PART - A

GENERIC AREA

Q1: A is the father of B and C is the son of D. E is the brother of A. B is the sister of C. How is D related to E?

(A) Daughter

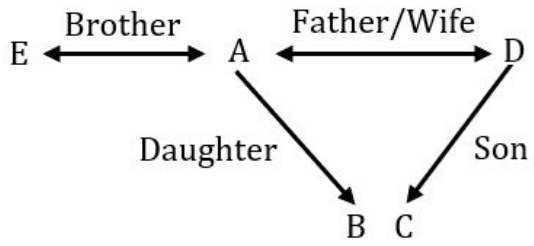
(B) Brother

(C) Brother in Law

(D) Sister in Law

Solution: D

Explanation:



Q2: Pointing towards a picture, Ramesh said, That picture is of the sister of the grandson of the father of my maternal uncle. How is that lady in the picture related to Ramesh?

(A) Mother's sister

(B) Cousin (maternal brother)

(C) Cousin (maternal sister)

(D) Father's sister

Solution: C

Explanation:

<img src=https://solutionsadda.in/wp-content/uploads/2020/11/brother.png>

Q3:
Refer the statement and solve the question according to the conclusions.

**
<b>Statement:**

**
**Some Pigeons are Bird;
**
**Some Birds are Alive
**
<b>Conclusion:**

**
**(I) Some Pigeons are Alive
**
**(II) Some Birds are Pigeons

(A) Only (I) follows

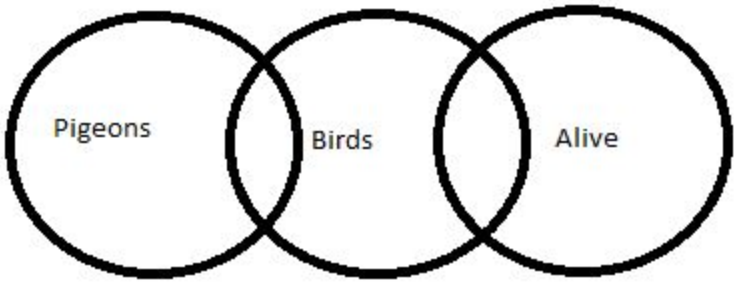
(B) Only (II) follows

(C) Both (I) & (II) follows

(D) None follows

Solution: B

Explanation:



//One more case is also possible where a circle of pigeons and birds will be the same as above but alive circle will pass both bird and pigeon as in this case also some birds are alive (don't focus on pigeons) and thus some pigeons are alive. Thus option C should be correct.

Q4: If 'CONTEMPORARY' is coded as NOCTEMROPARY then 'BODARDSITAND' is the code of which letter?

(A) DOBARDTISAND

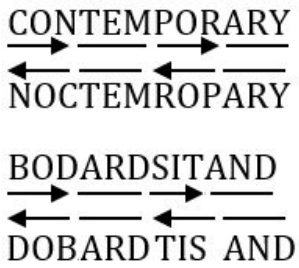
(B) BODDRASITDNA

(C) DOBDRATISDNA

(D) DOBARDSITAND

Solution: A

Explanation: <img src=>



Q5:
Find the number which does not fit into the series

8 12 20 32 50 68

(A) 20

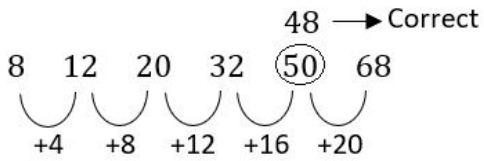
(B) 32

(C) 68

(D) 50

Solution: D

Explanation:



Directions - Question number 6 to 10 are based on following information:

There are twelve persons named O, P, Q, R, S, T, U, V, W, X, Y and Z who live in a multi-storey apartment. The apartment has three floors and each floor has four rooms. These 12 persons who live in a set of 12 Rooms can be represented by a Matrix of 3 rows and 4 columns.

-
→Q lives immediate left below diagonally of a person who lives immediate left below diagonally of T.

-
→S lives immediate left above diagonally of a person who lives immediate left above diagonally of Z.
-
→X lives immediate right above diagonally of a person who lives immediate right below diagonally of O.
-
→P lives immediate right above diagonally of a person who lives immediate right above diagonally of Y.
-
→T lives immediate left above diagonally of a person who lives third to the right of V.
-
⟞Q lives immediate left of a person who lives two rooms below W in the same column.
-
→R lives to the immediate right of a person who lives immediate right above diagonally of Q. Z is living to the immediate left of U who receives ₹46000 as salary.
-
⟞The person who live on one of the floors (left to right) receive salary in the same order ₹50000, ₹47000 and ₹46000.
-
→The person who live on one of the floors (right to left) receive salary in the same order ₹45000, ₹38000, ₹35000 and ₹40000.
-
→The person who live on one of the floors (left to right) receive salary in the same order ₹37000, ₹42000, ₹36000 and ₹43000.

Q6: What is the aggregate salary of people living at the right end of the apartment?

(A) ₹ 137000

(B) ₹ 134000

(C) ₹ 125000

(D) ₹ 131000

Solution: B

Explanation:

Q7. What is the salary received by a person who lives second to the right of S?

(A) ₹ 35000

(B) ₹ 45000

(C) ₹ 37000

(D) ₹ 38000

Solution: D

Explanation:

Q8. What is the sum of salaries of Y and P?

(A) ₹ 90000

(B) ₹ 99000

(C) ₹ 93000

(D) ₹ 89000

Solution: C

Explanation:

Q9. Who among the following lives third to the left of U?

(A) O

(B) Q

(C) T

(D) S

Solution: B

Explanation:

Q10. What is the sum of the salaries received by the persons living on the top floor of the apartment?

(A) ₹ 158000

(B) ₹ 193000

(C) ₹ 157000

(D) ₹ 161000

Solution: A

Explanation:

**Directions for question number 11 and 12:

Study the following information carefully and answer the question:

Group of girl's gossip with each other. All are sitting surrounding a round table. The names of the girls are Shiksha, Radha, Chinu, Snigdha and Rani. It is not necessary that they are sitting in the order of the name as mentioned here. Radha is second to the right of Shiksha. Shiksha doesn't sit with Chinu. Rani is second to the right of Radha. Radha sits near Snigdha.

Q11. If Radha and Snigdha change their places then who will be second to the left of Rani?

(A) Radha

(B) Snigdha

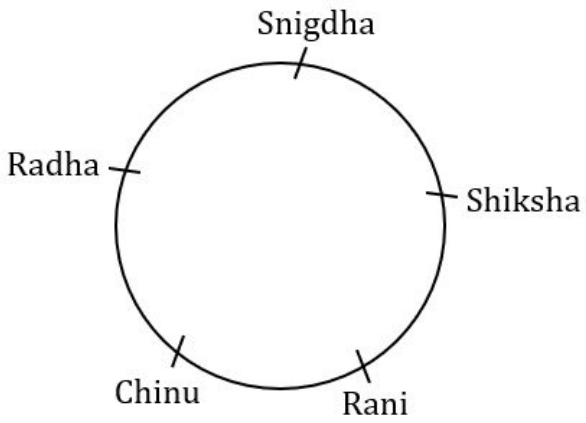
(C) Shiksha

(D) None of the options

Solution: B

Explanation:

According to the given passage the seating order is



If Radha and Snigdha change their places then Snigdha will be second to the left of Rani

---

**Directions for question number 11 and 12:

Study the following information carefully and answer the question:

Group of girl’s gossip with each other. All are sitting surrounding a round table. The names of the girls are Shiksha, Radha, Chinu, Snigdha and Rani. It is not necessary that they are sitting in the order of the name as mentioned here. Radha is second to the right of Shiksha. Shiksha doesn’t sit with Chinu. Rani is second to the right of Radha. Radha sits near Snigdha.

Q12. Who sits to the left of Shiksha?

(A) Rani

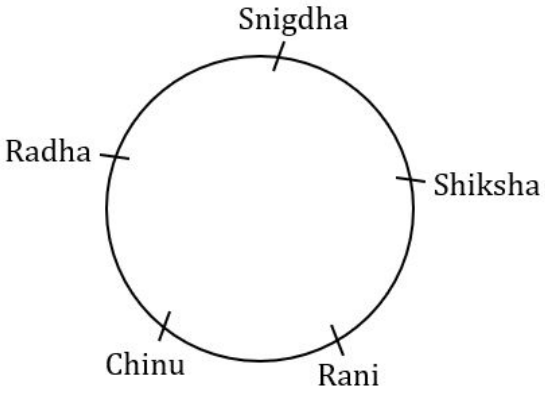
(B) Radha

(C) Chinu

(D) Snigdha

Solution: A

Explanation:



Rani sits to the left of Shiksha.

Directions for question number 13 to 15:

Relationship between different elements is provided in the statements. The statements are followed by conclusions. Study the conclusions based on the given statement and choose the correct answer.

Q13: T >= U = V <= W < X; V >= Y

Conclusions:

(I) Y <= T

(II) U >= X

(A) if only conclusion (I) follows

(B) if only conclusion (II) follows

(C) if neither (I) nor (II) conclusion follows

(D) if both (I) and (II) conclusions follow

Solution: A

Explanation:

T >= U = V <= W < X; V >= Y

 T>= U= V>= Y

 Y <= T

Directions for question number 13 to 15:

Relationship between different elements is provided in the statements. The statements are followed by conclusions. Study the conclusions based on the given statement and choose the correct answer.

Q13: T >= U = V <= W < X; V >= Y

Q14. P <= Q <= R > S; T >= R; S >= U

Conclusions:

(I) T > S

(II) U < R

(A) if only conclusion (I) follows

(B) if only conclusion (II) follows

(C) if neither (I) nor (II) conclusion follows

(D) if both (I) and (II) conclusions follow

Solution: D

Explanation:

P <= Q <= R > S; T >= R; S >= U

T >= R > S R > S>=U

T>S U<R

Directions for question number 13 to 15:

Relationship between different elements is provided in the statements. The statements are followed by conclusions. Study the conclusions based on the given statement and choose the correct answer.

Q13: T >= U = V <= W < X; V >= Y

Q15: A <= B < C >= D; C <= E <= F

Conclusions:

(I) F >= D

(II) A > E

(A) if only conclusion (I) follows

(B) if only conclusion (II) follows

(C) if neither (I) nor (II) conclusion follows

(D) if both (I) and (II) conclusions follow

Solution: A

Explanation:

A <= B < C >= D; C <= E <= F

D <= C <= E < F

F >= D

Q16. Five people are standing in a row. Aman is standing next to Karan but not adjacent to Tanuj. Radhika is standing next to Priyanka who is standing on the extreme left and Tanuj is not standing next to Radhika. Who are Standing adjacent to Aman?

(A) Radhika and Karan

(B) Karan and Tanuj

(C) Karan and Priyanka

(D) Radhika and Tanuj

Solution: A

Explanation:

(1) 1st stmt: Aman is standing next to Karan but not adjacent to Tanuj.
Aman = A, Tanuj = T, Karan = K

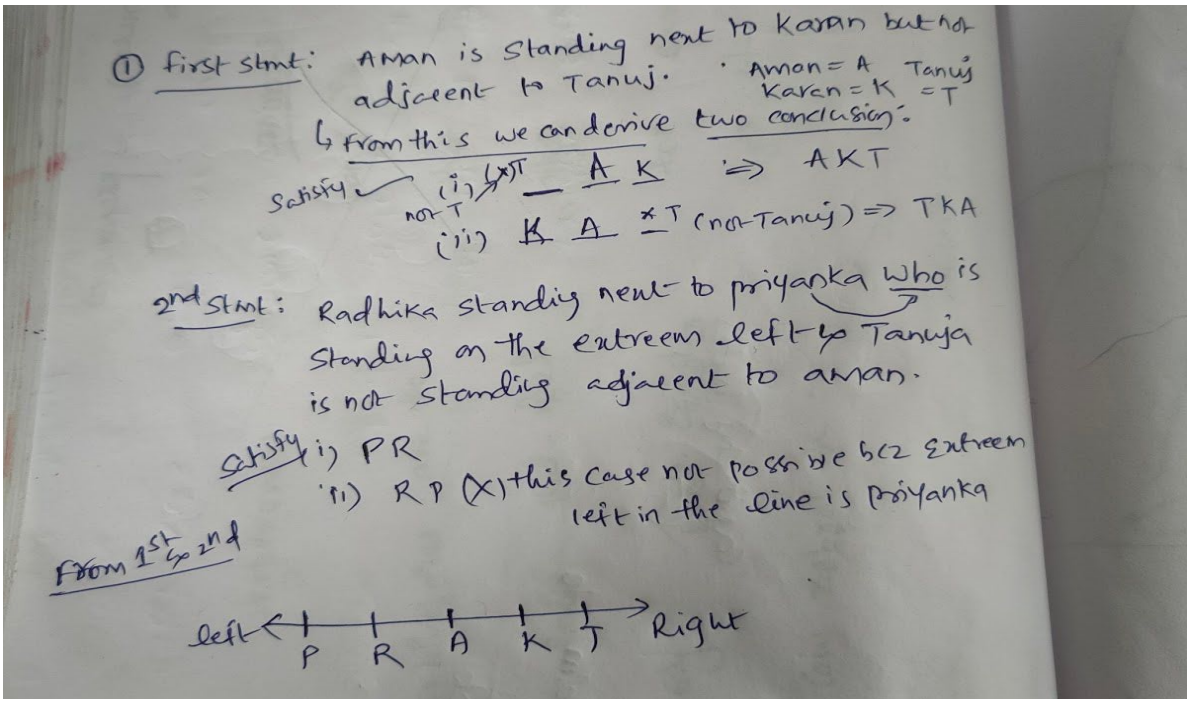
↳ From this we can device two conclusion:

(i) ✗T A K ⇒ AKT ✓ (Satisfy)
(ii) K A ✗T(not Tanuj) ⇒ TKA

(2) 2nd stmt: Radhika standing next to Priyanka, who is standing on the extreme left of Tanuja is not standing adjacent to Aman.

(i) PR (✓) Satisfy
(ii) RP (✗) This case not possible because extreme left in the line is Priyanka.

From 1st & 2nd:



Q17.
Complete the following series

 4, 27, 256, 3125, _____

(A) 46656

(B) 6250

(C) 800000

(D) 1024

Solution: A

Explanation:

2² = 4

3³ = 27

4⁴= 256

5⁵= 3125

6⁶= 46656

Q18. A Businessman purchases an item at a certain price and marks its price up by 30%. He sells the item at a certain discount on markup price and makes a net profit of 4% on the whole transaction. Find the discount given by a businessman on markup price.

(A) 10

(B) 15

(C) 26

(D) 20

Solution: D

Explanation:

Q19. Ramesh’s father is a paediatrician. Ram’s father is a trader. Krishan’s father is a school teacher. Krishan falls ill. Where should his father take him?

(A) to home

(B) to school

(C) to Ramesh’s father

(D) to Ram’s father

Solution: C

Explanation:

Ramesh’s father is a paediatrician

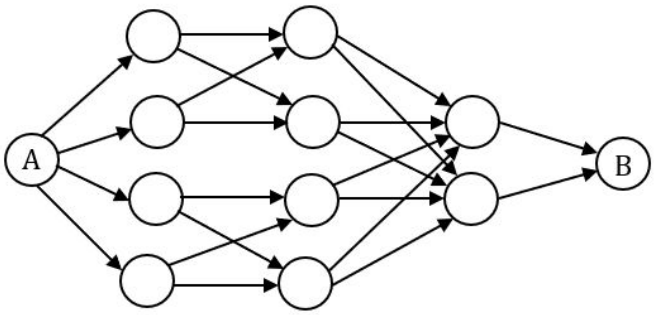
Ram’s father is a trader

Krishan’s father is a school teacher

Krishan falls ill

According to the given input Ramesh's father is a paediatrician. So, they went to Ramesh’s father.

Q20. What is the total number of ways to reach A to B in the network given?



(A) 12

(B) 16

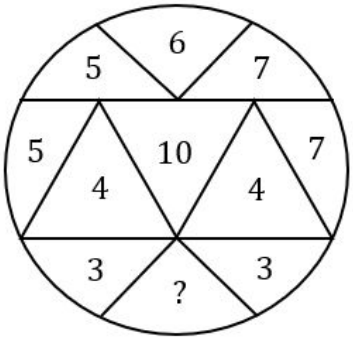
(C) 20

(D) 22

Solution: B

Explanation:

Q21.
Find the missing number.



(A) 14

(B) 10

(C) 9

(D) 3

Solution: D

Explanation:

Q22. If 5% income of P is equal to 15% income of Q and 10% income of Q is equal to 20% income of R. If income of R is ₹ 2000, then what are the incomes of P and Q respectively?

(A) ₹ 4000 and ₹ 8000

(B) ₹ 12000 and ₹ 4000

(C) ₹ 15000 and ₹ 5000

(D) ₹ 18000 and ₹ 6000

Solution: B

Explanation:

5%P = (15/100)*Q

 (10/100)*Q = (20/100)*R

 (20/100)*2000

 =4000

 (10/100)*Q = 4000

 Q = 4000

 (5/100)*P = (15/100)*4000

 =600

 P = (600*100)/5

 P=12000

Directions for question number 23 to 26:

Answer the questions on the basis of the data given below:

O is X’s father

Y is Z’s mother

P is O’s mother

X is Z’s sister

Q23. If P has a daughter Q, then how is Q related to Z?

(A) Aunt

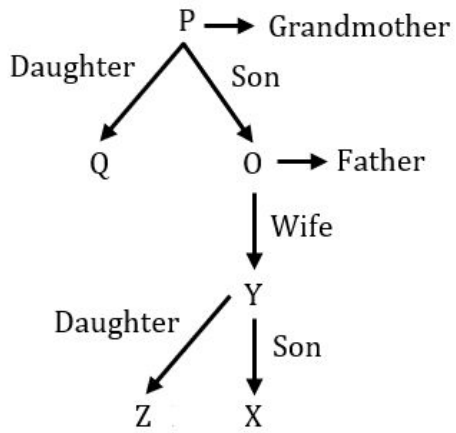
(B) Mother

(C) Sister

(D) Daughter

Solution: A

Explanation:



If P has a daughter Q, then Q related to Z is Aunt.

Directions for question number 23 to 26:

Answer the questions on the basis of the data given below:

O is X's father

Y is Z's mother

P is O's mother

X is Z's sister

Q24. How is Y related to O?

(A) Wife

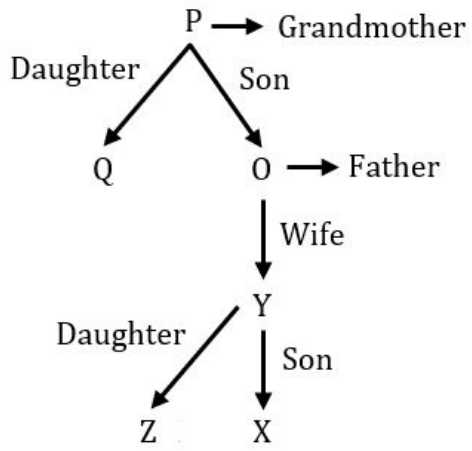
(B) Sister

(C) Mother

(D) Daughter

Solution: A

Explanation:



Y related to O is wife.

Directions for question number 23 to 26:

Answer the questions on the basis of the data given below:

O is X’s father

Y is Z’s mother

P is O’s mother

X is Z’s sister

Q25. How is O related to Z?

(A) Brother

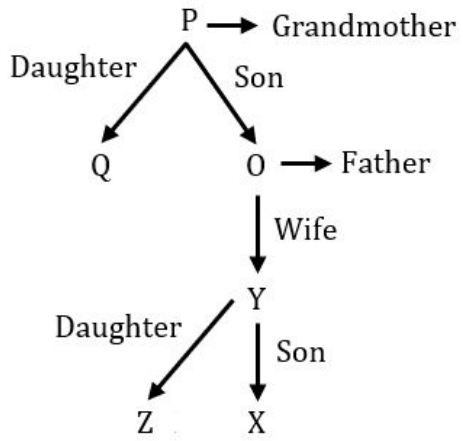
(B) Cousin

(C) Father

(D) Uncle

Solution: C

Explanation:



O related to Z is father.

Directions for question number 23 to 26:

Answer the questions on the basis of the data given below:

O is X’s father

Y is Z’s mother

P is O’s mother

X is Z’s sister

Q26. How is P related to X?

(A) Mother

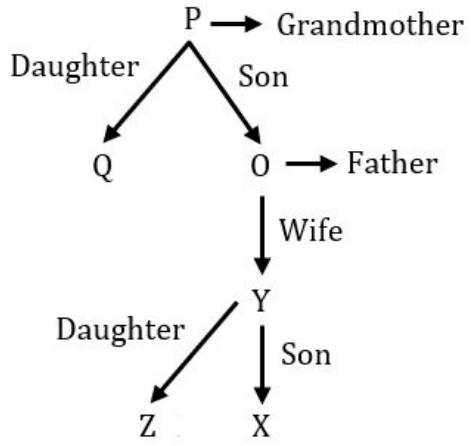
(B) Grandmother

(C) Sister

(D) Daughter

Solution: B

Explanation:



P related to X is Grandmother.

Q27. 14, 28, 20, 20, 40, 32, 64, _____

(A) 52

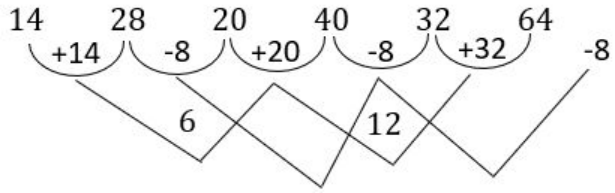
(B) 56

(C) 96

(D) 128

Solution: B

Explanation:



Q28. 5 16 49 104 181 _____

(A) 271

(B) 298

(C) 280

(D) 281

Solution: C

Explanation:

<img src=https://solutionsadda.in/wp-content/uploads/2020/11/series.png>

Q29. In a certain code, ‘CONSIDER’ is written as RMNBSFEJ, how is ‘MONOPOLY’ written in that code?

(A) LNMNZMPQ

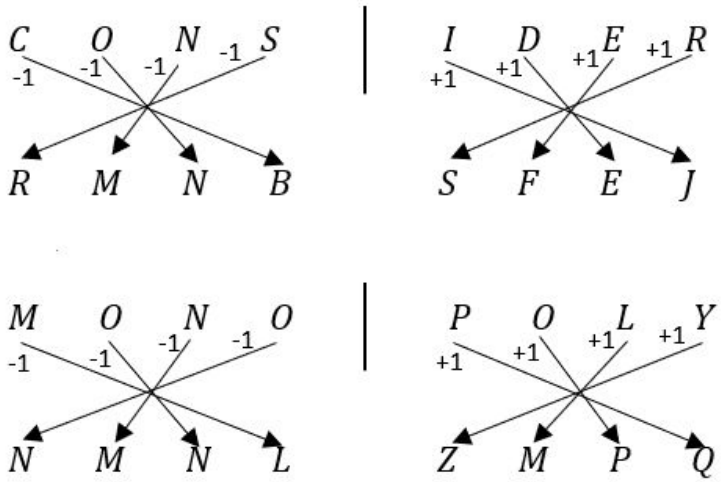
(B) NMNLZMPQ

(C) POPNXKNO

(D) NMNLXKNO

Solution: B

Explanation:



**
Directions for question number 30 to 31:**

**
**Two statements followed by four conclusions numbered from (I) to (IV) are given. You have to take the two statements to be true even if these seem to be at variance from the commonly known facts.

Read all the conclusions and decide which of the given conclusions logically follow from the two given statements disregarding commonly known facts.

**
**Q30. All Shoes are Socks
**
** Some Socks are Gloves

**
Conclusions:**

**
**(I) Some Shoes are Gloves
**
**(II) Some Socks are Shoes
**
**(III) All Gloves are Shoes
**
**(IV) No Shoes are Gloves

(A) Only (I) follows

(B) Only (II) follows

(C) Only (III) follows

(D) Only (IV) follows

Solution: B

Explanation:

<img src=https://solutionsadda.in/wp-content/uploads/2020/11/shoes.png>

**
Directions for question number 30 to 31:**

**
**Two statements followed by four conclusions numbered from (I) to (IV) are given. You have to take the two statements to be true even if these seem to be at variance from the commonly known facts. Read all the conclusions and decide which of the given conclusions logically follow from the two given statements disregarding commonly known facts.

**
**Q31: All Sentences are Words
**
** All Words are Alphabets

**
Conclusions:**

**
**(I) All words are sentences
**
**(II) All sentences are alphabets
**
**(III) All alphabets are words
**
**(IV) Some alphabets are words

(A) Only (I) and (III) follows

(B) Only (II), (III) and (IV) follows

(C) Only (II) and (IV) follows

(D) All follows

Solution: C

Explanation:

<img src=https://solutionsadda.in/wp-content/uploads/2020/11/alpha.png>

Q32. **
**All Boys are Girls

**
** No Girl is a Man

**
Conclusions:**

**
**(I) No Boy is a Man
**
**(II) Some Boys are Man
**
**(III) All Girls are Boys
**
**(IV) Some Man are Boys

(A) Only (III) follows

(B) Only (I) follows

(C) All follows

(D) None follows

Solution: B

Explanation:

<img src=https://solutionsadda.in/wp-content/uploads/2020/11/man.png>

Q33. A Class has 100 students with roll number from 101 to 200. All the even numbered students study Physics, whose roll number are divisible by 5 study Chemistry & students with roll numbers divisible by 7 study Biology. How many students do not study any of the given subject Physics, Chemistry or Biology?

(A) 35

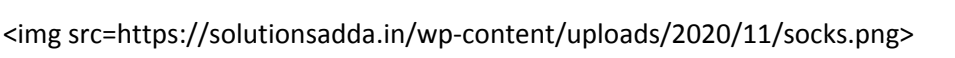
(B) 45

(C) 51

(D) 62

Solution: A

Explanation:



Q34. **
**Choose the alternative to decide whether the data given in the statements is/are sufficient to answer the question based on the following information.

**
**Five persons A, B, C, D and E are sitting in a row. Who is sitting in the middle?

**
Statements:**

**
**(I) E is to the left of B.
**
**(II) B is in-between C and E.
**
**(III) D is in-between E and A.

**
**Choose which of the following will be sufficient to find out who is sitting in the middle?

(A) Only (I) and (II)

(B) Only (II) and (III)

(C) Only (I) and (III)

(D) All (I), (II) and (III)

Solution: D

Explanation: here the question is only asking to find who is in the middle not for the exact pattern, so using only B we will get E in the middle and using D we will get only one pattern.

Q35. Ram can do a piece of work in 5 days, and Sham can do the same in 10 days. With the help of Karan, they finished the work in 2 days. How many days would it take Karan to do the work?

(A) 5 days

(B) 10 days

(C) 15 days

(D) 20 days

Solution: A

Explanation:

Ram can do a piece of work = 5 days**
**

Sham can do a piece of work = 10 days**
**

Ram + Sham + Karan = 2 days**
**

Karan= 5 days**
**

Q36. Considering 5 as the 1st element in the sequence 5, 11, 23, 47. What is the 6th element in the sequence?

(A) 191

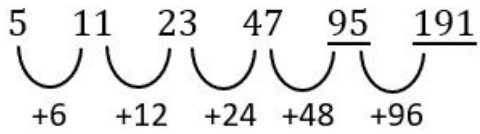
(B) 172

(C) 342

(D) 106

Solution: A

Explanation:



Q37. ₹ 1000 doubled in 10 years when compounded annually. How many more years will it take to get another ₹ 2000 compound interest?

(A) 5 years
(B) 10 years
(C) 3 years
(D) 4 years

Solution: B

Explanation:

₹ 1000 invested in compound interest becomes ₹ 2000 in 10 years.**
**
The amount will double again in another 10 years.**
**
The amount will become ₹ 2000 in another 10 years.**
**
So, to earn another ₹ 2000 interest, it will take another 10 years.**
**

**
Directions for question number 38 to 42:**

**
**Answer the questions on the basis of the following information provided:

**
**The students of a school participates in various sports activities, the distribution of the same is given below:

**
**Football - 17%
**
**Handball - 26%
**
**Badminton - 16%
**
**Table Tennis - 22%
**
**Basketball - 19%

**
**Total number of students in the school are 800.

**
**Q38. What is the respective ratio between the total number of students taking part in Badminton and Table Tennis together and those participating in Basketball and Football together?

(A) 11 : 13

(B) 18 : 19

(C) 19 : 18

(D) 29 : 28

Solution: C

Explanation:

Total number of students taking part in Badminton and Table Tennis together is =(0.16*800 + 0.22*800)**
**

= 304**
**

Total number of students taking part in Basketball and Football together is = (0.19*800 + 0.17*800)**
**

=288**
**

Ration= 304/16=19 : 288/16= 18**
**

Q39. What is the number of girls who take part in handball, if the ratio of boys to girls is 3 : 10 respectively?

(A) 48

(B) 80

(C) 78

(D) 160

Solution: D

Explanation:

Total number of students in handball is 208**
**

Ration is 3:10**
**

48: 160**
**

Boys = 48 and girls = 160**
**

Q40. The number of students taking part in Basketball is approximately what percent more than those taking part in Football?

(A) 10.84%

(B) 9.92%

(C) 9.32%

(D) None of the options

Solution: D

Explanation:

Y is what percentage more than X= Y-X/X * 100

Basketball is approximately what percent more than those taking part in Football = ((19-17) /17) *100.

Q41. If out of the number of students in Basketball, 69 are girls, what is the difference between the number of boys and girls taking part in Basketball?

(A) 17

(B) 23

(C) 86

(D) 14

Solution: D

Explanation:

Total number of Basket students = 152**
**

Girls= 69**
**

Boys= 152-69= 83**
**

Difference= 83-69 = 14**
**

Q42. What is the approximate average of the number of participants in Handball, Badminton and Basketball?

(A) 162

(B) 163

(C) 104

(D) 169

Solution: B

Explanation:

Total number of Basket students = 152**
**

Total number of students in handball = 208**
**

Total number of students in Badminton= 128**
**

=(152+208+128)/3**
**

=488/3**
**

=162.66**
**

PART - B

Technical Area

Q43: **
**What is the time complexity of the following recursive function?

```
int CompuFun (int n)
{
   if(n <= 2)
      return
    else
      return (CompuFun (floor(sqrt(n))) + n);
}
```

(A) $\theta(n)$

(B) $\theta(logn)$

(C) $\theta(nlogn)$

(D) $\theta(loglogn)$

Solution: D

Explanation:

Recurrence relation should be T(n)=T(n^1/2)+1 where n>2. **
**

Here only (√(n)) is in the recursion call parameter. (+n) is just addition and it is a dependent value on recursion. So, we will only consider the recursion part for the recurrence relation. **
**

It is ComputeFun(sqrt(n)).**
**

We are only returning ComputeFun(√n)+n. **
**

(+n) is not in a recursion call.**
**

So recursive equation is,**
**

T(n) = T(√n) + c**
**

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**
**

Now apply Master's theorem,

a=1, b=2, k=0, p=0
**
**

a = b^k, so Case-2 will be applied, and p>-1, so
**
**

<img src = https://solutionsadda.in/wp-content/uploads/2020/01/s12.jpg> **
**

Q44: The static keyword word is used in public static void main() declaration in java:

(A) To enable the JVM to make call to the main( ), as class has not been instantiated.

(B) To enable the JVM to make call to the main( ), as class has not been inherited.

(C) To enable the JVM to make call to the main( ), as class has not been loaded.

(D) To enable the JVM to make call to the main( ), as class has not been finalized.

Solution: A

Explanation:

Q45: A software Requirements specification(SRS) document should avoid discussing which one of the following?

(A) User interface issues

(B) Non-functional requirements

(C) Design solutions

(D) Interfaces with third party software

Solution: C

Explanation:

SRS is a description of a software system to be developed, laying out functional & nonfunctional requirements and may include a set of use cases that describe interactions the user will have with the software.

Q46: Changes are made to the system to reduce the future system failure chances is called___.

(A) Preventive Maintenance

(B) Adaptive Maintenance

(C) Corrective Maintenance

(D) Perfective Maintenance

Solution: A

Explanation:

Software maintenance in software engineering is the modification of a software product after delivery to correct faults, to improve performance or other attributes.**
**

1. 1. Corrective maintenance: Reactive modification of a software product performed after delivery to correct discovered problems. Corrective maintenance can be automated with automatic bug fixing.**
**
2. 2. Adaptive maintenance: Modification of a software product performed after delivery to keep a software product usable in a changed or changing environment.**
**
3. 3. Perfective maintenance: Modification of a software product after delivery to improve performance or maintainability.**
**
4. 4. Preventive maintenance: Modification of a software product after delivery to detect and correct latent faults in the software product before they become effective faults.**
**

Q47: Which among the following types of Server filters Website Traffic?

(A) POP Server

(B) Database Server

(C) Proxy Server

(D) Mail Server

Solution: C

Explanation:

A proxy server is a server application or appliance that acts as an intermediary for requests from clients seeking resources from servers that provide those resources. A proxy server thus functions on behalf of the client when requesting service, potentially masking the true origin of the request to the resource server.

Q48: In the context of modular software design, which one of the following combinations is desirable?

(A) High cohesion and high coupling

(B) High cohesion and low coupling

(C) Low cohesion and high coupling

(D) Low cohesion and low coupling

Solution: B

Explanation:

→ Cohesion is a measure of internal strength within a module, whereas coupling is a measure of inter dependency among the modules.

→ So in the context of modular software design, there should be high cohesion and low coupling.

Q49: How many AND, OR and XOR gates are required for implementation of full adder?

(A) 1, 2, 2

(B) 2, 2, 1

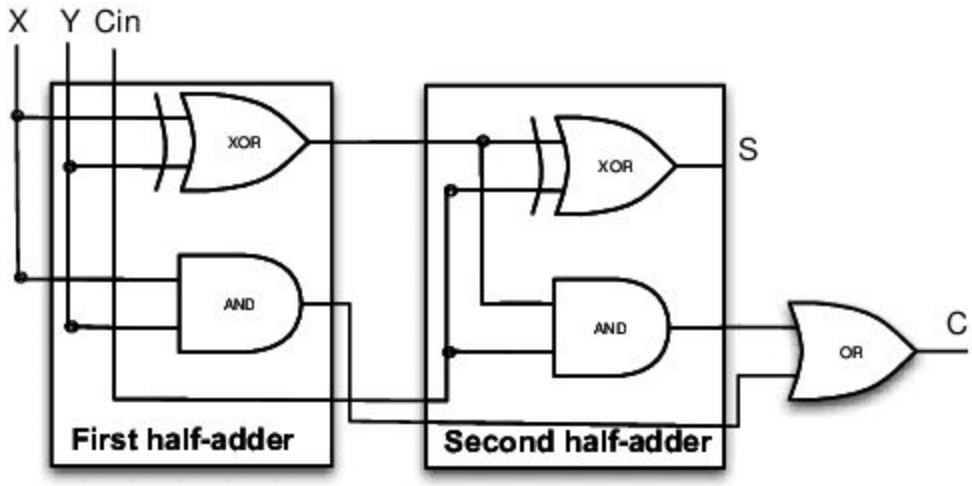
(C) 3, 2, 2

(D) 3, 0, 1

(E) None of the above

Solution: E

Explanation:



2-AND**
**

1-OR**
**

2-XOR**
**

Q50: Which of the following algorithms can be used to most efficiently find whether a cycle is present in a given graph?

(A) Prim's Minimum Spanning Tree

(B) Breadth First Search

(C) Depth First Search

(D) Kruskal's Minimum Spanning Tree Algorithm

Solution: C

Explanation:

DFS is the most efficient algorithm to find the cycle. **
**

BFS, Prims and Kruskal's also find the cycle but DFS will give better results. **
**

_____

Q51: Consider an array of positive integers between 123456 to 876543, which sorting algorithm can be used to sort these number in linear time?

(A) Impossible to sort in linear time

(B) Radix Sort

(C) Insertion Sort

(D) Bubble Sort

Solution: B

Explanation:

Radix Sort worst case time complexity is O(d(n+k)). **
**

Even it gives linear time when the input array is 0 to n^6....**
**

_____

Q52: In the Model-View-Controller (MVC) architecture, the model defines the _____.

(A) Data-access layer

(B) Presentation layer

(C) Business-logic layer

(D) Interface layer

Solution: A or C

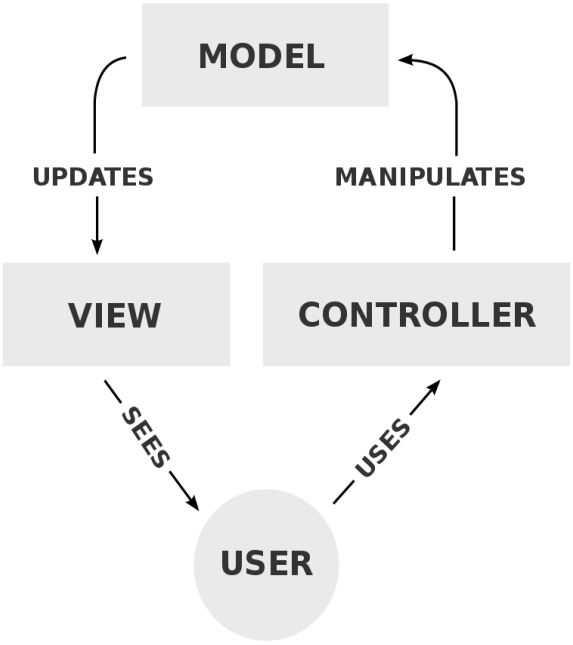
Explanation:

Model : The central component of the pattern. It is the application's dynamic data structure, independent of the user interface. It directly manages the data, logic and rules of the application.**
**

View : Any representation of information such as a chart, diagram or table. Multiple views of the same information are possible, such as a bar chart for management and a tabular view for accountants.**
**

Controller : Accepts input and converts it to commands for the model or view.**
**

<img src=>



In addition to dividing the application into these components, the model–view–controller design defines the interactions between them.**
**

1. 1. The model is responsible for managing the data of the application. It receives user input from the controller.**
**
2. 2. The view means presentation of the model in a particular format.**
**
3. 3. The controller responds to the user input and performs interactions on the data model objects. The controller receives the input, optionally validates it and then passes the input to the model.**
**

Both A and C seem to be correct, but to choose single , option C is the more accurate option.

Q53: The default character encoding in HTML5 is _____.

(A) UTF-16

(B) UTF-32

(C) UTF-8

(D) ISO-8859-1

Solution: C

Explanation:

For HTML5, the default character encoding is UTF-8.**
**

This has not always been the case. The character encoding for the early web was ASCII.**
**

Q54: In Java, for ensuring the persistence property, the class must implements:

(A) Serializable Interface

(B) Utilization Interface

(C) Threadable Interface

(D) Recognizable Interface

Solution: A

Explanation:

Q55: In the given Program:

```
class Dialog1
    {
    public static void main(String args[])
          {
           Frame f1 = new Frame(INDIA);
           f1.setSize(300, 300);
           f1.setVisible(true);
          FileDialog d = new FileDialog(f1, MyDialog);
          d.setVisible(true);
          String fname = d.getDirectory() + d.getFile();
```

```
        System.out.println(The Selection is + fname);
        }
    }
```

To make the Frame visible, which of the following statements are true?

(A) f1.setClear(true);

(B) f1.setVisible(true);

(C) f1.setlook(true);

(D) f1.setclean(true);

Solution: B

Explanation:

_____

Q56: The router table contains addresses belonging to _____ protocol(s).

(A) a single

(B) two

(C) multiple

(D) none of the options

Solution: A

Explanation:

_____

Q57: Which of the following scenarios may lead to an irrecoverable error in a database system?

(A) A transaction writes a data item after it is read by an uncommitted transaction

(B) A transaction reads a data item after it is read by an uncommitted transaction

(C) A transaction reads a data item after it is written by a committed transaction

(D) A transaction reads a data item after it is written by an uncommitted transaction

Solution: D

Explanation:

Q58: A stack can be implemented using queue, but then we need to use at least:

(A) 3 queues
(B) 2 queues
(C) only one queue is sufficient
(D) none of the options

Solution: B

Explanation:

A stack can be implemented using a queue, but then we need to use at least 2 queues.

Q59: A minimal super key (i.e, one of the super keys for which no proper subset is a super key) is called:

(A) Super Key

(B) Candidate Key

(C) Primary Key

(D) Candidate and Primary Key

Solution: D

Explanation:

A minimal superkey is a candidate key but as per the options it suited as Candidate and primary key.

Q60: During exception handling, which of the following statements hold true?

(A) Single try can have multiple associated catch with it

(B) A Single Catch can have multiple try associated with it

(C) Finally block execute only when the class is inherited

(D) For a given exception, multiple catch can execute

Solution: A

Explanation:

Q61: Which of the following problems is not NP complete but undecidable?

(A) Partition Problem

(B) Halting Problem

(C) Hamiltonian Circuit

(D) Bin Packing

Solution: B

Explanation:

NP Complete problems:

1.
1. Partition Problem
2.
2. Hamiltonian Circuit
3.
3. Bin Packing
4.
4. Travelling salesman problem.

Q62: Which of the following is not a part of the Test Implementation and Execution Phase?

A) Creating test suites from the test cases

B) Executing test cases either manually or by using test execution tools

C) Comparing actual results

D) Designing the tests

Solution: D

Explanation:

TRUE: Creating test suites from the test cases**
**

TRUE: Executing test cases either manually or by using test execution tools**
**

TRUE: Comparing actual results**
**

FALSE: Designing the tests**
**

Q63:

**
**Consider the following C program segment.

**
**while (first <= last)
**
**{
**
** if (array[middle] < search)
**
** first = middle + 1;
**
** else if (array[middle] == search)
**
** found = TRUE;
**
** else last = middle - 1;
**
** middle = (first + last)/2;
**
**}
**
**if (first < last) not Present = TRUE;

**
**The cyclomatic complexity of the program segment is_____.

(A) 3

(B) 4

(C) 5

(D) 6

Solution: C

Explanation:

To find the cyclomatic complexity using three formulas.**
**

1. 1. The number of regions**
**
2. 2. Predicate(P) + 1 [Predicate divides minimum 2 or more]**
**
3. 3. E-V+2**
**

According to given question, we can use Predicate(P) + 1 **
**

while (first <= last) → P1**
**

{**
**

if (array[middle] < search) → P2**
**

first = middle + 1; **
**

else if (array[middle] == search) → P3**
**

found = TRUE;**
**

else**
**

last = middle - 1; **
**

middle = (first + last)/2;**
**

}**
**

if (first < last) not Present = TRUE; → P4**
**

→ P+1 = 4+1 = 5**
**

Q64: **
**Let R and S be two relations with the following schema

**
**R (P, Q, R1, R2, R3)
**
**S (P, Q, S1, S2)

**
**Where (P, Q) is the key for both schemas. Which of the following queries are equivalent?

(I) $\Pi_P\ (R \bowtie S)$

(II) $\Pi_P\ (R) \bowtie \Pi_P (S)$

(III) $\Pi_P \left(\Pi_{P,Q}(R) \cap \Pi_{P,Q}(S) \right)$

(IV) $\Pi_P (\Pi_{P,Q}(R) - (\Pi_{P,Q}(R) - \Pi_{P,Q}(S)))$

(A) Only (I) and (II)

(B) Only (I) and (III)

(C) Only (I), (II) and (III)

(D) Only (I), (III) and (IV)

Solution: D

Explanation:

Natural join is based on the common columns of the two tables.
**
**

We have two common columns in 'R' and 'S' which are 'P' and 'Q'.
**
**

(I) Both P and Q are used while doing the join, i.e., both P and Q are used to filter.
**
**

(II) Q is not used here for filtering. Natural join is done on all P's from R and all P's from S. So different from option (I).
**
**

(III) Through venn diagram it can be proved that A ∩ B = A - (A-B).
**
**

So through the above formula we can say that (III) and (IV) are equivalent.

So, finally (I), (III) and (IV) are equivalent.**
**

Q65: Anomalies are avoided by splitting the offending relation into multiple relations, also known as _____.

(A) Acupressure

(B) Decomposition

(C) Precomposition

(D) Both decomposition & precomposition

Solution: B

Explanation:

Anomalies are avoided by splitting the offending relation into multiple relations, also known as Decomposition.

Q66: Which one of the following statements is FALSE?

(A) Context-free grammar can be used to specify both lexical and syntax rules.

(B) Type checking is done before parsing.

(C) High level language programs can be translated to different Intermediate Representations.

(D) Arguments to a function can be passed using the program stack.

Solution: B

Explanation:

TRUE: Context-free grammar can be used to specify both lexical and syntax rules.**
**

FALSE: Type checking is done before parsing.**
**

TRUE: High level language programs can be translated to different Intermediate Representations.**
**

TRUE: Arguments to a function can be passed using the program stack.**
**

Q67: Encoders are made by three _____ gates.

(A) AND

(B) OR

(C) NAND

(D) XOR

Solution: B

Explanation:

Encoders are made by three OR gates

Encoder may also be designed by using 3 NAND gates. Thus both option B,C are correct.

Explanation for why Option C is also correct.

The size of encoder is not mentioned here, also the FAN IN of the Gate used. So NAND being universal gate can be used to make Encoder. Attaching the screenshot and link below where 3 NAND gates are used as an Encoder. Link for reference : https://web.sonoma.edu/users/m/marivani/es210/units/experiment02.shtml

Decimal to Binary Encoder:

To communicate with a computer, it is necessary to convert input information into a binary form that the computer understands. One device that does this translation is an encoder. An encoder is a device that has 2^n (or fewer) inputs and n outputs. The outputs generate the binary version of the inputs. Figure 1 shows an encoder for converting the decimal digits 0 to 7 to their binary equivalents. Construct this encoder.

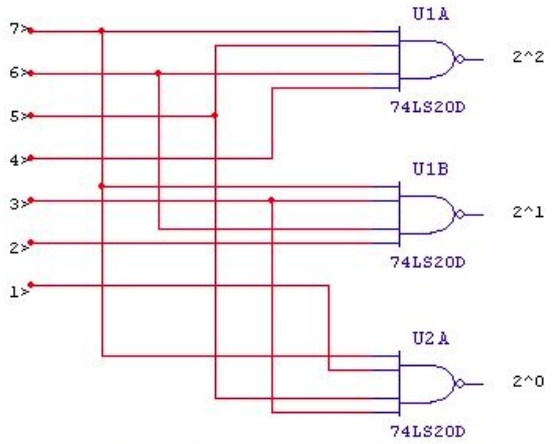


Figure 1 - Binary Encoder using NAND gates

Q68: _____ CSS property allows you to wrap a block of text around an image.

(A) wrap

(B) push

(C) float

(D) align

Solution: C

Explanation:

Q69: What does <main> include?

(A) Header

(B) Sidebar

(C) Article

(D) Footer

Solution: C

Explanation:

Answer can be option A also. Main tag contains the content that is main and unique to the document and is not repeated such as sidebar etc. Header can be in the main tag.

Q70: **
**Let R = (A, B, C, D, E) having following FD's.

**
**F = {A ⟶ BC, CD ⟶ E, B ⟶ D, E ⟶ A}

**
**Which of the following is not a Candidate key?

(A) A

(B) B

(C) E

(D) BC

Solution: B

Explanation:

**
**Closure(A)+ = { A, B, C, D, E }

**
**Closure(B)+ = { B, D }

**
**Closure(E)+ = { A, B, C, D, E }

**
**Closure(BC)+ = { A, B, C, D, E }

Q71: In Java, the Dynamic Array are known as :

(A) Vectors

(B) Cycle

(C) Remote

(D) Kubernotos

Solution: A

Explanation:

In Java, the Dynamic Array are known as Vectors

Q72: In ICMP, in case of time exceeded error, when the datagram visits a router, the value of time to live field is _____.

(A) Remains constant

(B) Decremented by 2

(C) Incremented by 1

(D) Decremented by 1

Solution: D

Explanation:

In ICMP, in case of time exceeded error, when the datagram visits a router, the value of time to live field is decremented by 1.

Q73: A 26-bit address bus has maximum accessible memory capacity of _____.

(A) 64 MB

(B) 16 MB

(C) 1 GB

(D) 4 GB

Solution: A

Explanation:

The maximum accessible memory capacity of 2^{^{26}} = 64 MB

Q74: Software consists of _____.

(A) Set of instructions + operating procedures

(B) Programs + documentation + operating procedures

(C) Programs + hardware manuals

(D) Set of programs

Solution: B

Explanation:

A software consists of Programs + documentation + operating procedures

---

Q75: To guarantee correction of upto 5 errors in all cases, the minimum Hamming distance in a block code must be _____.

(A) 11

(B) 6

(C) 5

(D) 2

Solution: A

Explanation:

To guarantee correction of up to t errors in all cases, the minimum Hamming distance in a block code must be d_{$_{min}$} = 2t + 1.**
**

t=5**
**

= 2*5+1**
**

=11**
**

Q76: Which of the following is not true for tree and graph?

(A) A tree is a graph

(B) A graph is a tree

(C) Tree can have a cycle

(D) Tree is a DAG

Solution: C

Explanation:

All are correct except Tree can have a cycle

Q77: (< ALL) comparison operator means :

(A) more than the maximum value in the subquery

(B) less than the minimum value in the subquery

(C) in equivalent to IN

(D) none of the options

Solution: B

Explanation:

No doubt. Correct answer is option B only.

Q78: Shift reduce parsing can also be called as :

(A) Reverse of the Right Most Derivation

(B) Right Most Derivation

(C) Left Most Derivation

(D) None of the options

Solution: A

Explanation:

Shift reduce parsing can also be called as Reverse of the Right Most Derivation.**
**

It is a bottom up parsing technique. **
**

Q79. Which of the following constructs is not supported by Java Server Pages?

(A) JSP Directives

(B) JSP Scriptlets

(C) JSP Actions

(D) JSP Reaction

Solution: D

Explanation:

Q80: **
**The number of tokens in the following C/C++ statement is:

**
**printf(i=%d, &i=%xx, i&i);

(A) 9

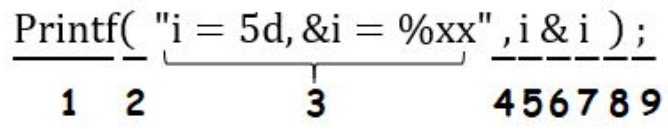
(B) 6

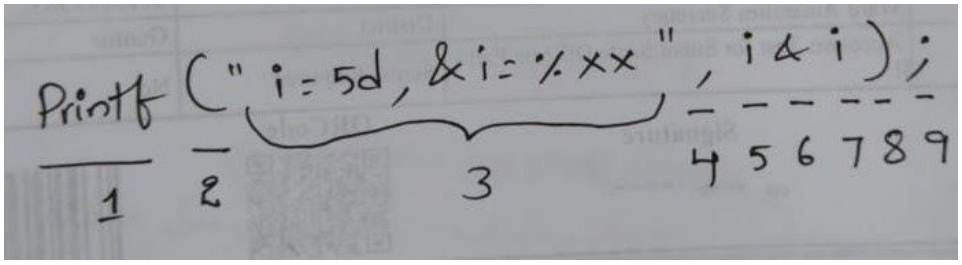
(C) 10

(D) 12

Solution: A

Explanation:





Q81: In CRC calculation if divisor is 1011 and dataword is 1001 what will be the CRC?

(A) 111

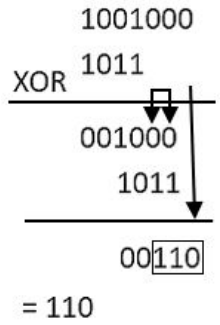
(B) 101

(C) 110

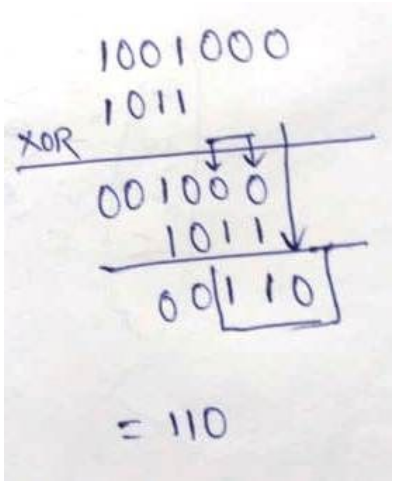
(D) 100

Solution: C

Explanation:



= 110



Q82: Find the mode of the following data:

<img src="https://solutionsadda.in/wp-content/uploads/2020/11/tab.jpg">

Age	0-6	6-12	12-18	18-24	24-30	30-36	36-42
Frequency	6	11	25	35	18	12	6

(A) 20.22

(B) 19.47

(C) 21.12

(D) 20.14

Solution: A

Explanation:

Q83: Some code optimization are carried out on the intermediate code because:

(A) they enhance the probability of the compiler to other target processors

(B) program analysis is more accurate on intermediate code than on machine code

(C) the information from data flow analysis cannot otherwise be used for optimization

(D) the information from the front end cannot otherwise be used for optimization

Solution: A

Explanation:

The code-optimization on intermediate code generation will always enhance the portability of the compiler to target processors. The main reason behind this is, as the intermediate code is independent of the target processor on which the code will be executed, so the compiler is able to optimize the intermediate code more conveniently without bothering the underlying architecture of the target processor.

Q84: A program P reads in 500 integers in the range [0..100] representing the scores of 500 students. It then prints the frequency of each score above 50. What would be the best way for P to store the frequencies?

(A) An array of 50 numbers

(B) An array of 100 numbers

(C) An array of 500 numbers

(D) A dynamically allocated array of 550 numbers

Solution: A

Explanation:

→ Here we are storing values above 50 and we are ignoring the scores which are less than 50.

→ Then using an array of 50 numbers is the best way to store the frequencies.

Q85: Which of the following are two main types of overloading in Java?

(A) Overloading and linking

(B) Overriding and linking

(C) Reusability and data-hiding

(D) Overloading and Overriding

Solution: D

Explanation:

Overloading occurs when two or more methods in one class have the same method name but different parameters.**
**

Overriding occurs when two methods have the same method name and parameters. One of the methods is in the parent class, and the other is in the child class. Overriding allows a child class to provide the specific implementation of a method that is already present in its parent class.

Q86: A recursive problem like tower of hanoi can be rewritten without recursion using:

(A) stack

(B) priority queue

(C) graph

(D) cycles

Solution: A

Explanation:

A recursive problem like tower of hanoi can be rewritten without recursion using stack.

Q87: SRD stands for _____.

(A) Software Requirements Definition

(B) Structured Requirements Definition

(C) Software Requirements Diagram

(D) Structured Requirements Diagram

Solution: B

Explanation:

Option A can also be correct. There is no proper definition for SRD , many definition is there.

Term	Definition	Category
SRD	Software Release Document	Softwares
SRD	System Reference Document	Computing
SRD	Self Reliance And Development	Business Position
SRD	step-recovery diode	Government
SRD	Short Range Devices	Other
SRD	Shuttle Requirements Document	Space Science
SRD	Signed Root Deviance	Maths
SRD	Salzman Research And Development	Business Firm
SRD	San Ramon	Airport Code
SRD	State Referee's Decision	Government
SRD	self-reading dosimeter	Government
SRD	Spectral Recording Digital	Electronics
SRD	Software Requirements Document	Business
SRD	Short Range Devices. The Name Given In Europe To Low Power Radio Devices. The Industry Is Represented By The Trade Body The Lpra	Messaging
SRD	systems requirement document	Government
SRD	State Recognition Day	Day's Abbreviation
SRD	Surinam Dollar	Country Currency
SRD	Services Rations Department	Military
SRD	Standards Requirements Document	Computer and Networking
SRD	Scottish Rite Dormitory	Other
SRD	systems requirement document, 10	Government
SRD	Systems Requirements Document	Space Science
SRD	Siding Roof And Deck	Community
SRD	Squirrels Rampant Dormitory	University
SRD	screen reader system	Government
SRD	Software Requirements Definition	Softwares

Full Form	Category	Term
Standards Requirements Document	Computer and Networking	SRD
Surinam Dollar	Country Currency	SRD
Short Range Device	Telecommunication	SRD
Software Release Document	Softwares	SRD
Software Requirements Document	Softwares	SRD
System Reference Document	Softwares	SRD
Software Requirements Definition	Softwares	SRD
Spectral Recording Digital	Electronics	SRD
Short Range Devices. The Name Given In Europe To Low Power Radio Devices. The Industry Is Represented By The Trade Body The Lpra	Messaging	SRD
System Requirements Document	Space Science	SRD
Shuttle Requirements Definition	Space Science	SRD
Shuttle Requirements Document	Space Science	SRD
Systems Requirements Document	Space Science	SRD
Self Reliance and Development	Job Title	SRD
San Ramon	Airport Code	SRD
Signed Root Deviance	Maths	SRD
Services Rations Department	Military and Defence	SRD

Q88: Black Box Software Testing method focuses on the:

(A) Boundary condition of the software

(B) Control structure of the software

(C) Testing of User Interface only

(D) Cyclomatic Complexity

Solution: A

Explanation:

Black Box Software testing method focuses on the functional requirement of the software. **
**

TRUE: Boundary condition of the software: It is one of the methods in black box testing. **
**

FALSE: Control structure of the software : Which is done by white box testing. **
**

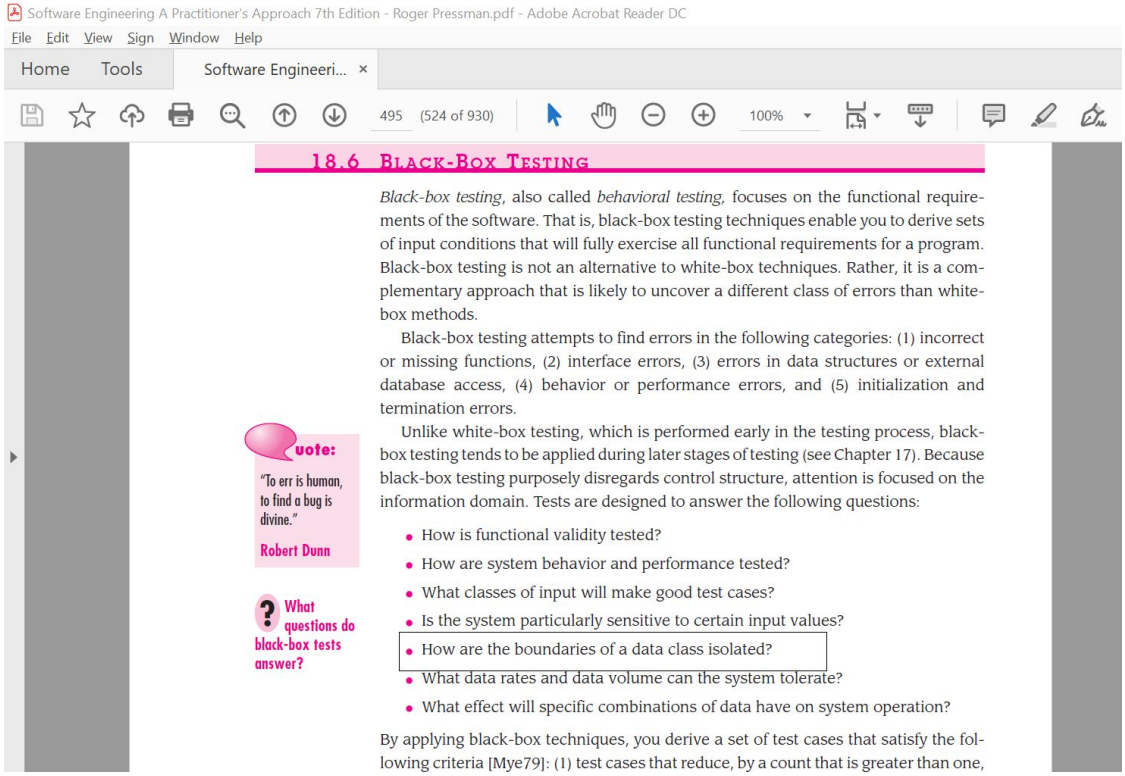
FALSE: Testing of User Interface only**
**

FALSE: Cyclomatic Complexity: This is done by white box testing. **
**

ANSWER IS ONLY A. Black box testing focuses on boundary or edges cases to test the software.

Proof that Boundary Value Aanalysis come in Black Box Testing: It is mentioned in Pressman Book.

Also “Testing User Interface Only” , here “only” makes Option C incorrect.



Q89: The LL(1) and LR(0) techniques are _____.

(A) Both same in power

(B) Both simulate reverse of rightmost derivation

(C) Both simulate reverse of left most derivation

(D) Incomparable

Solution: D

Explanation:

LL(1) is a Top down parser that parsers the leftmost derivation.**
**

LL(0) is a Bottom up parser that parses the reverse of rightmost derivation.

Q90: You have a network ID of 192.168.10.0 and require at least 25 host IDs for each subnet, with the largest amount of subnets available. Which subnet mask should you assign?

(A) 255.255.255.192

(B) 255.255.255.224

(C) 255.255.255.240

(D) 255.255.255.248

Solution: B

Explanation:

Given ID belongs to Class C, so default mask for class C is 255.255.255.0, from the last octet 256 hosts are possible, from the 256 we need to fix the bits to create a number of subnets and hosts . But in question we have given that 26 hosts require each subnet, so for 26 hosts we require 5-bits bcz with 4-bit we can make maximum 16 hosts. So, in the last octet first 3 bits are fixed and others are for hosts. Subnet Mask for 3bits in decimal is 128+64+32=224. So, overall subnet mask is 255.255.255.224

Q91: With the following syntax

**
**INSERT INTO table [(column [, column...])]
**
**VALUES (value [, value...]);

**
**you can:

(A) Insert one row at a time.

(B) Insert multiple rows at a time.

(C) Insert one column at a time.

(D) Insert multiple columns at a time.

Solution: A

Explanation:

Q92: Which flip-flop is used to make all types of shift registers?

(A) JK flip-flop

(B) D flip-flop

(C) T flip-flop

(D) All the options

Solution: D

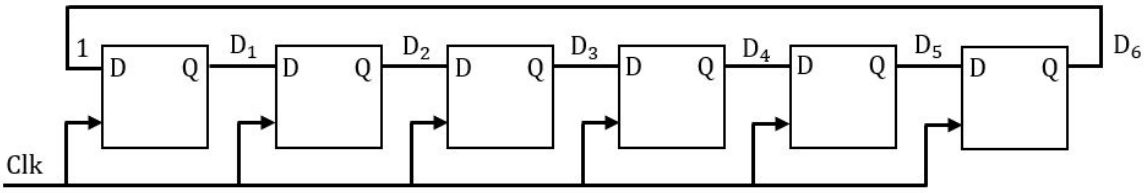
Explanation:

Using synchronous counter (Ring counter)we can develop shift registers (Serial in Serial out (SISO), SIPO (serial in parallel out), ..etc). In synchronous counter D-FF used to design shift registers. The characteristic of D FF takes previous state value as present value input. Below figure shows the design and example of shift register.

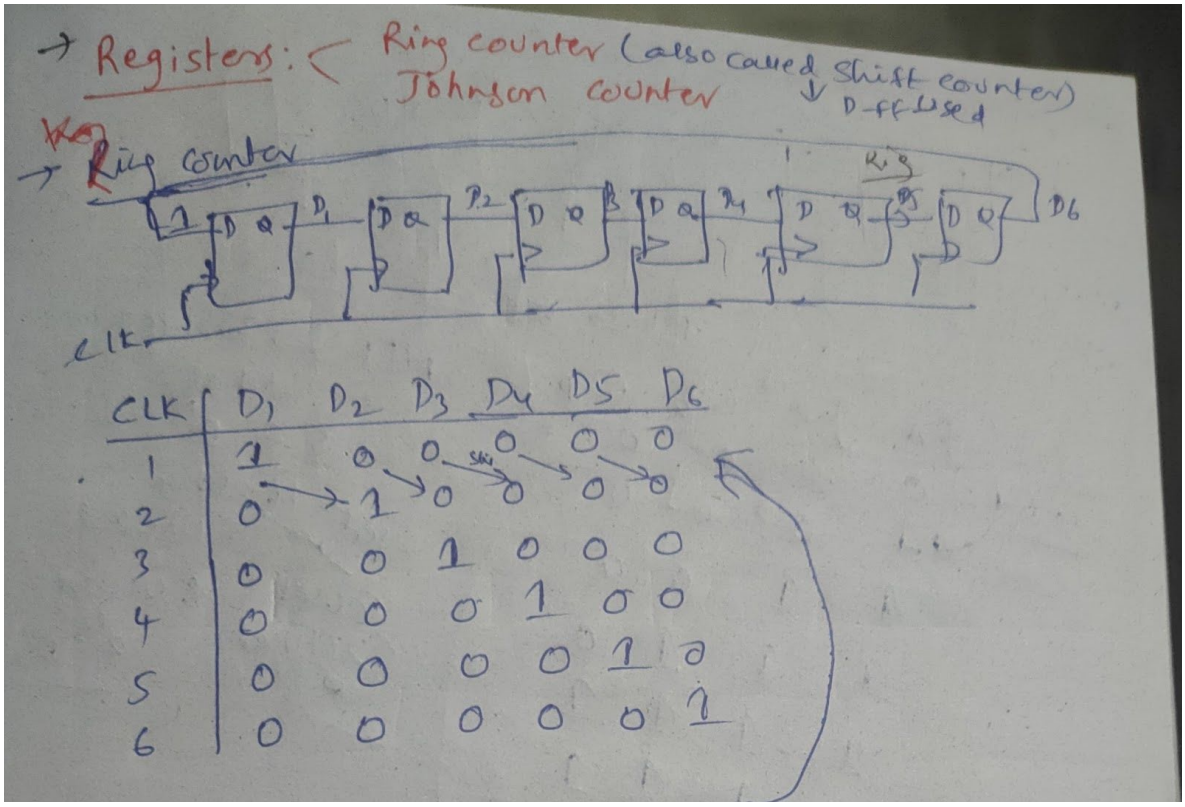
Registers:

- Ring counter (also called Shift counter) → Diffused
- Johnson counter

Ring counter:



CLK	D_1	D_2	D_3	D_4	D_5	D_6
1	1	0	0	0	0	0
2	0	1	0	0	0	0
3	0	0	1	0	0	0
4	0	0	0	1	0	0
5	0	0	0	0	1	0
6	0	0	0	0	0	1



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Correct answer should be option D as all of the FF can be converted to D ff and can be used as shift registers. BEST POSSIBLE ANSWER IS D. If option D would not have present then option B but here as option D is there , therefore option D is correct.

Q93: Domain constraints, functional dependency and referential integrity are special forms of _____.

(A) Foreign key

(B) Primary key

(C) Assertion

(D) Referential constraint

Solution: C

Explanation:

Domain constraints, functional dependency and referential integrity are special forms of assertion.

Q94: Peephole optimization is a:

(A) Loop optimization

(B) Local optimization

(C) Constant folding

(D) Data flow analysis

Solution: B

Explanation:

Peephole optimization is a Local optimization.

Q95: A bag contains 10 white balls and 5 blue balls. A ball is drawn from the bag and its color is noted. This ball is put back in the bag along with 3 more balls of the same color. A ball is drawn again from the bag at random. The probability that the first ball drawn is blue, given that the second ball drawn is blue, is:

(A) 1/3

(B) 3/4

(C) 8/9

(D) 4/9

Solution: D

Explanation:

Q96: If we don't want to allow a floating div to the left side of an element, _____ CSS property will we use.

(A) margin

(B) clear

(C) float

(D) padding

Solution: B

Explanation:

The clear property specifies on which sides of an element floating elements are not allowed to float.**
**

Syntax: clear: none|left|right|both|initial|inherit;

Q97: Which of the following Interface is not supported by JDBC for connecting to Database in Java Programming language?

(A) Statement Interface

(B) Prepared Statement Interface

(C) Callable Statement Interface

(D) Database Interface

Solution: D

Explanation:

DBC connections support creating and executing statements. These may be update statements such as SQL's CREATE, INSERT, UPDATE and DELETE, or they may be query statements such as SELECT. Additionally, stored procedures may be invoked through a JDBC connection. JDBC represents statements using one of the following classes:**
**

1. 1. Statement – the statement is sent to the database server each and every time.**
**
2. 2. PreparedStatement – the statement is cached and then the execution path is pre-determined on the database server allowing it to be executed multiple times in an efficient manner.**
**
3. 3. CallableStatement – used for executing stored procedures on the database.**
**

Q98: When we perform an order traversal on a binary tree, we get the ascending order array. The tree is:

(A) Heap tree

(B) Almost complete binary tree

(C) Binary search tree

(D) Cannot be determined

Solution: C

Explanation:

Binary search tree gives the ascending order array.

Q99: Why does congestion occur?

(A) Because the routers and switches have tables

(B) Because the routers and switches have queues

(C) Because the routers and switches have cross-points

(D) None of the options

Solution: B

Explanation:

CORRECT ANSWER SHOULD BE D.

They have queues as the storage implementation and that is not its drawback. The congestion occurs due to lack of synchronization problem between sender and receiver. Even if some large size best efficient DS is used instead of a queue but if synchronization is not there then also congestion will occur as it is dependent on sender and receiver agreement for transmission not on storage used.

Q100: Adding the style attributes in HTML elements, is known to be _____.

(A) Internal

(B) Inline

(C) Outline

(D) External

Solution: B

Explanation:

CSS can be added to HTML documents in 3 ways:**
**

Inline - by using the style attribute inside HTML elements**
**

Internal - by using a <style> element in the <head> section**
**

External - by using a <link> element to link to an external CSS file**
**

The most common way to add CSS, is to keep the styles in external CSS files.

Q101: Assembly line scheduling and Longest Common Subsequence problems are an example of _____.

(A) Dynamic Programming

(B) Greedy Algorithms

(C) Greedy Algorithms and Dynamic Programming respectively

(D) Dynamic Programming and Branch and Bound respectively

Solution: A

Explanation:

Assembly line scheduling and Longest Common Subsequence problems are an example of Dynamic Programming.

Q102: Term in the MVC architecture that receives events is called _____.

(A) Receiver

(B) Controller

(C) Transmitter

(D) Modulator

Solution: B

Explanation:

Term in the MVC architecture that receives events is called Controller.

Q103: What is meant by the following relational algebra statement : STUDENT × COURSE?

(A) Compute the natural join between the STUDENT and COURSE relations

(B) Compute the left outer join between the STUDENT and COURSE relations

(C) Compute the cartesian product between the STUDENT and COURSE relations

(D) Compute the outer join between the STUDENT and COURSE relations

Solution: C

Explanation:

The Cartesian product of two sets A and B, denoted A×B, is the set of all ordered pairs (a, b) where a is in A and b is in B.**
**

FALSE: Compute the natural join between the STUDENT and COURSE relations**
**

FALSE: Compute the left outer join between the STUDENT and COURSE relations**
**

TRUE: Compute the cartesian product between the STUDENT and COURSE relations**
**

FALSE: Compute the outer join between the STUDENT and COURSE relations**
**

Q104: Which of the following is a correct time complexity to solve the 0/1 knapsack problem where n and w represents the number of items and capacity of knapsack respectively?

(A) O(n)

(B) O(w)

(C) O(nw)

(D) O(n + w)

Solution: C

Explanation:

0/1 knapsack problem takes O(nw) time complexity using dynamic programming.

Q105: In an undirected graph, if we add the degrees of all vertices, it is:

(A) odd

(B) even

(C) cannot be determined

(D) always n+1, where n is number of nodes

Solution: B

Explanation:

In an undirected graph, if we add the degrees of all vertices, it is even.

Q106: Type of conflicts that can arise in LR(0) techniques are _____.

(A) Shift-reduce conflict

(B) Shift-Shift conflict

(C) Both Shift-reduce conflict & Shift-Shift conflict

(D) None of the options

Solution: A

Explanation:

Type of conflicts that can arise in LR(0) techniques are Shift-reduce or Reduce-reduce conflicts:

Q107: When retrieving data in a particular table in PostgreSQL, we use the _____ statement.

(A) \dt

(B) ORDER BY

(C) SELECT FROM

(D) \i

Solution: C

Explanation:

When retrieving data in a particular table in PostgreSQL, we use the SELECT FROM statement.

Q108: A computer has a single cache (off-chip) with a 3 ns hit time and a 95% hit rate. Main memory has a 50 ns access time. If we add an on-chip cache with a 0.6 ns hit time and a 98% hit rate, the computer's effective access time:

(A) 2.8 ns

(B) 5.5 ns

(C) 0.7 ns

(D) None of the options

Solution: C

Explanation:

Single off-chip hit time = 3 ns**
**

Hit rate = 95% = 0.95**
**

Miss rate = 0.05**
**

Main Memory= 50 ns**
**

Access time = 3 ns + 0.05 * 50 ns**
**

= 2.5 ns**
**

Add on-chip cache hit time= 0.6 ns**
**

Hit rate = 98% = 0.98**
**

Miss rate = 0.02**
**

Effective access time = 0.6 ns + 0.02 * (3 ns + 0.05 * 50 ns)**
**

= 0.71**
**

Q109: Which of the following is the correct recurrence for the worst case of QuickSort?

(A) T(n) = T(n - 4) + T(n - 2) + O(1)

(B) T(n) = T(n - 1) + T(0) + O(n)

(C) T(n) = 2T(n/2) + O(n)

(D) T(n) = 4T(n/2) + O(n)

Solution: B

Explanation:

T(n) = T(n-1) + n **
**

T(n-1) = (n-1) + T(n-2)**
**

T(n-2) = (n-2) + T(n-3)**
**

...**
**

T(3) = T(2) + 3**
**

T(2) = T(1) + 2 **
**

T(1) = 0**
**

Hence,**
**

T(n) = n + (n-1) + (n-2) ... + 3 + 2 **
**

=n²/2**
**

=O(n²)**
**

Q110: In case of the dynamic programming approach the value of an optimal solution is computed in:

(A) Top down fashion

(B) Bottom up fashion

(C) Left to Right fashion

(D) Right to Left fashion

Solution: B

Explanation:

In case of the dynamic programming approach the value of an optimal solution is computed in Bottom up fashion.

Q111: What is the output of the following program?

**
**abstract class Sum
**
**{
**
** public abstract int sumOfTwo(int n1, int n2);
**
** public abstract int sumOfThree(int n1, int n2, int n3);
**
** public void disp() {
**
** System.out.println(Method of class Sum);
**
** }
**
** }

**
** class DemoAbstract[] extends Sum
**
** {
**
** public int sumOfTwo(int num1, int num2)
**
** {
**
** return num1+num2;
**
** public int sumOfThree(int num1, int num2, int num3)
**
** {
**
** return num1 + num2 + num3;
**
** }
**
** public static void main(String args[]) {
**
** Sum.obj = new DemoAbstract1();
**
** System.out.println(obj.sumOfTwo(3, 7));
**
** System.out.println(obj.sumOfThree(4, 3, 19));
**
** obj.disp();
**
** }
**
**}

(A) 10**
**
26**
**
Method of class Sum**
**

(B) 26**
**
10**
**
Method of class Sum**
**

(C) Method of class Sum**
**
26**
**
10**
**

(D) Error

Solution: A

Explanation:

The output is**
**

10**
**
26**
**
Method of class Sum**
**

Q112: Given $r_{₁₂} = 0.6,\ r_{₁₃} = 0.5$ and $r_{23} = 0.8,$ the value of $r_{₁₂₃}$ is:

(A) 0.47

(B) 0.40

(C) 0.74

(D) 0.64

Solution: D

Explanation: Marks to All

ANSWER OF THIS QUESTION IS 0.384 MOST PROBABLY ANSWER IS B but because all option are in 2 fraction but there is no option for 0.384.

Q113: What is the product of the following matrix using Strassen's matrix multiplication algorithm?

<img src="https://solutionsadda.in/wp-content/uploads/2020/11/matrix.jpg">

$$A = \begin{bmatrix} 1 & 3 \\ 5 & 7 \end{bmatrix} \qquad B = \begin{bmatrix} 8 & 4 \\ 6 & 2 \end{bmatrix}$$

(A) $C_{₁₁} = 80;\ C_{₁₂} = 07;\ C_{₂₁} = 15;\ C_{₂₂} = 34$

(B) $C_{₁₁} = 82;\ C < sub >_{12</sub>} = 26;\ C < sub >_{21</sub>} = 10;\ C < sub >_{22</sub>} = 34$

(C) $C_{₁₁} = 15;\ C < sub >_{12</sub>} = 07;\ C_{₂₁} = 80;\ C < sub >_{22</sub>} = 34$

(D) $C_{₁₁} = 26;\ C < sub >_{12</sub>} = 10;\ C < sub >_{21</sub>} = 82;\ C < sub >_{22</sub>} = 34$

Solution: D

Explanation:

Q114: Finding the location of the element with a given value is:

(A) Traversal

(B) Search

(C) Sort

(D) None of the options

Solution: B

Explanation:

Finding the location of the element with a given value is search.

Q115: The given array is arr = {1, 2, 4, 3}. Bubble sort is used to sort the array elements. How many passes will be done to sort the array?

(A) 4

(B) 2

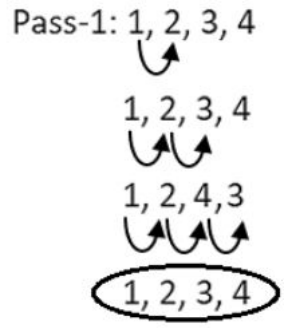
(C) 1

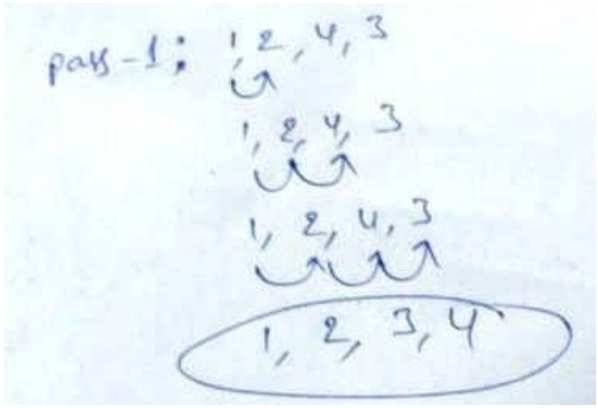
(D) 3

Solution: C

Explanation:

Bubble sort will take the worst case in n-1 comparisons but as per the input it takes only one pass.





Note: Official answer key given, Option-D as the correct answer.

Correct answer should be option C only as after 1 pass it will be sorted and in the beginning of the 2nd pass itself it will stop and not complete 2nd pass also. Thus 1 pass only

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Q116: A digital signature is required:

(A) for non-repudiation of communication by a sender

(B) for all email sending

(C) for all DHCP server

(D) for FTP transactions

Solution: A

Explanation:

A digital signature is required for non-repudiation of communication by a sender.

Q117: Priority queue is implemented by:

(A) Doubly link list

(B) Graph

(C) Heap

(D) Stack

Solution: C and D both

Explanation: Priority queue is implemented by stack heap linked list and binary search tree but efficient way to implement a priority queue is heap but in this question not given for efficient way , so amswer is C and D both

BUT BEST PROBABLE ANSWER IS OPTION C. THEREFORE TO CHOOSE 1 OPTION ONLY, OPTION C IS MOST ACCURATE.

Q118: In the following addressing mode, which of them performs better for accessing array?

(A) Register addressing mode

(B) Direct addressing mode

(C) Displacement addressing mode

(D) Index addressing mode

Solution: D

Explanation:

Index addressing mode performs better for accessing arrays.

Q119: Assume that the SLR parser for a grammar G has n1 states and the LALR parser for G has n2 states. The relationship between n1 and n2 is:

(A) n1 is necessarily less than n2

(B) n1 is necessarily equal to n2

(C) n1 is necessarily greater than n2

(D) none of the options

Solution: B

Explanation:

No. of states in SLR and LALR are equal and no. of states in SLR and LALR are less than or equal to LR(1).

Q120: The _____ field in IPv4 datagram is not related to fragmentation.

(A) Flag

(B) Offset

(C) TOS

(D) Identifier

Solution: C

Explanation:

IPv4 datagram requires Flag, Offset and Identifier.
