C-DOT Model Paper PDF

C DOT Aptitude Test

1. An empty tank be filled with an inlet pipe A in 42 minutes. After 12 minutes an outlet pipe B is opened which can empty the tank in 30 minutes. After 6 minutes another inlet pipe C opened into the same tank, which can fill the tank in 35 minutes and the tank is filled. Find the time taken to fill the tank?

A. 45.5 mins
B. 50.5 mins
C. 58.5 mins
D. none of these

Explanation:

For first 12 mins' tank is 2/7 filled (because only pipe A is opened). For first 18 mins' tank is 8/35 filled. i.e. pipe A is opened for 18 mins and pipe B is opened for 6 mins. (3/7) -(1/5) =8/35. that means after 18 mins' tank is 8/35 filled.

so, after 18 mins all the 3 pipes work simultaneously.

now we calculate the time required to fill the tank by 3 pipes,

(1/42) +(1/35) -(1/30) =2/105. It means 105/2 mins.

But the tank is already 8/35 filled. so, we have to find the time required to fill 27/35 of the tank.

The time taken to fill 27/35 of the tank= (105/2) *(27/35) = 40.5 mins.

The time taken to fill the tank= 18 mins+40.5 mins = 58.5 mins.

2. If the sum of the roots of the equation ax2 + bx + c=0 is equal to the sum of the squares of their reciprocals then a/c, b/a, c/b are in

A. AP
B. GP
C. HP
D. None of these

Explanation:

Suppose the roots are r and s. Then (x-r)(x-s) = 0, so

=> x^2 - (r+s) x + (rs) = 0

and hence r+s = -b/a and rs = c/a.

We are saying that

=> r + s = (1/r^2 + 1/s^2)

=> (rs)^2 (r+s) = (rs)^2 (1/r^2 + 1/s^2) = s^2 + r^2

=> (rs)^2 (r+s) = (r+s)^2 - 2rs

=> (c/a)^2 (-b/a) = (-b/a)^2 - 2(c/a)

Multiplying through by a^3 we get

-bc^2 = ab^2 - 2(a^2)c

Divide through by abc to get

-c/a = b/c - 2a/b

or a/b - c/a = b/c - a/b

which means c/a, a/b and b/c are in AP.
Hence their reciprocals, a/c, b/a and c/b are in harmonic progression (HP).

3.   The average age of a woman and her daughter is 16 years. The ratio of their ages in 7: 1 respectively. What is the woman's age?
A.   4 years
B.   28 years
C.   32 years
D.   6 years
E.   None of these
Explanation:
The average age of a woman and her daughter is 16 years.
Sum of ages = 16*2=32 years.

The ratio of their ages in 7: 1 say 7x and x.
Then 8x = 32
=> x=4
Hence, the age of woman = 7*4 = 28 years.

4.   The average of 7 numbers is 50. The average of three of them is 40, while the average of the last three is 60. What must be the remaining number?
A.   40
B.   60
C.   50
D.   55
Explanation:

Sum of last 3 numbers=180.
Sum of other 3 numbers=120.
Sum of all seven numbers=350.
Thus,
=> 180+120+x=350
=> x=50.

5.   One type of liquid contains 25% of Kerosene, the other contains 30% of Kerosene. P can is filled with 6 parts of the first liquid and 4 parts of the second liquid. Find the percentage of the Kerosene in the new mixture.
A.   28%
B.   25%
C.   30%
D.   27%
Explanation:
Let P be filled by 60 lts of 1st liquid and 40 lts. of 2nd liquid.
Amount of kerosene = (25*60/100) + (30*40/100) = 27 lts.
% of kerosene = 27 %.

6. The minimum number of numbers required to form a number from 9 to 9000 which are multiples of 5 is:

A. 31
B. 41
C. 42
D. 32

Explanation:

The multiples of 5 must end with 0 or 5.

Therefore, units place of a number from 9 to 9000 can be filled by only two digits 0 and 5. i.e., 2 digits.

10's place of a number from 9 to 9000 can be formed by 0 to 9 digits. i.e., 10 digits.

100's place of a number from 9 to 9000 can be formed by 0 to 9 digits. i.e., 10 digits.

1000's place of a number from 9 to 9000 can be formed by 1 to 9 digits 1. i.e., 9 digits.

Therefore, total number of numbers required is 2 + 10 + 10 + 9 = 31.

7. Three people (A, B, and C) need to cross a bridge. A can cross the bridge in 10 minutes, B can cross in 5 minutes, and C can cross in 2 minutes. There is also a bicycle available and any person can cross the bridge in 1 minute with the bicycle. What is the shortest time that all men can get across the bridge? Each man travels at his own constant rate.

A. 2.75 minutes
B. 2.87 minutes
C. 2.92 minutes
D. 2.96 minutes

Explanation:

A's speed is 1/10 (in bridges per minute), B's speed is 1/5, C's speed is 1/2, and the bicycle's speed is 1.

The fastest way to get everyone across is for B and C to start out on foot and A to start out with the bicycle. At a point y, A will get off the bicycle and walk the rest of the way. Eventually C will get to the bicycle abandoned by A, then ride back to a point x, leaving the bicycle there, then turning around and walk until he reaches the end. Person B will walk until he reaches the bicycle left by C and then ride the rest of the way.

Below are the times that each will take to cross, in terms of x and y:

A: 1*y + 10*(1-y)

B: 5*x + 1*(1-x)

C: 2*y + (y-x) + 2*(1-x)

Next equate these equations: 10 - 9y = -3x + 3y + 2 = 4x + 1.

To solve set up two linear equations:

10 - 9y = -3x + 3y + 2 -> 3x - 12y = -8

10 - 9y = 4x + 1 -> 4x + 9y = 9

Then solve for x and y:

x = 12/25, y=59/75.

Given these points it will take each person 73/25 = 2.92 minutes to cross. Since they all start and end at the same time, the total duration to cross the bridge is also 2.92 minutes.

8.   There are 3 red balls,3 green balls and 3 blue balls are present. what is the probability of at least two of them are of same color if 3 balls are drawn?

A.   57/84
B.   27/42
C.   75/84
D.   none of these

Explanation:

Total combinations = 9c3 = 84

if we calculate the combinations in which three balls are of different colors,

then combinations will be = 3c1*3c1*3c1 = 27

so final probability of at least two of them are of same color if 3 balls are drawn = 1 - (27/84) = 57/84.

C DOT Logical Reasoning Test

9.   Adhir mishra has three children- Urmila, Raghu and Sumit. Sumit married to Rama, the eldest daughter of Mr. and Mrs. Mohan. Mr. Mohan married their youngest daughter to the eldest son of Mr. and Mrs. Sharma and they had two children Sandeep and Shaifali. Mr. Mohan have two more children, Roshan and Bimla, both elder to Sheila. Sohan and Shivendra are sons of Sumit and Roma. leela is the daughter of Sandeep. What is the surname of Leela?

A.   Sharma
B.   Mohan
C.   Mishra
D.   None of these

Answer: A.

10.   What is the next number of the following sequence
123,444,888,1776,8547, ...?

A.   16500
B.   16005
C.   16000
D.   16040

Explanation:

123+321=444, 444+444=888, 888+888=1776, 1776+6771=8547.
So,8547 + 7458 = 16005.

11.   What is the distance from city A to city C in kms?
(I) City A is 90 kms from City B
(II) City B is 30 kms from City C

A.   If statement (I) alone is sufficient but statement (II) alone is not sufficient.

B. If statement(II) alone is sufficient but statement(I) alone is not sufficient.

C. If both statements together are sufficient but neither of statements alone is sufficient.

D. If both together are not sufficient.

Explanation:

If both together are not sufficient.

It is not clear whether three cities, A, B, C are in a straight line.

Even if they are in line, it is not clear whether C lies in between A and B or it is on other side of B.

12. **Jumbled Sentences:**

S1: Biological evolution has not fitted man to any specific environment.

P: It is by no means a biological evolution, but it is a cultural one.

Q: His imagination, his reason, his emotional subtlety and toughness, makes it possible for him not to accept the environment but to change.

R: And that series of inventions by which man from age by age has reshaped his environment is a different kind of evolution.

S: Among the multitude of animals which scamper, burrow swim around us he is in the only one who is not locked in to his environment.

S6: That brilliant sequence of cultural peaks can most appropriately be termed the ascent of man.

The Proper sequence should be:

A. QPRS

B. SRQP

C. QRSP

D. SQRP

Answer: C.

13. **In a certain code language, 'PICTURE' is written as 'QHDSVQF'. How would 'BROWSER' be written in that same code?**

A. CQVVTDS

B. CQPVTDS

C. CQPUTDS

D. CQVPPDS

E. NONE OF THESE

Explanation:

P__+1___Q Similarly, B__+1___C

I__-1___H R__-1___Q

C__+1___D O__+1___P

T__-1___S W__-1___V

U__+1___V S__+1___T

R__-1___Q E__-1___D

E__+1___F R__+1___S

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14. Some boys are standing in a row, Sunil is 10th from right and Anant is seventh from left. if there are five boys in between Sunil and Ananth, how many boys are there in the row?

A. 20
B. 22
C. 21
D. 23

Explanation:

Sunil is 10th from right means 9 members are there after Sunil and five members are there between Sunil and Anant.

But we don't know that Anant placed right or left of Sunil.

So if he right there is no changes if left extra five members are there left to Sunil and then Anant placed Now Anant is 7th from left so 6 members are there before Anant so total 22 boys.'

_ _ _ _ _ _ A 1 2 3 4 5 Sunil 1 2 3 4 5 A _ _ _

15. Gaurav walks 20 meters towards North. He then turns left and walks 40 meters. He again turns left and walks 20 meters. Further, he moves 20 meters after turning to the right. How far is he from his original position?

A. 40 meters
B. 50 meters
C. 60 meters
D. 70 meters

Answer: C.

C DOT Technical Test

16. The format specifier "-%d" is used for which purpose in C

A. Left justifying a string
B. Right justifying a string
C. Removing a string from the console
D. Used for the scope specification of a char[] variable

Answer: A.

17. Which of the following communications lines is best suited to interactive processing applications?

A. Narrowband channels
B. Simplex channels
C. Full-duplex channels
D. Mixed band channels

Answer: B.

18. Which of the statements is correct about the following program on GCC compiler?

#include

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```
int main() {
char a[]="Add";
int *j;
j = &a;
printf("%c\n",*j+2);
return 0;
}
```
A.   It prints character equivalent of 67.
B.   It prints character the third character of the string 'a'.
C.   It will print 3.
D.   It will print a garbage value.
Explanation:
Here, base address of array 'a' is assigned to the integer pointer 'j'. '*j' denotes value at the base address of 'j' i.e. the first character of string 'a' i.e. 'A'.
Since, the ASCII integer value of 'A' is 65, the format specifier "%c" in the printf() function prints the ASCII character equivalent of 67(65+2) i.e. 'C'.

19.   In a processor these are 120 instructions. _____ bits are needed to implement these instructions.
A.   6
B.   7
C.   10
D.   none
Answer: B.

20.   In a compiler there is 36 bit for a word and to store a character 8bits are needed. IN this to store a character two words are appended. Then for storing a K characters string, how many words are needed.
A.   2k/9
B.   (2k+8/9
C.   (k+8/9
D.   2*(k+8/9
E.   none
Answer: A.

21.   In a binary tree, certain null entries are replaced by special pointers which point to nodes higher in the tree for efficiency. These special pointers are called _____.
A.   Leaf
B.   Branch
C.   Path
D.   Thread
Answer: D.

22.   _____is very useful in situation when data have to stored and then retrieved in reverse order.
A.   Stack

B.   Queue
C.   List
D.   Link list
Answer: A.

23.   Running merge sort on an array of size n which is already sorted is
A.   O(n)
B.   O(nlogn)
C.   O(n^2)
D.   None
Answer: B.

C DOT Verbal Ability Test

24.   Fill in the blank:
As for the free world, trade with Cuba has been taking place on a modest scale despite the _____ opposition of the United States.
A.   overt
B.   independent
C.   clandestine
D.   casual
Answer: A.

25.   Fill in the blank:
Hardly a day goes_____ When I don't remember all those great people who had gathered _____ my home on his birthday.
A.   Out, in
B.   by, in
C.   through, on
D.   for on
Answer: B.

26.   Synonym:
DIVERSION
A.   Amusement
B.   Distortion
C.   Deviation
D.   Bylane
Answer: C.

27.   Synonym:
EMACIATED
A.   garrulous

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B.   primeval

C.   vigorous

D.   disparate

E.   thin

Answer: E.

28.   Antonym:

HAPLESS

A.   Cheerful

B.   Consistent

C.   Fortunate

D.   Shapely

Answer: C.

29.   Antonym:

EXTROVERT

A.   clown

B.   hero

C.   ectomorph

D.   neurotic

E.   introvert

Answer: E.

30.   Sentence correction:

He never has and ever will take such strong measures.

A.   had taken nor will ever take

B.   had taken and will ever take

C.   has and never will take

D.   had and ever will take

E.   No correction required

Answer: A.