Infosys Previous Placement paper

1. The hour hand lies between 3 and 4. Tthe difference between hour and minute hand is 50 degree. What are the two possible timings?

Sol:

The angle between the hour hand and minute hand at a given time H:MM is given by

$$\theta = 30 \times H - \frac{2}{11} \times MM$$

The time after H hours, hour hand and minute hand are at

$$MM = \left| \frac{2}{11} \times ((30 \times H) \pm \theta) \right|$$

given H = 3, MM = 50

Substituting the above values in the formula

$$\theta = \frac{80}{11}, \frac{280}{11}$$

2. Jack and Jill went up and down a hill. They started from the bottom and Jack met Jill again 20 miles from the top while returning. Jack completed the race 1 min a head of Jill. If the hill is 440 miles high and their speed while down journey is 1.5 times the up journey. How long it took for the Jack to complete the race ?

Sol:

Assume that height of the hill is 440 miles.

Let speed of Jack when going up = x miles/minute

and speed of Jill when going up = y miles/minute

Then speed of Jack when going down = 1.5x miles/minute

and speed of Jill wen going up = 1.5y miles/minute

Case 1 :

Jack met jill 20 miles from the top. So Jill travelled 440 – 20 = 420 miles.

Time taken for Jack to travel 440 miles up and 20 miles down = Time taken for Jill to travel 420 miles up

$$\frac{440}{x} + \frac{20}{1.5x} = \frac{420}{y}$$

$$\frac{68}{1.5x} = \frac{420}{y}$$

68y = 63x

$$y = \frac{63x}{68} \quad \text{---(1)}$$

Case 2 : Time taken for Jack to travel 440 miles up and 440 miles down = Time taken for Jill to travel 440 miles up and 440 miles down – 1

$$\frac{440}{x} + \frac{440}{1.5x} = \frac{440}{y} + \frac{440}{1.5y} - 1$$

$$440 \times \frac{5}{3}\left(\frac{1}{y} - \frac{1}{x}\right) = 1 \quad \text{-----(2)}$$

Substitute (2) in (1) we get

$$x = 440 \times \frac{5 \times 5}{3 \times 63}$$

$$t = 440 \times \frac{5}{3}\left(\frac{1}{x}\right)$$

t = 12.6min

3. Data Sufficiency question:

A, B, C, D have to stand in a queue in descending order of their heights. Who stands first?

I. D was not the last, A was not the first.

II. The first is not C and B was not the tallest.

Sol:

D because A is not first neither C and B is not the tallest person. The only person will be first is D.

So option (C). We can answer this question using both the statements together.

4. One of the longest sides of the triangle is 20 m. The other side is 10 m. Area of the triangle is 80 m^2. What is the another side of the triangle?

Sol:

If a,b,c are the three sides of the triangle.

Then formula for Area = $\sqrt{(s(s-a) \times (s-b) \times (s-c))}$

Where s = $\frac{(a+b+c)}{2} = \frac{1}{2} \times (30+c)$

[Assume a = 20 ,b = 10]

Now,

Check the options.

5. Data Sufficiency Question:

a and b are two positive numbers. How many of them are odd?

I. Multiplication of b with an odd number gives an even number.

II. $a^2 - b$ is even.

Sol:

From the 1st statement b is even, as when multiplied by odd it gives even

$a^2 - b$ = even

⇒ a is even

Here none of a and b are odd

6. Mr. T has a wrong weighing pan. One arm is lengthier than other. 1 kilogram on left balances 8 melons on right, 1 kilogram on right balances 2 melons on left. If all melons are equal in weight, what is the weight of a single melon.

Sol:

Let additional weight on left arm be x.

Weight of melon be m

x + 1 = 8 x m   - - - - - - (1)

x + 2 x m = 1   - - - - - - (2)

Solving 1 & 2 we get.

Weight of a single Melon = 200 gm.

7. a, b, b, c, c, c, d, d, d, d, ... Find the 288th letter of this series.

Sol:

Observe that each letter appeared once, twice, thrice .... They form an arithmetic progression. 1+2+3......

We know that sum of first n natural numbers = $\dfrac{n(n+1)}{2}$

So $\dfrac{n(n+1)}{2} \leq 288$

For n = 23, we get 276. So for n = 24, the given series crosses 288.

Ans is X

8. If ABC =C^3 and CAB = D^3, Then find $D^3 \div B^3$

Sol:

ABC = C^3

So, look for a number, that has a 3 digit cube, and the last digit of the cube is same as the number itself: 5^3 = 125

So, CAB = 512 = 8^3

D = 8 and B = 2

$8^3 \div 2^3$

Answer = 64.

9. There are three trucks A, B, C. A loads 10 kg/min. B loads 13 1/3 kg/min. C unloads 5 kg/min. If three simultaneously works then what is the time taken to load 2.4 tones?

Sol:

Work done in 1 min =10 + $\dfrac{40}{3}$ − 5= $\dfrac{55}{3}$ kg/min

For 1 kg = 3/55 min

For 2.4 tonnes = 3/55 x 2.4 x 1000 = 130 mins = 2hrs 10min

10. If A = $x^3 y^2$ and B=xy^3, then find the HCF of A, B

Sol:

A=$x^3 \times y^2$

B = $x \times y^3$

To find the HCF of the above numbers, take minimum power of x and y in both the numbers.

HCF = Common terms from both A & B and minimum powers = $x \times y^2$

11. HERE = COMES – SHE, (Assume s = 8)

Find value of R + H + O

Sol:

HERE = COMES – SHE

   HERE

\+   SHE

COMES

E + E = S = 8 => E = 4

3 digit no. + 4 digit no. = 5 digit no. $\Rightarrow$ C = 1 ,O = 0, H = 9 etc

So 9454 + 894 = 10348

10348

 – 894

  9454

R + H + O = 5 + 9 + 0 = 14

12. A person is 80 years old in 490 and only 70 years old in 500 in which year is he born?

a) 400

b) 550

c) 570

d) 440

Sol:

He must have born in BC 570

Hence in BC 500 he will be 70 years

And in BC 490 he will be 80 years

13. Lucia is a wonderful grandmother and her age is between 50 and 70. Each of her sons have as many sons as they have brothers. Their combined ages give Lucia's present age.what is the age?

Sol:

The question basically states that if Lucia were to have say 10 sons, then each son would have 9 sons (Lucia's grandsons – since each son has 9 brothers). So the total in this case would be $9\times$ 10 grandsons + 10 sons = 100. Let us assume Lucia has got x sons. Now each son has (x - 1) sons.   So total = x + (x - 1) x. For x = 8 we get 64 which is in between 50 and 60. (7 x 8 grandsons + 8 sons = 64)

14. A family X went for a vacation. Unfortunately it rained for 13 days when they were there. But whenever it rained in the mornings, they had clear afternoons and vice versa. In all they enjoyed 11 mornings and 12 afternoons. How

Sol:

Clearly 11 mornings and 12 afternoons = 23 half days

since 13 days raining means 13 half days.

so 23 – 13 =10 half days (not affected by rain)

so 10 half days = 5 full days

Total no. of days = 13 + 5 = 18 days.

15. Find the unit digit of product of the prime number up to 50 .

Sol:

Prime number up to 50 are

2,3,5,7,11,...,43,47

Product = $2 \times 3 \times 5 \times 7 \times 11 \times --- \times 43 \times 47$

There's a term $2 \times 5 = 10$

So unit digit of product = 0

16. HOW + MUCH = POWER Then P + O + W + E + R =

Sol:

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    HOW
+ MUCH
-------------
  POWER
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Here p = 1 and M = 9 because after adding carry bit it gives result 10. Hence O = 0,here three digits 0,1,9 have been used.

Now, put all remaining value in 3rd column and check which value is suitable for H,U and W and we get H = 7,U = 8 and W = 5 and 1 carry which will be added in 4th column.

Now in first column we have W + H = R means 5 + 7 = 2 and 1 carry will add in 2nd column

in 2nd column, 0 + C = E,0 + 3 + 1 = 4 so C = 3,E = 4

Therefore,

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  9837
+ 705
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10542
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so P + O + W + E + R = 1 + 0 + 5 + 4 + 2 = 12

17. Complete the series..

2 2 12 12 30 30 ?

Sol:

Answer is 56.

It follows the series as:

1 x 2 = 2

2 x 1 = 2

3 x 4 = 12

4 x 3 = 12

5 x 6 = 30

6 x 5 = 30

7 x 8 = 56

This is the required number for the series.