);
reverse(a, k + 1, n);
reverse(a, 1, n);
```

Which of the above implementation(s) work correctly for all inputs?

A

I and II but not III

B

II and III but not I

Your answer is Correct

Solution :

(b)

III is the standard way of rotating left by k positions. So if we swap the first and second line in 3rd implementation, it will still give correct output.
 So II is also correct. But 3rd line has to be at the end, so I is incorrect.
 Hence answer is option (b).

C

I only

D

III only

QUESTION ANALYTICS

Q. 46

Which of the following functional dependencies have maximum possible number of superkey on the relation $R(A, B, C)$?

A

 $A \rightarrow B, B \rightarrow C, C \rightarrow A$

Your answer is Correct

Solution :

(a)

$$(a) \{A \rightarrow B, B \rightarrow C, C \rightarrow A\}$$



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Superkeys AB, AC, BC, ABC
 (c) $\{AB \rightarrow C, C \rightarrow A\}$
 $\{AB, CB\}$ are candidate keys
 Superkeys $\{AB, CB, ABC\}$
 So maximum 7 superkeys are possible on $\{A \rightarrow B, B \rightarrow C, C \rightarrow A\}$.

B
 $AB \rightarrow C, BC \rightarrow A, AC \rightarrow B$

C
 $AB \rightarrow C, C \rightarrow A$

D
 Both (b) and (c) have same number of superkeys

QUESTION ANALYTICS

Q. 47

Consider the following 4 processors P_1, P_2, P_3 and P_4 and their respective latencies in the 5 stages S_1, S_2, S_3, S_4 and S_5 are shown below:

	S_1	S_2	S_3	S_4	S_5
P_1	4	4	3	2	2
P_2	5	2	1	3	2
P_3	2	1	1	2	0
P_4	3	3.5	1	1	1

Which processor has the lowest peak clock frequency?

Have any Doubt ?

A

 P_1

B

 P_2

Your answer is Correct

Solution :

(b)

Cycle time = $\max(S_1, S_2, S_3, S_4, S_5)$
 For P_1 , maximum latency is 3

$$\text{Peak clock frequency} = \frac{1}{4} = 0.25$$

For P_2 , maximum latency is 4

$$\text{Peak clock frequency} = \frac{1}{5} = 0.20 \text{ (it is minimum)}$$

For P_3 , maximum latency is 2

$$\text{Peak clock frequency} = \frac{1}{2} = 0.5$$

For P_4 , maximum latency is 2.5

$$\text{Peak clock frequency} = \frac{1}{3.5} = 0.28$$

C

 P_3

D

 P_4

QUESTION ANALYTICS



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Consider the following statements:

- S_1 : Purpose of using intermediate code in compilers is to improve the register allocation.
 S_2 : Operator grammar allows unit production.
 S_3 : Directed acyclic graph can be used to eliminate the common sub expression.

Which of the above statements is/are correct?

[Have any Doubt ?](#)

A

 S_1 and S_3 only

B

 S_2 and S_3 only

Your answer is Correct

Solution :

(b)

- S_1 : Intermediate code generation enhances the portability of the code. S_1 is incorrect.
 S_2 : Operator grammar allows unit production. It has following restriction.
 Two nonterminal should not adjacent.
 Null production $\{A \rightarrow \epsilon\}$ is not allowed in the grammar.
 S_3 : Directed acyclic graph is used to eliminate common sub expression.
 Both S_2 and S_3 is correct.

C

 S_1 and S_2 only

D

All S_1 , S_2 and S_3

QUESTION ANALYTICS

Q. 49

Value of $\lim_{x \rightarrow \infty} \left(\frac{x-1}{x+1} \right)^{x+1}$ is equal to

[Have any Doubt ?](#)

A

 e

B

 e^{-1}

C

 e^{-2}

Your answer is Correct

Solution :

(c)

We know,

$$\lim_{x \rightarrow \infty} \left(1 + \frac{a}{x+1} \right)^x = e^a$$

$$\text{So, } \lim_{x \rightarrow \infty} \left(1 + \frac{-2}{x+1} \right)^{x+1} = e^{-2}$$

D

None of these



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Consider an array A = {4, 5, 6, 7, 1, 2, 3}, and another list L. Quick sort is being applied to the array A, in which the partition algorithm is modified such that at each pass of Quicksort, when the partition procedure is called, it always picks an element as pivot such that we always get a worst case split of quicksort at each iteration. Now we wish to do the following - once a pivot is chosen during an iteration, we insert it into the list L, run the next iteration and repeat this procedure until the array A is sorted. We can observe that there can be many such lists possible; for example - one of them is 1, 2, 3, 4, 5, 6, 7. How many such lists are possible?

A

2

B

64

Your answer is Correct

Solution :

(b)

In order to get worst case split, we need to always choose the extremal elements - i.e. at first iteration of partition algorithm we have 2 choices - either choose 1 or 7. Let's say we chose 1 at the first step. Now at the second iteration, again we have 2 choices - choose either 2 or 7. If we choose 7 now, at the third step again we can choose 2 or 6, so 2 choices again, so select 2. Now between 3 and 6, choose 3; 2 ways. Now between 4 and 6 choose 4 - 2 choices again. And similarly, between 5 and 6, choose 5 - again 2 options. Lastly we are left with 6, so we will select 6; 1 option only.
 So number of ways = 2.2.2.2.2.1 = 64

C

5040

D

128

QUESTION ANALYTICS

Q. 51

Consider the language, $L = \{x^1 y^m z^n \mid (1 + m + n) \text{ is divisible by } 5\}$. Which of the following is CORRECT statements with regards to L?

A

L is recursive

B

L is CSL

Your answer is Wrong

C

L is CFL

D

L is regular

Correct Option

Solution :

(d)

L is a mod 5 machine which can be design by finite automata. Hence L is regular.

QUESTION ANALYTICS

Q. 52

Consider a typical disk that has a transfer rate of 30 Mbps and rotates at 5000 rotations per minute (RPM). The average seek time of the disk is twice the average rotational delay and assume no controller's transfer



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48 ms

B
45 msC
55 msD
51 ms

Your answer is Wrong

Correct Option

Solution :

(d)

60 sec 5000 rotations

$$\frac{60}{5000} \text{ sec 1 rotations}$$

$$1 - \text{rotation time} = 12 \text{ ms}$$

$$\text{Average rotational delay} = \frac{1}{2}(1 - \text{rotation time}) = 6 \text{ ms}$$

$$\text{Average seek time} = 2 \times \text{Average rotational delay} = 12 \text{ ms}$$

$$T_{\text{avg}} = \text{Seek time} + \text{Average rotational delay} + \text{controllers time} + \text{Data transfer}$$

$$= 12 \text{ ms} + 6 \text{ ms} + 0 \text{ ms} + \frac{1 \text{ MB}}{30 \text{ MBps}}$$

$$= 12 \text{ ms} + 6 \text{ ms} + \frac{1}{30} \times 10^3 \text{ ms} = 51.33$$

QUESTION ANALYTICS

Q. 53

Host A transmits 12-bit Hamming code whose hexadecimal value is 0xE5F arrives to Host B who is at the receiver end. The medium through the code has been transmitted is not error free but cannot damage parity bit and parity bits has been inserted from left to right. What was the original value Host A transmitted in hexadecimal? (Assume that not more than 1 bit is in error.)

Have any Doubt ?

A
0xAB

Your answer is Correct

Solution :

(a)

If we number the bits from right to left($b_1 b_2 \dots b_{12}$) where bit 1, bit 2, bit 4 and bit 8 are parity Bit 2 and bit 8 (a parity bit) is incorrect. Hence message at bit 10 has been modified. The 1 value transmitted (after Hamming encoding)

was 0xA4F. The original 8-bit data value was 0xAB.

0xE4F - 1110 0100 1111

0xAB - 1010 1011

B
0xAFC
0x2AD
0x2F

QUESTION ANALYTICS



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Consider the set of all boolean square matrices of order 3×3 as shown below, where a, b, c, d, e, f are boolean variables.

$$\begin{pmatrix} a & b & c \\ 0 & d & e \\ 0 & 0 & f \end{pmatrix}$$

Out of all boolean matrices of the above type, a matrix is chosen at random. The probability that the matrix chosen is singular, is equal to _____. (Answer must have exactly 3 decimal places)

0.875 (0.875 - 0.875)

Correct Option

Solution :

0.875 (0.875 - 0.875)

We will do this by complementary counting. Note that the matrix is an upper triangular matrix and therefore the determinant will be,

$$\Delta = (a \cdot d \cdot f)$$

So we can see that the determinant is independent of b, c and e . And since we want the matrix to be singular, from the total, we just subtract the case when a, d, f are all 1 at the same time (singular) and divide the same by total to get the required probability.

So $P(\text{matrix is singular}) = (\text{Total number of boolean upper triangular matrices}) - (\text{Number of singular boolean lower triangular matrices}) / (\text{Total number of boolean lower triangular matrices})$

In order to find number of non singular boolean LTM (Lower Triangular Matrices), we will take the value of a, b and f as 1 and the other 3 variables can be either 0 or 1.

\Rightarrow Number of non singular boolean LTM = $2 \cdot 2 \cdot 2 = 2^3$

Total number of boolean LTM = $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 2^6$

$$\therefore \text{Probability} = \left(\frac{2^6 - 2^3}{2^6} \right) = \left(\frac{7}{8} \right) = 0.875$$

Your Answer is 0.125

QUESTION ANALYTICS

Q. 55

A grammar is said to be in 4-Standard Form if all productions of the grammar are of the type $A \rightarrow BCDE/ a$, where A, B, C, D, E are non terminals and a is a terminal symbol. If a grammar G is in 4-Standard Form $w \in L(G)$ such that $|w| = 256$, then the number of steps in the derivation of w in G is equal to _____.

341

Correct Option

Solution :

341

Derivation:

$$A \xrightarrow{1} BCDE \xrightarrow{2} BCDFGHI \xrightarrow{3} \dots$$

After x steps the length of the sentential form will be $3x + 1$.

$$\text{Let } 3x + 1 = n$$

$$\text{Then } x = \frac{n-1}{3}$$

So $\frac{n-1}{3}$ steps will be required to get non-terminals of length n . Then apply n more products of type $A \rightarrow a$ to make the actual string.

$$\text{Total steps required} = \frac{n-1}{3} + n = \frac{4n-1}{3}$$

$$\text{Given, } n = 256$$



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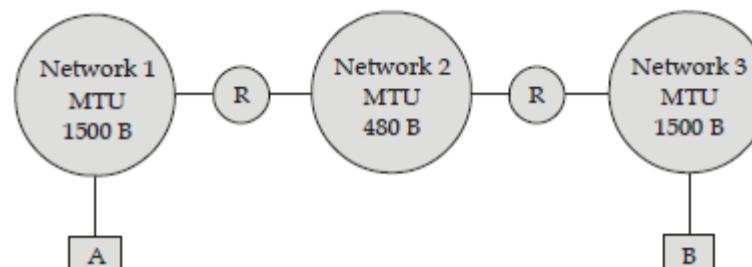
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QUESTION ANALYTICS

Q. 56

In the given network system, station A needs to send a payload of 1600 Bytes from its network layer to station B. If fragmentation is done, then the actual data size to be transmitted is _____.


[Have any Doubt?](#)

1680

Correct Option

Solution :

1680

For station A (at network layer) : Total data is 1600 bytes

At network 2

$$\text{MTU} = \text{Data} + \text{Header}$$

$$\text{or, } \text{Data} = \text{MTU} - \text{Header}$$

$$= 480 - 20 = 460 \text{ Bytes}$$

As 460 is not divisible by 8. So, add 4 byte in it. $[\because 460 + 4 = 464/8 = 58]$

$$\text{Number of fragments (n)} = \frac{\text{Total data size}}{\text{Actual data size used}}$$

$$n = \frac{1600 \text{ Bytes}}{464 \text{ Bytes}} = 3.44$$

\therefore Take it as 4 fragments

1st fragment data \rightarrow 464 Bytes

20 | 464 1st packet

2nd fragment data \rightarrow 464 Bytes

20 | 464 2nd packet

3rd fragment data \rightarrow 464 Bytes

20 | 464 3rd packet

4th fragment data \rightarrow 208 Bytes

20 | 208 4th packet

Total data size transmitted to destination = 1680 Bytes.

[Your Answer is 456](#)

QUESTION ANALYTICS

Q. 57

Consider a system with physical address of 36 bit, 8 K frame and page table contain 128 K entries then how many number of bits in virtual address _____.

[Have any Doubt?](#)

40

Your answer is Correct40

Solution :

40

Number of pages in page table = 128 K = 17 bit

System has 36 bit physical address and 8 K frames.



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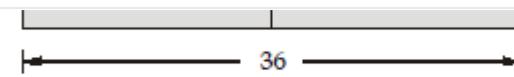
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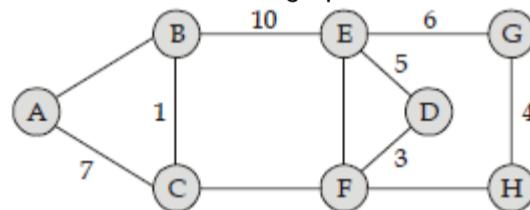
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$$\begin{aligned} \text{Virtual address} &= 17 + 23 \\ &\downarrow \quad \downarrow \\ \text{Page table entry} & \quad \text{Page offset} \\ &= 40 \text{ bit} \end{aligned}$$

QUESTION ANALYTICS

Q. 58

Consider the graph G shown below with 11 edges and integer edge weights. Weight of the edge which is included in MST is given. The minimum possible sum of weights of edges of the all edge which is not included in the MST of graph G is _____.



Have any Doubt?

28

Correct Option

Solution :

28

In every cycle, the weight of an edge that is not part of MST must be greater than or equal to weight of other edge since it is not given that edge weight must be distinct, same edge weight can be there
 minimum possible weight of AB = 7, EF = 5, CF = 10, FH = 6

Sum = 7 + 5 + 10 + 6 = 28

Your Answer is 32

QUESTION ANALYTICS

Q. 59

Consider a disk having 10 platters each with 2 recording surfaces, each surface contain 80 tracks and each track contain 400 sector with 1 sector capacity of 4 KB. The capacity of 1 cylinder (in KB) is _____.

Have any Doubt?

32000

Correct Option

Solution :

32000

1 cylinder capacity = 1 track capacity × Number of tracks in one cylinder
 In a cylinder all tracks of same radius from all surfaces are included

$$\begin{aligned} \text{Cylinder capacity} &= 400 \times 4 \text{ KB} \times 2 \times 10 \\ &= 1600 \text{ KB} \times 20 \\ &= 32000 \text{ KB} \end{aligned}$$

Your Answer is 2560000

QUESTION ANALYTICS



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$A = \begin{bmatrix} \cos \theta & \cos \theta \sin \theta \\ \cos \theta \sin \theta & \sin^2 \theta \end{bmatrix}$ and $B = \begin{bmatrix} \cos \phi & \cos \phi \sin \phi \\ \cos \phi \sin \phi & \sin^2 \phi \end{bmatrix}$ are two square matrix. If $\theta - \phi = \frac{\pi}{2}$
 then rank of AB is _____.

Have any Doubt?

0

Your answer is Correct! 0

Solution :

0

$$\begin{aligned} AB &= \begin{bmatrix} \cos^2 \theta & \cos \theta \sin \theta \\ \cos \theta \sin \theta & \sin^2 \theta \end{bmatrix} \begin{bmatrix} \cos^2 \phi & \cos \phi \sin \phi \\ \cos \phi \sin \phi & \sin^2 \phi \end{bmatrix} \\ &= \begin{bmatrix} \cos^2 \theta \cos^2 \phi + \cos \theta \cos \phi \sin \theta \sin \phi & \cos^2 \theta \cos \phi \sin \phi + \sin^2 \phi \sin \theta \\ \cos^2 \phi \cos \theta \sin \theta + \sin^2 \theta \sin \phi \cos \phi & \cos \theta \cos \phi \sin \theta \sin \phi + \sin^2 \theta \sin^2 \phi \end{bmatrix} \\ &= \begin{bmatrix} \cos \theta \cos \phi (\cos \theta \cos \phi + \sin \theta \sin \phi) & \cos \theta \sin \phi (\cos \theta \cos \phi + \sin \theta \sin \phi) \\ \cos \phi \sin \theta (\cos \theta \cos \phi + \sin \theta \sin \phi) & \sin \theta \sin \phi (\cos \phi \cos \theta + \sin \theta \sin \phi) \end{bmatrix} \\ &= \begin{bmatrix} \cos \theta \cos \phi \cos(\theta - \phi) & \cos \theta \sin \phi \cos(\theta - \phi) \\ \sin \theta \cos \phi \cos(\theta - \phi) & \sin \theta \sin \phi \cos(\theta - \phi) \end{bmatrix} \end{aligned}$$

Given,

$$\theta - \phi = \frac{\pi}{2}$$

$$AB = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

Hence, rank of AB is 0.

QUESTION ANALYTICS

Q. 61

Consider the following function quartz().

```
void quartz(int n)
{
    for (i1 = 1; i1 <= n; i++)
    {
        for(i2 = 1; i2 <= i1; j++)
        {
            for(i3 = 1; i3 <= i2; i3)
            {
                for(im = 1; im <= im-1; im++)
                {
                    count++;
                }
            }
        }
    }
}
```

Initially, the value of the variable count is zero. Also assume the variables i_1, i_2, \dots, i_m are declared before use. Then the value returned by the function call $quartz(8)$ when the value of m is equal to 6, will be _____.

Have any Doubt?

1716

Correct Option

Solution :

1716

The value returned will be, $n - 1 + mC_m$ Putting $n = 8, m = 6$ we get, 1716 as the answer.



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Q. 62

A database relation has 1000 records. A block can hold either 4 records or 10 key, pointer pairs. Number of disk blocks required to store relation and sparse index at 1st level and multilevel _____.

279

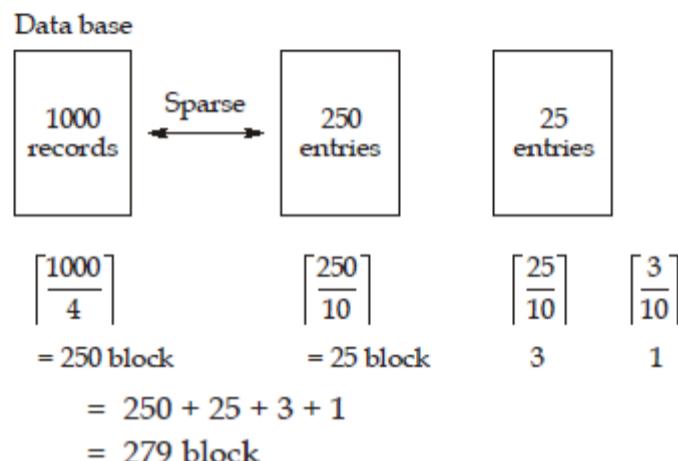
Correct Option

Solution :

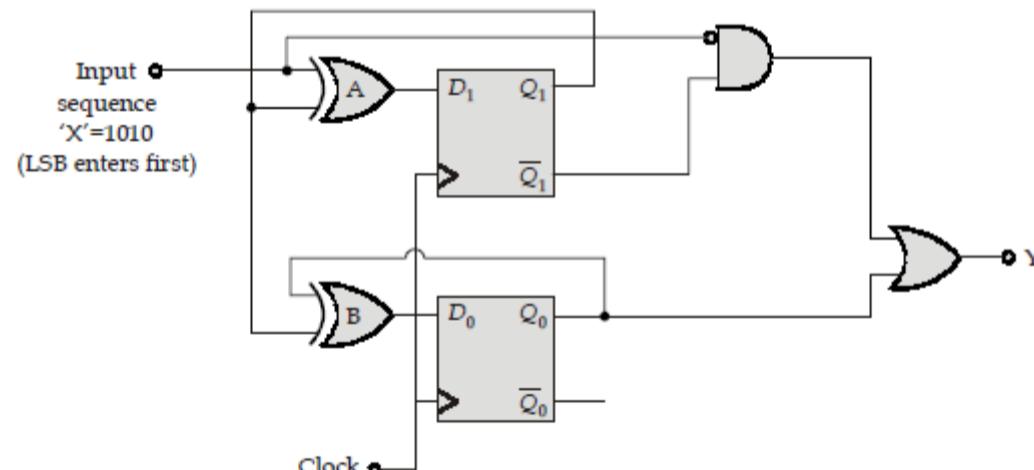
279

Database size = 1000 records

Block can contain 4 records as 10 key pointer.

**QUESTION ANALYTICS****Q. 63**

Consider a clocked sequential circuit as shown in the figure below. Assuming initial state to be $Q_1 Q_0 = 00$ For an input sequence $X = 1010$ (the right most is LSB), the respective output sequence will be _____.



1001

Correct Option

Solution :
1001

Clock	X	$Q_1 \ Q_0$	Y = $\bar{X}\bar{Q}_1 + Q_0$	
			FF1	FF0
1	0	0 0	0	0
2	1	0 0	1	0
3	0	1 0	1	1
4	1	1 1	0	0
5	0	0 0	1	1

Answer is 1001.

Your Answer is 1010



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Q. 64

Consider the following expression:

 $((a + b) + ((a + b) * (a + b))) + ((a + b) * (a + b)) + ((a + b)/(a + b))$

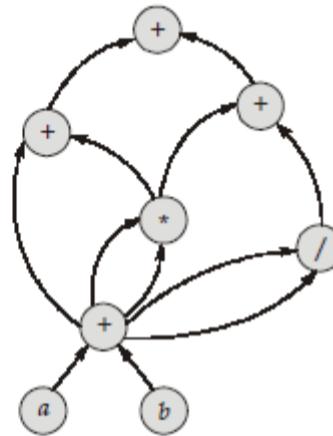
The number of nodes to represent the direct acyclic graph for the above expression is A and number of edges is B then value of A + B is _____.

[Have any Doubt ?](#)

20

Your answer is **Correct** 20**Solution :**

20



Number of nodes = 8 = A

Number of edges = 12 = B

$$A + B = 8 + 12 = 20$$

QUESTION ANALYTICS

Q. 65A CPU has 24 bit instructions and we have to calculate the sum of n number by using below code:

MOV N, R ₁
Clear R ₀ , R ₂
Loop:
R ₀ ← [R ₀] + R ₂ [PC]
Dec R ₁
R ₂ = [R ₂] + 1;
Branch > 0, X [PC]
MOV R ₀ , SUM

The value of X, if target address of branch is loop, when instruction is uses PC relative addressing mode is _____. (Assume memory is byte addressable)

[Have any Doubt ?](#)

-12

Correct Option

Solution :

-12

$$\text{Each instruction of 24 bits} = \frac{24}{8} = 3 \text{ B}$$

$$\text{So, loop: } \leftarrow [R_0] + R_2[\text{PC}] i$$

$$\text{Dec } R_1 \quad i + 3\text{B}$$

$$R_2 \leftarrow [R_2] + 1 \quad i + 6\text{B}$$

$$\text{Branch } > 0, \text{ offset } i + 9\text{B}$$

$$\text{PC} = [i + 12\text{B}]$$

$$\text{So value of } X = [i + 12] - 12 = i$$

$$\text{So value of } X = [-12]$$

QUESTION ANALYTICS

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