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NIELIT

QUESTIONS WITH DETAILED SOLUTIONS

COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

SCIENTIST - 'B' & SCIENTIFIC

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NIELIT Scientist – B Examination

Branch: Computer Science and Information Technology

Questions with Detailed Solutions

01. How is R related to S?

Statement (1):

T, the wife of R's only brother C does not have any siblings.

Statement (2):

S is T's brother-in-law's wife.

(A) Only Statement (1) is required for answering the question

(B) Only Statement (2) is required for answering the question

(C) Both statement together are required to answer the question

(D) Answer cannot be ascertained with the given information

01. Ans: (C)

Sol: Statement 1:

T ⇔ C, R

– +

Statement 2:

Brother in law → sister Husband/ spouse brother

T ⇔ , ⇔ S

+ –

(or)

S ⇔, T ⇔

–

Using statement 1 or statement 2 alone we can't find relation between R and S

Statement 1 & Statement 2 put together

T ⇔ C, R ⇔ S

– + + –

(T has no siblings) (R only brother is C)

Answer is C Both statement together are required to answer the question

02. What is the Standard Deviation (SD) of the four numbers A, B, C, D ?

Statement (1):

The sum of A, B, C and D is 24.

Statement (2):

The sum of the squares of A, B, C and D is 224.

(A) Only **Statement (1)** is required for answering the question

(B) Only **Statement (1):** is required for answering the question

(C) Both Statement together are required to answer the question

(D) Answer cannot be ascertained with the given information

02. Ans: (C)

Sol: Variance $\sigma^2 = E(X^2) - (E[X])^2$

$$E(X) = \frac{\text{sum of } X_i}{\text{No.of}}$$

$$E(X^2) = \frac{\text{sum of } X^2_i}{\text{No.of}}$$

Statement1: Sum of A, B, C, D = 24

$$\text{So, } E(X) = \frac{24}{4} = 6$$

Statement 2: Sum of squares of A, B, C, D = 224

$$\text{So, } E(X_1^2) = \frac{224}{4} = 56$$

Using statement 1 & 2 alone, we can't for variance and standard deviation

Statement 1 & 2 put together

Variance $E(X^2) - [E(X)]^2$

Variance $= 56 - 6^2 = 20$

$$\Rightarrow \text{Standard deviation} = \sqrt{\text{variance}} = \sqrt{20}$$

$$SD = 2\sqrt{5}$$

Answer is C, Both statements together are required to answer the question.

03. There are 6 boxes numbered 1, 2,….,.6. Each box is to be filled up either with a red or a green ball in such a way that at least 1 box contains a green ball and the boxes containing green balls are consecutively numbered. The total number of ways in which this can be done is:

(A) 18 (B) 19

(C) 20 (D) 21

03. Ans: (D)

Sol: The number of ways in which 1 green ball filled in 6 boxes = 6

The number of ways in which 2 green balls filled in 6 boxes = 5

i.e., (1, 2), (2, 3), (3, 4), (4, 5), (5, 6)

The number of ways in which 3 green balls filled in 6 boxes = 4

i.e., (1, 2, 3) , (2, 3, 4), (3, 4, 5), (4, 5, 6) and so. on

Total ways = 6 + 5 + 4 + 3 + 2 + 1 = 21

04. Gopal went to a fruit market with certain amount of money. With this money he can buy either 50 oranges or 40 mangoes. He retains 10% of the money for taxi fare. If he buys 20 mangoes, then the number of oranges he then the number of oranges he can buy with balance amount is:

(A) 25 (B) 20

(C) 18 (D) 6

04. Ans: (A)

Sol: As per question

50 oranges = 40 mangoes = certain amount

÷ 2

25 oranges = 20 mangoes

= (certain amount)/2

So, if he buys 20 mangoes, with balance amount he can buy 25 oranges

05. A player rolls a die and receives the same number of rupees as the number of dots on the face that turns up. What should the player pay for each roll if he wants to make

a profit of one rupee per throw of the die in the long run?

(A) ₹ 2.50

(B) ₹ 2

(C) ₹ 3.50

(D) ₹ 4

05. Ans: (A)

Sol: If the die is rolled infinite times, the average of all outcomes would be 3.5 $\left(\frac{1+6}{2}\right)$

Earning from every roll = 3.5 and profit should be 1 rupee from every roll.

Hence, we can say fee paid or charge per throw that should be paid = 3.5 – 1 = 2.5

06. The admission ticket for an Art Gallery bears a password which is changed after every clock hour based on set of words chosen for each day. The following is an illustration of the code and steps of rearrangement for subsequent clock hours. The Time is 9 a.m. to 3 p.m. Day's first password:

First Batch - 9 a.m. to 10 a.m. is not ready cloth simple harmony burning

Second Batch – 10 a.m. to 11 a.m. ready not is cloth burning harmony simple

Third Batch – 11 a.m. to 12 noon

cloth is not ready simple harmony burning

Fourth Batch- 12 noon to 1 p.m. not is cloth ready burning harmony simple

Fifth Batch – 1 p.m. to 2 p.m. ready cloth is not simple harmony burning and so on.

If the password for 11 a.m. to 12 noon was – "soap shy miss pen yet the she", what was the password for the First Batch?

(A) pen miss shy soap she the yet

(B) shy miss pen soap yet the she

(C) soap pen miss shy she the yet

(D) miss shy soap pen she the yet

06. Ans: (B)

Sol:

First Batch:

1 2 3 4 5 6 7

is not ready cloth simple harmony burning

Second Batch:

3 2 1 4 7 6 5

ready not is cloth burning harmony simple

Third Batch:

4 1 2 3 5 6 7

cloth is not ready simple harmony burning

Fourth batch:

2 1 4 3 7 6 5

not is cloth ready burning harmony simple

Fifth batch:

3 4 1 2 5 6 7

ready cloth is not simple harmony burning

Given third batch:

4 1 2 3 5 6 7

Soap shy miss pen yet the she

⇒ **first batch**

1 2 3 4 5 6 7

shy miss open soap yet the she

#PROGRAM-1

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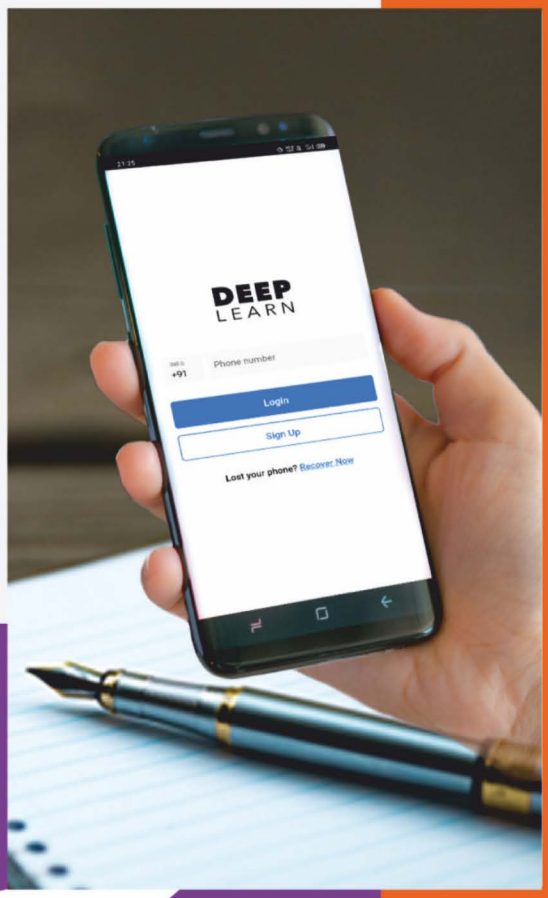

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07. If 09/12/2001 (DD/MM/YYYY) happens to be Sunday, then 09/12/1971 would have been a:

(A) Wednesday

(B) Tuesday

(C) Saturday

(D) Thursday

07. Ans: (D)

Sol: 9/12/2001 – Sunday

–3

9/12/1971-Thursday

In 30 years, 8 leap years (1972, 1976, 1980, 1984, 1988, 1992, 1996, 2000) and 22 non leap years.

odd days = $8 \times 2 + 22 \times 1 = 38 = 3$ odd days

7) 38 (5

35

3

08. Number of letter repeated in the given word 'MEASUREMENTS' are indicated in front of each alternative. Identify the correct alternative

(A) $M_2E_2A_2S_2U_1R_1N_1T_1$

(B) $M_2E_3A_1S_1U_2R_1N_2T_1$

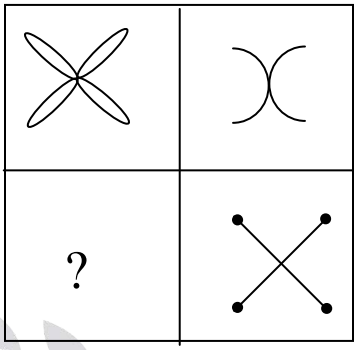
(C) $M_2E_2A_1S_2U_1R_1N_1T_1$

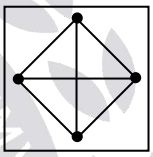
(D) $M_2E_3A_1S_2U_1R_1N_1T_1$

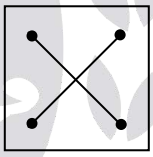
08. Ans: (D)

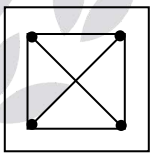
Sol: MEASUREMENTS- $M_2\,E_3A_1S_2\,U_1\,R_1\,N_1T_1$

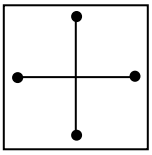
09. Select a suitable figure from the four alternatives that would complete the figure matrix.



(A) 

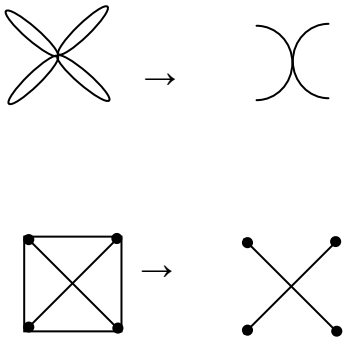
(B) 

(C) 

(D) 

09. Ans: (C)

Sol:



10. What is the value of k for which the following system of equations has no solution:
$2x - 8y = 3$ and $kx + 4y = 10$
(A) –2 (B) 1
(C) –1 (D) 2

10. Ans: (C)

Sol: $2x - 8y = 3$
and $kx + 4y = 10$
for no solution $\frac{2}{x} = \frac{-8}{4} \Rightarrow k = -1$

11. If a cube with length, height and width equal to 10 cm, is reduced to a smaller cube of height, length and width of 9 cm then reduction in volume is:
(A) 172 cm^3
(B) 729 cm^3
(C) 271 cm^3
(D) None of the options

11. Ans: (C)

Sol: $Volume_1 = 10 \times 10 \times 10 = 1000\ cm^3$
$volume_2 = 9^3\ cm^3 = 729\ cm^3$
Reduction in volume= $1000 - 729 = 271 cm^3$

Directions for question number 12 and 13:

Study the information below and answer questions based on it.

Five of India's leading models are posing for a photograph promoting "World Peace and Understanding', But them, Sachin Malhotra the photographer is having a tough time getting them to stand in a straight line, because Natasha refuses to stand next to Jessica since Jessica had said something about her in a leading gossip magazine. Rachel and Anna want to stand together because they are good friends. Ria on the other hand cannot get along well with Rachel, because there is some talk about Rachel scheming to get a contract already awarded to Ria. Anna believes her friendly astrologer who has asked her to stand at the extreme right for all group photographs. Finally, Sachin managed to pacify the girls and got a beautiful picture of five beautiful girls smiling beautifully in a straight line, promoting world peace.

12. If Anna's astrologer tells her to stand second from left and Natasha decides to stand second from right, then who is the girl standing at the extreme right?
(A) Rachel
(B) Jessica
(C) Ria
(D) None of the options

12. Ans: (C)

Sol:

Jessica Rachel Richa

Left J A R_a N R_i Right

end Anna Natasha end

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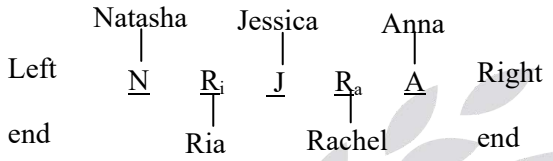
13. If Natasha stands at the extreme left, who is standing second from left?
(A) Cannot say
(B) Jessica
(C) Rachel
(D) Ria

13. Ans: (D)

Sol:



Directions for question number 14 to 16:
Answer the following questions on the basis of the directions given below:
Directions: For the **Assertion (A)** and **Reason (R)** below, choose the correct alternative from the following:
I. Both (A) and (R) are true and (R) is the correct explanation of (A).
II. Both (A) and (R) are true and (R) is not the correct explanation of (A)
III. (A) is true but (R) is false
IV. (A) is false but (R) is true

14. **Assertion (A):**
Salt is added to cook food at higher altitudes.
Reason (R):
Temperature is lower at higher altitudes.
(A) I
(B) II
(C) III
(D) IV

14. Ans: (B)

Sol: As pressure decreases at higher altitudes, water boils much below 100^0 c, so that the food does not get sufficient heat for being cooked. Salt increases the boiling point of water.

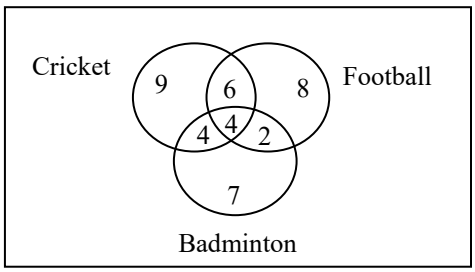
15. **Assertion (A):**
Ventilators are provided near the roof
Reason (R):
Conduction takes place better near the roof.
(A) I
(B) II
(C) III
(D) IV

15. Ans: (C)

16. **Assertion (A):**
Moon cannot be used as a satellite for communication
Reason (R):
Moon does not move in the equatorial plane of the Earth
(A) I
(B) II
(C) III
(D) IV

16. Ans: (A)

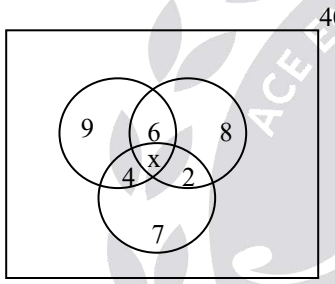
Directions-Question number 17 and 18 are based on the diagram given below:
In a class there are 40 students who play atleast one game out of Football, Cricket and Badminton.



17. What percentage of students play all the three games?
(A) 4% (B) 5%
(C) 8% (D) 10%

17. Ans: (D)

Sol:



$9 + 6 + 4 + x + 8 + 2 + 7 = 40$

$x = 4$

Play all 3 games % $= \frac{4}{40} \times 100\% = 10\%$

18. What percentage of students play only one game?
(A) 50%
(B) 60%
(C) 65%
(D) 70%

18. Ans: (B)

Sol: Play only 1game $= 9 + 8 + 7 = 24$

Play only 1 game % $= \frac{20}{40} \times 100\% = 60\%$

19. What is the next number 16, 30, 54, 88, 132,…
(A) 186
(B) 188
(C) 190
(D) 206

19. Ans: (A)

Sol:

16, 30, 54, 88, 132, 186

14 24 34 44 54

20. Two taps A and B can fill a tank in 12 minutes and 15 minutes respectively. The tank can be emptied by a third tap C in 6 minutes. If A and B are kept open for 5 minutes in the beginning and then C is opened along with A and B being kept open, the time taken to empty the tank is:
(A) 60 minutes
(B) 45 minutes
(C) 30 minutes
(D) 75 minutes

20. Ans: (B)

Sol: Tank capacity = LCM (12, 15, 6) = 60 lit.

A_f – 12 min	+ 5 lit/min
B_f – 15 min	+ 4 lit/min
C_e – 6 min	–10 lit/min

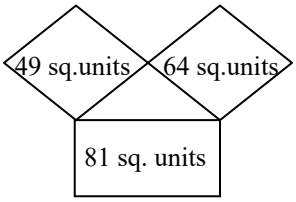
45 lit — $\frac{45}{1} = 45$ min

$A_f + B_f$ — 45 lit — $A_f + B_f + c_e = +5+4-10 = -1$ lit/min)

5 min

(+5+4 = +9 lit/min)

21. Three squares are there as shown on the three sides of the triangle; find the area of the triangle from the respective areas of the squares.

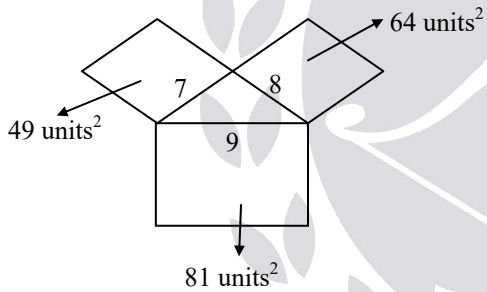


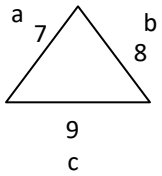
(A) $15\sqrt{5}$ (B) $12\sqrt{5}$

(C) $2\sqrt{5}$ (D) 1

21. Ans: (B)

Sol:





$$S = \frac{a+b+c}{2} = 12$$

Area of

$$\Delta = \sqrt{S(S-a)(S-b)(S-c)} = \sqrt{12\times5\times4\times3}$$

Area of $\Delta = 12\sqrt{5}$ units^2

22. Arjun by car takes double the time taken by bus to travel from Delhi to Agra. What is the Speed of the Bus if the Speed of Car is 40 km/hr?

(A) 40 km/hr

(B) 60 km/hr

(C) 80 km/hr

(D) 30 km/hr

22. Ans: (C)

Sol: $T_{car} = 2\,T_{Bus}$

Distance is constant

$$S\alpha\frac{1}{T}$$

$$\Rightarrow \frac{S_{Car}}{S_{Bus}} = \frac{T_{Bus}}{T_{Car}}$$

$$\Rightarrow \frac{40}{S_{Bus}} = \frac{1}{2}$$

$$\Rightarrow S_{Bus} = 80\text{km/hr}$$

23. Find the odd one out in the given series:

ZA, RS, DE, JK, PR, LM, YZ, NO

(A) JK (B) LM

(C) ZA (D) PR

23. Ans: (D)

Sol: Two consecutive letters (ZA, RS, DE, JK, LM, YZ, NO)

PR is odd one out

24. In an office, 30% of the employees were women and 70% of the employees were above the age of 40 years, out of which 60% are men. Find the percentage of women employees who are above 40 years out of the total number of women employees.

(A) 96% (B) 93.33%

(C) 70.44% (D) 80.66%

24. Ans: (B)

Sol: Total employees = 100 (ASSUME)

Women = 30

Employees above 40 years = 70

Men above 40 years

= 60 % (70) = 42

Women above 40 years = 28

% of women above 40 years out of total women

$$= \frac{28}{30} \times 100\% = 93.33\%$$

25. In a group of 24 members, each member drinks either tea or coffee or both. If 15 of them drink tea and 18 drink coffee, find the probability that a person selected from the group drinks both tea and coffee.

(A) 1/8

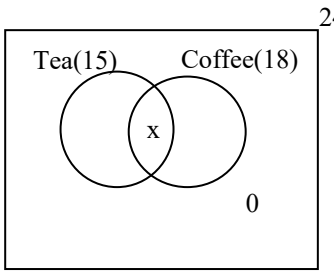
(B) 3/8

(C) 5/24

(D) None of the options

25. Ans: (D)

Sol:



$15 + 18 - x = 24$

$\rightarrow x = 9$

Probability that person selected is from both tea and coffee = $\frac{9}{24}$

Directions for question number 26 to 28:

Read the following information carefully and then answer the questions given below it.

A, B, C, D, E and F are six members of a family. There are two married couples among them.

C is the mother of A and F.

E is the father of D.

A is the grandson of B.

The total number of female members in the family is three.

26. Which of the following pairs is one of the married couples?

(A) E - F

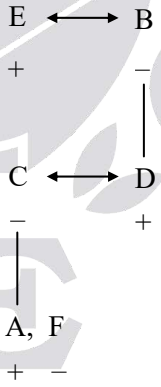
(B) B - D

(C) E - B

(D) A - F

26. Ans: (C)

Sol:



EB and CD

27. How is B related to F?

(A) Sister

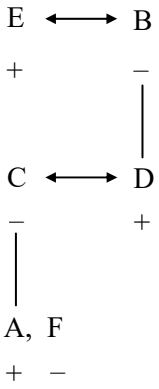
(B) Grandmother

(C) Wife

(D) Data inadequate

27. Ans: (B)

Sol:

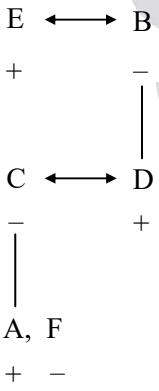


B is grandmother of f

28. How is F related to A?
(A) Brother
(B) Daughter
(C) Son
(D) None of the options

28. Ans: (D)

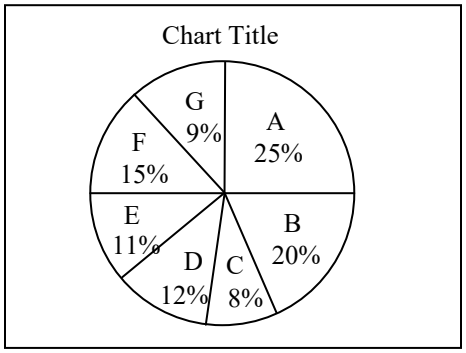
Sol:



F is sister of A

Directions for question number 29 to 33:

Study the following graph and the table and answer the questions given below. (Data of different states regarding population of states in the year 2018)



Total population of the given States = 3276000.

States	Sex and Literacy wise Population Ratio			
	Sex		Literacy	
	M	F	Educated	Non-Educated
A	5	3	2	7
B	3	1	1	4
C	2	3	2	1
D	3	5	3	2
E	3	4	4	1
F	3	2	7	2
G	3	4	9	4

29. The number of males in F in the year 2018 is_____.
(A) 294650 (B) 294840
(C) 301470 (D) 301200

29. Ans: (B)

Sol: State F population = 15% (3276000)
= 491400

Male in f = $\frac{3}{5} \times 491400 = 294840$

30. _____is the ratio of the number of females in G to the number of females in C.
(A) 16 : 5 (B) 16: 7
(C) 15 : 1 (D) 15: 14

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30. Ans: (D)

Sol: Number of females in G

$$= \frac{4}{7} \times 9\% \ (3276000)$$

Number of females in C $= \frac{3}{5} \times 8\% \ (3276000)$

$$\text{Ratio} = \frac{\frac{4}{7} \times 9\%(3276000)}{\frac{3}{5} \times 8\%(3276000)} = \frac{15}{14}$$

31. If in the year 2018, population of F is increased by 10% and population of B is increased by 12% as compared to the previous year, then_____ is the ratio of populations of F and B in 2017.

(A) 42 : 55

(B) 62 : 55

(C) 42 : 11

(D) 44 : 5

31. Ans: (A)

Sol: $F_{2018} = 110\% \ F_{2017}$

$$\Rightarrow F_{2017} = \frac{15\%(3276000)}{1.1}$$

$B_{2018} = 112\% \ B_{2017}$

$$\Rightarrow B_{2017} = \frac{20\%(3276000)}{1.12}$$

$$\frac{F_{2017}}{B_{2017}} = \frac{\frac{15\%}{1.1}}{\frac{20\%}{1.12}} = \frac{3}{4} \times \frac{1.12}{1.1} = \frac{8.4}{11} = \frac{42}{55}$$

32. _____is the total number of non-educated people in A and B in 2018.

(A) 1276040 (B) 1032170

(C) 1081550 (D) 1161160

32. Ans: (D)

Sol: Non-educated people in A in 2018

$$= \frac{7}{9} \times 25\%(3276000)$$

Non-educated people in B in 2018

$$= \frac{4}{5} \times 20\% \ (3276000)$$

Total no. of non-educated people in A & B in 2018 = 1161160

33. ____ is the percentage of total number of males in F, B and D together to the total population of all the given states

(A) 24% (B) 17.5%

(C) 28.5% (D) 29.5%

33. Ans: (C)

Sol: Number of males in F. B and D

$$= \left(\frac{3}{5} \times 15\% + \frac{3}{4} \times 20\% + \frac{3}{8} \times 12\%\right)$$

(3276000)

= (28.5%) total

34. Choose the missing terms out of the given alternatives.

EJO, TYD, NS, XCH, ____

(A) NRW

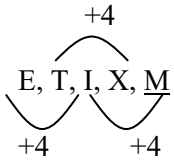
(B) MRW

(C) MSX

(D) NSX

34. Ans: (B)

Sol: EJO, TYD, INS, XCH, __?



J, Y, N, C, R
+4 +4

+4
O, D, S, H, W
+4 +4

So, MRW is answer

35. If X says that his mother is the only daughter of Y's mother, then how is Y related to X?
(A) Brother (B) Son
(C) Uncle (D) Father

35. Ans: (C)

Sol: X mother is only daughter of y mother

Y mother
–
|
X mother, Y
–
|
X
+

his ⇒ X – male
Y is siblings of x mother
So, Y is uncle/aunt of X

36. A solid cube of each side 8 cm, has been painted red, blue and black on pairs of opposite faces. It is then cut into cubical blocks of each side 2cm. How many cubes have no face painted?
(A) 0 (B) 4
(C) 8 (D) 12

36. Ans: (C)

Sol: n = 8/2 = 4
Cubes with no face painted = $(n-2)^3 = 8$

37. In the following question below are given three statements followed by three conclusions numbered I, II and III. You have to take the two statements to be true even if they seem to be at variance from the commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follow from the two given statements, disregarding commonly known facts.

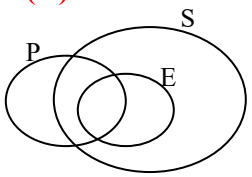
Statements:
Some pigeons are eagles.
All eagles are sparrows.
Some sparrows are not pigeons.

Conclusions:
I. Some sparrows are pigeons
II. All pigeons are sparrows
III. All eagles are pigeons

(A) Only I follows
(B) Only II follows
(C) Only III follows
(D) Both I and III follows

37. Ans: (A)

Sol:



Basic Diagram

only conclusion I follows
⇒ some sparrows are pigeons

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38. Which of these statements reflects a contrast between two flowers?
(A) This tulip is as colourful as a rose
(B) This tulip does not smell as bad as a daffodil
(C) This tulip turns towards light just like sunflower.
(D) This tulip is grown in bunches, like a lotus

38. Ans: (B)

Sol: This tulip does not smell as bad as a daffodil

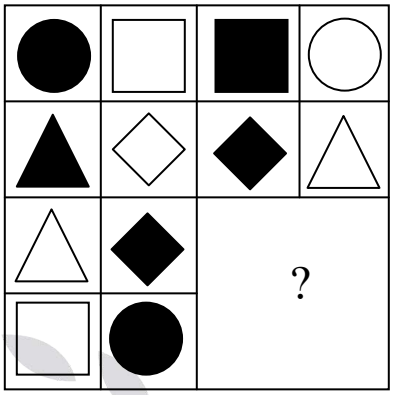
39. Choose which of the following will be sufficient to find: What time did the bus leave today?

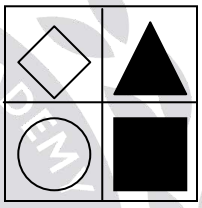
Statements:
I. The bus normally leaves on time.
II. The scheduled departure is at 12:30
(A) I alone is sufficient while II alone is not sufficient
(B) II alone is sufficient while I alone is not sufficient
(C) Either I or II is sufficient
(D) Neither I nor II is sufficient

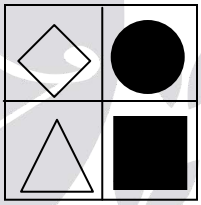
39. Ans: (D)

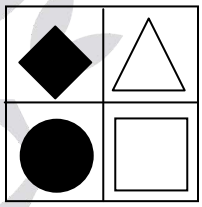
Sol: Neither I nor II is sufficient
Clearly even both I and II together do not used the exact time of departure of the bus today

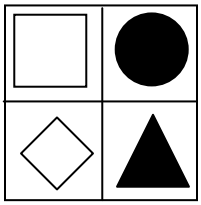
40. Identify the figure that completes the pattern.



(A)


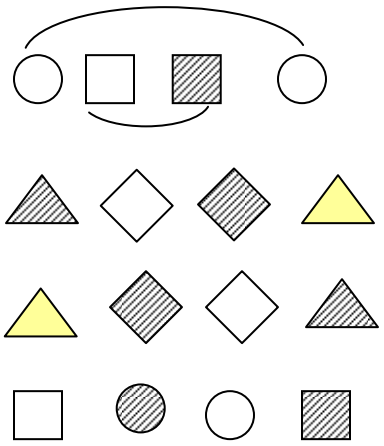
(B)


(C)


(D)


40. Ans: (A)

Sol:

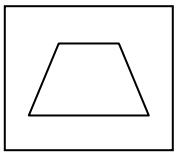


41. A university library budget committee must reduce exactly five of eight areas of expenditure – I, J, K, L, M, N, O and P in accordance with following conditions:
If both I and O are reduced, P is also reduced.
If L is reduced, neither N nor O is reduced.
If M is reduced, J is not reduced.
Of the three areas J, K and N exactly two are reduced.
If both K and N are reduced, which one of the following is a pair of areas neither of which could be reduced?
(A) I, L (B) J, L
(C) J, M (D) I, J

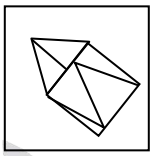
41. Ans: (B)

Sol: Areas reduced are K, N
Not reduced: J (as per 4th condition in passage)
Not reduced: L (per 2nd condition)
So, J, L not reduced

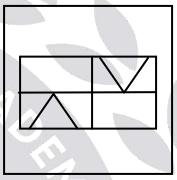
42. Find out the alternative figure which contains the given figure as its part.



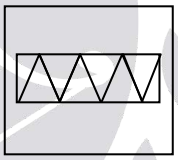
(A)



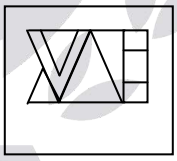
(B)



(C)



(D)



42. Ans: (C)

Sol:

(Spotting out the embedded figures)

PART-B
TECHNICAL AREA

43. Match the following

(1)Waterfall model	(a) Specifications can be developed incrementally
(2) Evolutionary	(b) Re-usability in development
(3) Component-based Software engineering	(c) Explicit recognition of risk
(4) Spiral development	(d) Inflexible partitioning of the project into stages

(A) (1)-(a), (2)-(b), (3)-(c), (4)-(d)
(B) (1)-(d), (2)-(a), (3)-(b), (4)-(d)
(C) (1)-(d), (2)-(b), (3)-(a), (4)-(c)
(D) (1)-(c), (2)-(a), (3)-(b), (4)-(d)

43. Ans: (B)

44. Which of the following tag is used intended or navigation in HTML5?
(A) nav
(B) footer
(C) section
(D) navigation tag

44. Ans: (A)

Sol: HTML| <nav> Tag is used to declaring the navigational section in HTML documents.

45. Consider the basic COCOMO model where E is the effort applied in person months, D is the development time in chronological months, KLOC is the estimated number of delivered lines of code (in thousands) and a_b, b_b, c_b, d_b have their usual meanings. The basic COCOMO equations are of the form.
(A) $E = a_b(KLOC)\exp(b_b)$, $D = c_b(E)\exp(d_b)$
(B) $D = a_b(KLOC)\exp(b_b)$, $E = c_b(D)\exp(d_b)$
(C) $E = a_b \exp(b_b)$, $D = c_b\ (KLOC)\exp(d_b)$
(D) $E=a_b \exp(d_b)$, $D = c_b(KLOC)\exp(b_b)$

45. Ans: (A)

Sol: In basic COCOMO model,
Effort Applied,
E = a*(KLOC)b
Development Time, D = c*Ed
People Required, P = E/D
where KLOC = Estimated number of delivered lines in thousands and a,b,c,d depends upon the software being Organic, Semi detached or Embedded.

46. Which element is used to define discrete unit of content such as a blogpost, comment and so on?
(A) section
(B) class
(C) article
(D) none of the options

46. Ans: (C)

Sol: Sections in document is made by section tag
The class attribute specifies one or more class names to HTML
An article element is semantic element and it contains a standalone piece of content that would make sense.

47. Which of following is component of Hadoop?
(A) YARN
(B) HDFS

(C) Map reduce
(D) All of the options

47. Ans: (D)

Sol: 3 Component of Hadoop:
1. Hadoop HDFS
2. Hadoop Map Reduce
3. Hadoop YARN

48. 58000 LOC gaming software is developed with effort of 3 person-year. What is the productivity of person-month?
(A) 1.9 KLOC
(B) 1.6 KLOC
(C) 4.8 KLOC
(D) 4.2 KLOC

48. Ans: (B)

Sol: Estimated lines of code of a system is: 58,000 LOC
Software is developed with efforts of 3 person-year.

What is the productivity of person-month
= 58000/3*12(converting year to month)
= 1611 LOC
~= 1.6 KLOC

49. An instance of relational schema R(A,B,C) has distinct values of A including NULL values. Which one of the following is true?
(A) A is a candidate key
(B) A is not a candidate key
(C) A is a primary key
(D) Both "A is a candidate key" and "A is a primary key"

49. Ans: (B)

50. Which one of the following statements is incorrect?
(A) The number of regions corresponds to the cyclomatic complexity
(B) Cyclomatic complexity for a flow graph G is V(G)=N–E+2, where E is the number of edges and N is the number of nodes in flow graph
(C) Cyclomatic complexity for a flow graph G is V(G) = E–N+2, where E is the number of edges and N is the number of nodes in flow graph
(D) Cyclomatic complexity for a flow graph G is V(G) = P+1, where P is the number of predicate nodes contained in the flow graph G

50. Ans: (B)

Sol: Cyclomatic complexity has a foundation in graph theory and is computed in one of three ways.
1. The number of regions correspond to the cyclomatic complexity.
2. Cyclomatic complexity V(G) for a flow graph G, is defined as,
V(G)=E-N+2
where E=Number of flow graph edges
N=Number of flow graph nodes.
3. Cyclomatic complexity,V(G) for a flow graph G, is defined as,
V(G)=P+1
where P=Number of predicate nodes contained in flow graph G.

51. On computers where there are multiple operating system, the decision to load a particular one is done by_____.

(A) PCB
(B) Inode
(C) File Control Block
(D) Boot Loader

51. Ans: (D)

Sol: Boot loader is special loader (loaded by BIOS).
Boot loader load O.S. into main memory and this process is known as Booting.

52. Calculate the modulation percentage if the modulating signal is 8 V and carrier is of 12 V?
(A) 50
(B) 67
(C) 150
(D) 33

52. Ans: (B)

Sol: Percentage of modulation

$$= \left(\frac{E_{max} - E_{min}}{E_{max} + E_{min}}\right) \times 100$$

$A_m = 8v$
$A_c = 12v$
$E_{max} = A_c + A_m = 20v$
$E_{min} = A_c - A_m = 4v$

$$\text{modulation} = \left(\frac{20-4}{20+4}\right) \times 100 = 66.66\%$$
$$= 67\%$$

53. Which of the following property is related to a cryptographic hash functions?
(A) One way function
(B) Inversible
(C) Non-Deterministic
(D) All of the options

53. Ans: (A)

Sol: One-way function
Cryptographic hash function:
* one-way function
(Infeasible to invert)
* Non-reversible
* Deterministic
(Same message always result in the same hash)

54. Let $X_1, \ldots. X_{50}$ be independent random variables following N(0, 1) distribution. Let $Y = \sum_{i=1}^{50} X_i^2$ and E(Y)=a and Var(Y) =b.
Then, the ordered pair (a, b) is:
(A) (50, 100) (B) (50, 50)
(C) (25, 50) (D) (25, 100)

54. Ans: (A)

55. In which modulation discrete values of carrier frequencies is used to transmit binary data?
(A) Phase Shift Keying
(B) Amplitude Shift Keying
(C) Frequency Shift Keying
(D) Disk Shift Keying

55. Ans: (C)

Sol: Frequency–shift keying is a frequency modulation scheme in which digital information is transmitted through discrete frequency changes of a carrier signal.

56. What is the basis of KVL?
(A) Conservation of charge
(B) Conservation of energy
(C) Conservation of power
(D) All of the options

56. Ans: (B)

Sol: KVL expresses conversation of energy in every loop of a lumped electric circuit.

57. Consider a control unit generating the control signals. These control signals are divided into five mutually exclusive groups as shown below:

Groups	G1	G1	G1	G1	G1
Control Signals	3	7	10	12	2

How many bits are saved using the Vertical Micro-programmed instead of Horizontal Micro-programmed control unit?

(A) 14 (B) 34

(C) 20 (D) None

57. Ans: (C)

Sol: No. of bits in horizontal micro-programmed CU

$X = (3+7+10+12+2) = 34$ bits

No. of bits in vertical micro-programmed CU

$Y = \lceil \log_2 (3) \rceil + \lceil \log_2 (7) \rceil + \lceil \log_2 (10) \rceil + \lceil \log_2 (12) \rceil + \lceil \log_2 (2) \rceil$

$= (2+3+4+4+1) = 14$ bits

$\Rightarrow X - Y = 20$ bits

58. In _____VMs do not simulate the underlying hardware

(A) Para Virtualization

(B) Full Virtualization

(C) Hardware-Assisted Virtualization

(D) Network Virtualization

58. Ans: (D)

Sol: Full virtualization provide complete simulation of the underlying hardware and Para virtualization provide partial simulation of the underlying hardware. Both para and full comes under software based virtualization.

59. Data leakage threats are done by internal agents. Which of them is not an example of an internal data leakage threat?

(A) Data leak from stolen credentials from desk

(B) Data leak by partners

(C) Data leak by 3rd Party apps

(D) All of the options

59. Ans: (D)

60. How to specify the comment in the XML document?

(A) <? -- > (B) <! -- --!>

(C) <! -- > (D) </ -- -->

60. Ans: (C)

Sol: <!-- -- >

In XML documents, comments can be in the form

<!--write your comment-- >

61. Which of the following Page Replacement Algorithm suffers from the belady's anomaly?

(A) LRU

(B) Optimal Page Replacement

(C) FIFO

(D) Both LRU and FIFO

61. Ans: (C)

Sol: FIFO page replacement policy may suffers from belady's anomaly.

62. Limitations of the XML Data Type are:
(A) It cannot be compared or sorted. This means an XML data type cannot be used in a GROUP BY statement
(B) It cannot be used as a key column in an index
(C) The value() method of the XML data type returns a scalar value, so it can be specified anywhere where scalar values are allowed
(D) All of the options

62. Ans: (D)

Sol: Limitation of XML data type:
1. XML data can't be sorted
2. Column containing XML data type can't be used as index
3. The value () method returns a scalar value from the targeted XML document

63. _____is a partitioning of single physical server into multiple logical servers
(A) Virtualization
(B) Private cloud
(C) Hybrid cloud
(D) Public cloud

63. Ans: (A)

Sol: Server virtualization is done because a single physical server can be divided into multiple logical servers.

64. Contiguous memory allocation having variable size partition suffers from:
(A) External Fragmentation
(B) Internal Fragmentation
(C) Both External and Internal Fragmentation
(D) None of the options

64. Ans: (A)

65. Which of the following techniques deals with sorting the data stored in the computer's memory?
(A) Distribution sort (B) Internal sort
(C) External sort (D) Radix sort

65. Ans: (B)

66. The number of 4 digit numbers which contain not more than two different digits is:
(A) 576 (B) 567
(C) 513 (D) 504

66. Ans: (A)

67. PI in XML specification stands for _____.
(A) priceless instruction
(B) processing instruction
(C) polymorphic inheritance
(D) primary instruction

67. Ans: (B)

68. _____has a feature of remote access through which a customer can access the data from anywhere and at any time with the help of internet connection
(A) IaaS (B) PaaS
(C) NaaS (D) SaaS

68. Ans: (A)

69. Consider a software project with the following information domain characteristic for calculation of function point metric.
Number of external inputs (I) = 30
Number of external output (O) = 60
Number of external inquiries (E) = 23
Number of files (F) = 08
Number of external interfaces (N) = 02
It is given that the complexity weighting factors for I, O, E, F and N are 4, 5, 4, 10 and 7, respectively. It is also given that, out of fourteen value adjustment factors that influence the development effort, four factors are not applicable, each of the other four factors have value 3 and each of the remaining factors have value 4. The computed value of function point metric is_____.
(A) 612.06 (B) 212.05
(C) 305.09 (D) 806.9

69. Ans: (A)

Sol: Function point metrics provide a standardized method for measuring the various functions of a software application
The value of function point metric
= UPF * VAF
Here,
UPF: Unadjusted Function Point (UFP) count
VAF: Value Adjustment Factor
UPF = 4*30 + 60*5 + 23*4 + 8*10 + 7*2
= 606
VAF = (TDI * 0.01) + 0.65
Here TDI is Total Degree of Influence
TDI = 3*4 + 0*4 + 4*6 = 36
VAF = (TDI * 0.01) + 0.65
= 36*0.01 + 0.65
= 0.36 + 0.65 = 1.01
FP = UPF * VAF
= 1.01 * 606 = 612.06

70. Point out the wrong statement:
(A) Non-Relational databases require that schemas be defined before you can add data
(B) NoSQL databases are built to allow the insertion of data without a predefined schema
(C) New SQL databases are built to allow the insertion of data without a predefined schema
(D) All of the options

70. Ans: (D)

71. Which sorting algorithm sorts by moving the current data element past the already sorted values and repeatedly interchanges it with the preceding value until it is in its correct place?
(A) Insertion sort
(B) Internal sort
(C) External sort
(D) Radix sort

71. Ans: (A)

72. In which of the following hash functions, do consecutive keys map to consecutive hash values?
(A) Division method
(B) Multiplication method
(C) Folding method
(D) Mid-square method

#PROGRAM-6

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72. Ans: (A)

Sol: Disadvantage of the division method is that consecutive keys map to consecutive hash values in the hash table. This leads to a poor performance

73. Which type of linked list stores the address of the header node in the next field of the last node?
(A) Singly linked list
(B) Circular linked list
(C) Double linked list
(D) Hashed list

73. Ans: (B)

74. A direct mapped cache is of size 32 KB and has block size 32 Bytes. CPU also generates 32 bit address. Number of bits needed for indexing the cache:
(A) 14 (B) 15
(C) 10 (D) 17

74. Ans: (C)

Sol: No. of cache lines $= \dfrac{\text{cache size}}{\text{cache block size}}$

$= \dfrac{32\text{kb}}{32\text{Bytes}} = 2^{10}$ lines

No. of Index bits
$= (\log_2(\text{No. of cache lines}))$ bits $= 10$ bits

75. If x, y, z are Boolean variable then $(x+\bar{y})(x.\bar{y}+x.z)(\bar{x}.\bar{z}+\bar{y})$ is equal to:
(A) $x.\bar{y}$
(B) $x.\bar{y}+z$
(C) $x.\bar{z}$
(D) None of the options

75. Ans: (A)

Sol: $(x+\bar{y})(x\bar{y}+xz)(\bar{x}\,\bar{z}+\bar{y})$

$= (x\bar{y}+xz+x\bar{y}+x\bar{y}z)(\bar{x}\,\bar{z}+\bar{y})$

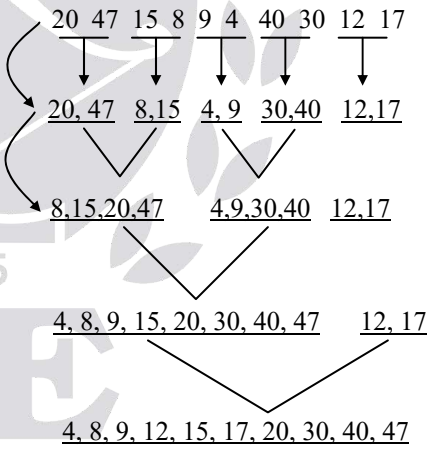
$= x\bar{y}+x\bar{y}z$

$= x\bar{y}(1+z) = x\bar{y}$

76. If one uses straight two-way merge sort algorithm to sort the following elements in ascending order 20, 47, 15, 8, 9, 4, 40, 30, 12, 17 then the order of these elements after the second pass of the algorithm is:
(A) 8, 9, 15, 20, 47, 4, 12, 17, 30, 40
(B) 8, 15, 20, 47, 4, 9, 30, 40, 12, 17
(C) 15, 20, 47, 4, 8, 9, 12, 30, 40, 17
(D) 4, 8, 9, 15, 20, 47, 12, 17, 30, 40

76. Ans: (B)

Sol:



77. In classful addressing, a large part of the available addresses are_____.
(A) Dispersed
(B) Blocked
(C) Wasted
(D) Reserved

77. Ans: (C)

Sol: For class A: half wasted
For class B: 3/4 wasted
For class C: 7/8 wasted

78. One-megabyte memory storage in form of bytes is equal to _____.
(A) 1024 bytes (B) 1024^2 bytes
(C) 1024^3 bytes (D) 1024^4 bytes

78. Ans: (B)

Sol: 1MB = 1024 kB = 1024 × 1024 B = 1024^2 B

79. _____possible labels are allowed in the first level of generic domain
(A) 10 (B) 12
(C) 16
(D) none of the options

79. Ans: (D)

Sol: There can be more than 1200 generic top level domain (first level of generic domain)

80. Consider a Simple Check pointing Protocol and the following set of operations in the log
(start, T4); (write, T4, y, 2, 3); (start, T1); (commit, T4); (write, T1, z, 5, 7); (Checkpoint);
(start, T2); (write, T2, x, 1, 9); (commit, T2); (start, T3); (write, T3, z, 7, 2); if a crash happens now and the system tries to recover using both undo and redo operations, what are the contents of the undo list and the redo list?
(A) Undo: T3, T1; Redo T2
(B) Undo: T3, T1; Redo T2, T4
(C) Undo: none; Redo T2, T4, T3, T1
(D) Undo: T3, T1, T4; Redo T2

80. Ans: (A)

81. In an IPv6 header, the traffic class field is similar to the _____field in the IPv4 header.
(A) TOS field
(B) Fragmentation field
(C) Fast Switching
(D) Option field

81. Ans: (A)

Sol: TOS: Type of services (8 bits)

82. Which of the following machine model can be used in a necessary and sufficient sense for lexical analysis in modern computer language?
(A) Deterministic Push down Automata
(B) Finite Automata
(C) Non-Deterministic Finite Automata
(D) Turing Machine

82. Ans: (B)

Sol: Finite Automata is sufficient for recognition of the day tokens in the lexical analysis of the modern compiler.

83. _____uses pretty good privacy algorithm
(A) Electronic mails
(B) File encryption
(C) Both Electronic mails and file encryption
(D) None of the options

83. Ans: (C)

Sol: Both E-mails and file encryption

Pretty Good Privacy (PGP):

* Cryptographic method

* Provides privacy and authentication for data communication
* Used for e-mails, files directions

84. In an operating system, processes that are terminated but, for some reason must have its task structure in the process table are referred as _____.
(A) Zombies (B) Orphans
(C) Parent Process (D) Child Process

84. Ans: (A)

85. In _____, other odes verify the validity of the block by checking that the hash of the data of the block is less than a preset number.
(A) Proof of Burn
(B) Proof of STAKE
(C) Proof of Work
(D) All of the options

85. Ans: (C)

86. You are working with a network that is 172.16.0.0 and would like to support 600 hosts per subnet. What subnet mask should you use?
(A) 255.255.192.0
(B) 255.255.224.0
(C) 255.255.252.0
(D) None of the options

86. Ans: (C)

Sol: 600 hosts per subnet

Host ID length = $\lceil \log_2 (600) \rceil$ bits = 10 bits

subnet mask 11….11 (22 bits) 00 ….00 (10 bits)

255. 255. 252.0

87. What is the advantage of bubble sort over other sorting techniques?
(A) It is faster
(B) Consumes less memory
(C) Detects whether the input is already sorted
(D) All of the options

87. Ans: (C)

88. Which of the following is correct Content-Type header that a server side script should send for SSE in HTML5?
(A) Content-Type: text/event-stream
(B) Content-Type: text/application-stream
(C) Content-Type: text/data-stream
(D) None of the options

88. Ans: (A)

Sol: Content-Type: text/event. stream

Server side script for SSE in HTML5:

content-type header

"Content-Type: text/event-stream

89. Binary search tree contains the values 1, 2, 3, 4, 5, 6, 7, 8. The tree is traversed in pre-order and the values are printed out. Which of the following sequences is a valid output?
(A) 53124786 (B) 53126487
(C) 53241678 (D) 53124768

89. Ans: (D)

90. The _____command will show you the translation table containing all the active NAT entries
(A) show ip nat translations
(B) show ip nat tl
(C) show ip nat states
(D) none of the options

#PROGRAM-5

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90. Ans: (A)

Sol: show ip nat translations[verbose] command displays the NAT table

91. The physical location of a record is determined by a mathematical formula that transforms a file key into a record location is:
(A) B-Tree File
(B) Hashed File
(C) Indexed File
(D) Sequential File

91. Ans: (B)

92. The best running time is defined as/obtained as/by:
(A) the least or smallest of all the running times the algorithm takes, on inputs of a particular size
(B) an input that requires maximum computations or resources
(C) averaging the different running times for all inputs of a particular kind
(D) None of the options

92. Ans: (A)

93. An expression in the domain relational calculus is of the form:
(A) $\{P(x_1, x_2, \ldots, x_n \mid <x_1, x_2, \ldots, x_n>\}$
(B) $\{x_1, x_2, \ldots, x_n \mid <x_1, x_2, \ldots, x_n>\}$
(C) $\{x_1, x_2, \ldots, x_n \mid x_1, x_2, \ldots, x_n\}$
(D) $\{< x_1, x_2, \ldots, x_n > \mid P(x_1, x_2, \ldots, x_n)\}$

93. Ans: (D)

94. A special PCM system uses 32 channels of data, one whose purpose is an identification (ID) and synchronization. The sampling rate is 4 kHz. The word length is 5 bits. Find the serial data rate.
(A) 1280 kHz (B) 160 kHz
(C) 320 kHz (D) 640 kHz

94. Ans: (D)

Sol: Bit Rate = sampling rate × word length × channels
= 4KHz × 5 bits × 32 channels
= 4×10^3 samples/sec × 5bits/sample ×32
= 640×10^3 bits/sec
= 640KHz

95. In the congestion avoidance algorithm, the size of the congestion window increases _____until congestion is detected.
(A) Exponentially (B) Additively
(C) Multiplicatively (D) Suddenly

95. Ans: (B)

Sol: In the congestion avoidance algorithm, the congestion window almost increases by one in every round trip time.

96. Consider a software program that is artificially seeded with 100 faults. While testing this program, 159 faults are detected, out of which 75 faults are from those artificially seeded faults. Assuming that both real and seeded faults are of same nature and have same distribution, the estimated number of undetected real faults is_____.
(A) 28 (B) 175
(C) 56 (D) 84

96. Ans: (A)

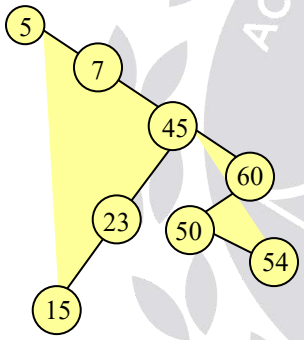
97. What is the best case complexity of QuickSort?
(A) O(nlogn) (B) O(logn)
(C) O(n) (D) $O(n^2)$

97. Ans: (A)

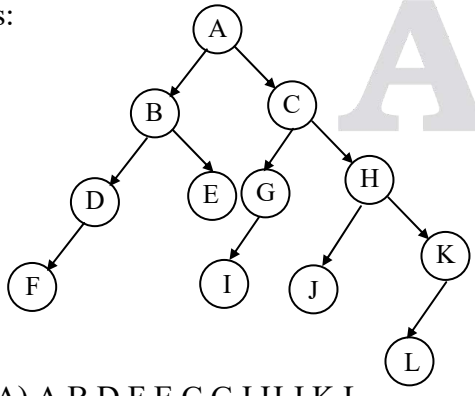
98. Suppose we have to insert the following sequence of keys into an empty binary search tree:
5, 7, 45, 60, 50, 23, 15, 54
What would be the height of binary search tree?
(A) 3 (B) 4 (C) 5 (D) 6

98. Ans: (C)

Sol:



99. The Preorder traversal of a tree given below is:



(A) A B D F E C G I H J K L
(B) A B C D E G H F I J K L
(C) A B E D F C G H I J K L
(D) A B D F E C G I J H K L

99. Ans: (A)

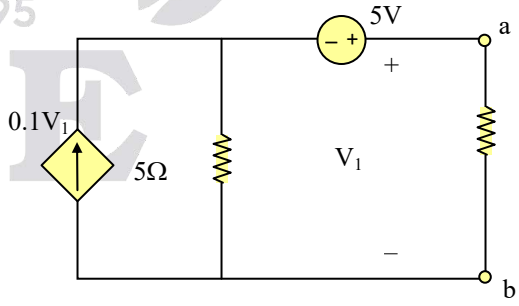
100. Set of key attributes that identify weak entities related to some owner entity is classified as:
(A) Structural key
(B) String key
(C) Partial key
(D) Foreign key

100. Ans: (C)

101. Which table is used in MS DOS for linked list allocation?
(A) TLB
(B) Page Table
(C) FAT
(D) Index Table

101. Ans: (C)

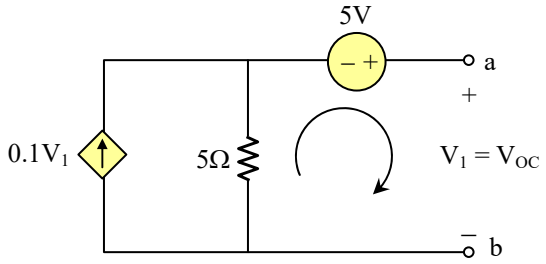
102. The resistance to be connected across terminal a, b for maximum power transfer to it is:



(A) 40 Ω (B) 5 Ω
(C) 2.5 Ω (D) 10 Ω

102. Ans: (D)

Sol: By doing open circuit across ab



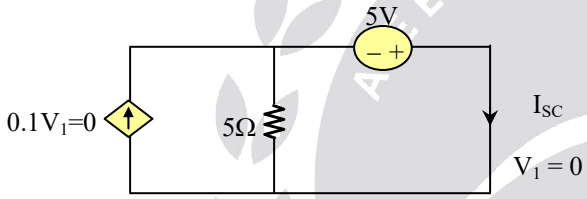
By applying KVL

$-0.5V_1 - 5 + V_1 = 0$

$0.5V_1 = 5$

$V_{OC} = V_1 = 10$ V

By doing short circuit across ab



$5I_{SC} - 5V = 0$

$I_{SC} = 1$ A

Resistance to be connected across a, b for maximum power transfer

$$R_{Th} = \frac{V_{OC}}{I_{SC}} = 10\ \Omega$$

103. Most NoSQL databases support automatic _____meaning that you get high availability and disaster recovery

(A) Processing

(B) Scalability

(C) Replication

(D) All of the options

103. Ans: (D)

104. Given the truth table of a Binary Operation $ as follows:

X	Y	X $ Y
1	0	1
1	1	1
0	1	0
0	0	1

Identify the matching Boolean Expression.

(A) X $ ¬ Y

(B) ¬ X $ Y

(C) ¬ X $ ¬ Y

(D) None of the options

104. Ans: (A)

Sol:

X	Y	X $ Y
0	0	1
0	1	0
1	0	1
1	1	1

Matching Boolean function is

$\Rightarrow X \$ Y \Rightarrow X + Y'$

105. Identify the odd one out

(A) Amazon web service

(B) Microsoft Azure

(C) Google cloud Platform

(D) Twitter Platform

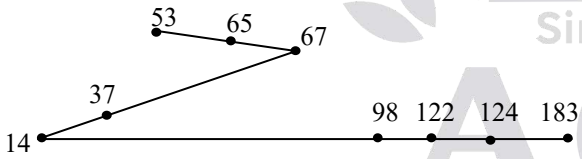
105. Ans: (D)

Sol: Amazon web service (AWS): Providing on-demand cloud computing platforms
Microsoft azure (Azure): cloud computing service created by Microsoft
Google cloud platform (GCP): suit of cloud computing services, offered by google.
Twitter platform: social networking service

106. One disk queue with requests for I/O to blocks on cylinders. The Request are in the following manner:
98 183 37 122 14 124 65 67
Considering SSTF (shortest seek time first) scheduling, the total number of head movements is, if the disk head is initially at 53 is:
(A) 236 (B) 246 (C) 220 (D) 240

106. Ans: (A)

Sol: Request: 14, 37, 65, 67, 98, 122, 124, 183
head at 53



Total no. of head movement
= (67–53) + (67–14) + (183–14)
= 236

107. Which open addressing technique is free from Clustering problems?
(A) Linear probing
(B) Quadratic probing
(C) Double hashing
(D) Rehashing

107. Ans: (C)

108. Which of the following can be used when creating a pool of global addresses instead of the netmask command?
(A) / (slash notation)
(B) prefix-length
(C) no mask
(D) block-size

108. Ans: (B)

Sol: Prefix length specifies the number of bits in the IP address that are to be used as the subnet mask

109. Consider the algorithm that solves problems of size n by recursively solving two sub problems of size n–1 and then combining the solutions in constant time. Then the running time of the algorithm would be:
(A) O(n)
(B) O(logn)
(C) O(nlogn)
(D) $O(n^2)$

109. Ans: $O(2^n)$

Sol: $T(n) = 2T(n-1) + O(1)$
By solving we get
$T(n) = 2[2T(n-2)+c]+c$
:
:
$= O(2^n)$

110. Considering binary relationships, possible cardinality ratios are:
(A) one : one (B) 1 : N
(C) M : N (D) All the options

110. Ans: (D)

111. If main memory access time is 400 μs, TLB access time 50 μs, considering TLB hit 90%, what will be the overall access time?

(A) 800 μs (B) 490 μs

(C) 485 μs (D) 450 μs

111. Ans: (B)

Sol: h_b= 0.9, t_b = 50 μs, t_m= 400μs

N =1 (By default single level paging)

EAT = $h_b \times (t_b + t_m) + (1-h_b) \times (t_b+(N+1)\, t_m)$

= 0.9 × 450μs + 0.1 × 850μs

= 490 μs

112. Debugger is a program that:

(A) Allows to examine and modify the contents of registers

(B) Allows to set breakpoints, execute a segment of program and display contents of register

(C) Does not allow execution of a segment of program

(D) All the options

112. Ans: (B)

113. The number of tokens in the following C statement is

printf("i=%d, &i=%x", i, &i);

(A) 8 (B) 4

(C) 7 (D) 10

113. Ans: (D)

Sol: There are 10 tokens

tokens: printf → 1

(→ 2

"i =%d, &i = %x" →3

, →4

i →5

, →6

& →7

i →8

) →9

; →10

Number of tokens = 10

114. To the detection of up to 5 errors in all cases, the minimum Hamming distance in a block code must bed _____

(A) 5 (B) 6 (C) 10 (D) 8

114. Ans: (B)

Sol: To detect upto x bits error minimum hamming Distance should be (x+1)

115. ____tells a firewall about how to reassemble a data stream that has been divided into packets.

(A) The source routing feature

(B) The number in the header's identification field

(C) The destination IP address

(D) The header checksum field in the packet header

115. Ans: (B)

Sol: Fragments of same segment must have same identification no.

Reassembling is performed on the basis of [Source IP address, Identification no.]

116. Typical time requirement for operations on queues is:
(A) O(1)
(B) O(n)
(C) O(logn)
(D) $O(n^2)$

116. Ans: (A)

117. ____is automatically loaded and operates as part of browser
(A) Add-ons
(B) Plug-ins
(C) Utilities
(D) Widgets

117. Ans: (B)

Sol: **Add-ons:** Browser extensions little programs that extend the functionality of a browser

Utilities: A collection of useful browser tools

Plug-in programs are automatically loaded and operates as a part of browser

118. The program written for binary search, calculates the midpoint of the span as mid: = (Low+ High)/ 2. The program works well if the number of elements in the list is small (about 32,000) but it behaves abnormally when the number of elements is large. This can be avoided by performing the calculation as:
(A) mid: = (High – Low)/2 + Low
(B) mid: = (High – Low+1)/2
(C) mid: = (High – Low)/2
(D) mid: = (High + Low)/2

118. Ans: (A)

119. The recurrence relation T(n) = 7T(n/7)+n has the solution:
(A) O(n)
(B) O(logn)
(C) O(nlog(n))
(D) $O(n^2)$

119. Ans: (C)

120. An attribute(s) that is used to look up for records in a file is called a:
(A) Function key
(B) Catalog key
(C) Access key
(D) Search key

120. Ans: (D)

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