TCS Latest Placement Paper Questions - 2014 (9)

1. A and B run a 1 km race. If A gives B a start of 50m, A wins by 14 seconds and if A gives B a start of 22 seconds, B wins by 20 meters. Find the time taken by A to run 1 km.

To solve these type of questions, always keep in your mind that, the ratio of the speeds of two contestents never change.

A gives B a start of 50 m means, A runs 1000 m and B runs only 950. By the time A reaches the target, B has to take 22 seconds to reach the target.
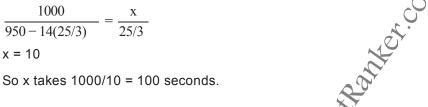
$$\frac{a}{b} = \frac{1000}{950 - 14b} = \frac{980}{1000 - 22b}$$

50,000 -1100b = 46550 -686b

Solving we get b = 25/3

Now Assume A's speed = x

$$\frac{1000}{950 - 14(25/3)} = \frac{x}{25/3}$$

x = 10

So x takes 1000/10 = 100 seconds.

2. A owes B Rs.50. He agrees to pay B over a number of consecutive days on a Monday, paying single note or Rs.10 or Rs.20 on each day. In how many different ways can A repay B.

He can pay by all 10 rupee notes = 1 way

3 Ten rupee + 1 twenty rupee = $\frac{4!}{3! \times 1!}$ = 4 ways

1 Ten rupee + 2 twenty rupee notes = $\frac{3!}{2! \times 1!}$ = 3 ways

Total ways = 1 + 4 + 3 = 8

3. W, X, Y, Z are integers. The expression X - Y - Z is even and the expression Y - Z - W is odd. If X is even what must be true?

a) W must be odd

b) Y - Z must be odd

c) Z must be even

d) Z must be odd

Sol: X is even so Y, Z both are even or both are odd.

Now Y - Z in both cases even. So (Y - Z) - W = odd happens only when w is odd

Ans: W is odd

4. Raj writes a number. He sees that the number of two digits exceeds four times the sum of its digits by 3. If the

number is increased by 18, the results is the same as the number formed by reversing the digits. Find the next immediate prime greater than the number.

Let the number be xy = 10x + y

$10x + y = 4(x+y) + 3 \Rightarrow 2x - y - 1$ -------(1)

Also 10x + y +18 = 10y +x , 9(y-x) = 18, y-x = 2 -------(2)

Solving we get x = 3, y = 5

The number is 35. So next immediate prime is 37

5. Kate wanted to buy 2kgs of apples. The vendor kept the 2kg weight on the right side and weighed 4 apples for that. She doubted on the correctness of the balance and placed 2 kg weight on the left side and she could weight 14 apples for 2 kgs. If the balance was correct how many apples she would have got?

As she got less apples when the weight put on the right side, the left pan has more weight say w kgs.

Now w + 4a = 2

and w+ 2 = 14a

Solving we get a = 2/9 Kgs.

So she gets, 2/(2/9) = 9 apples

6. Find the remainder when 32^33^34 is divided by 11

We know that when the divisor is a prime number, Fermat little theorem says, a^{p-1} when divided by p, remainder is 1

So 32^{10} gives remainder 1.

Now we have to write 32^33^34 in this format. So we have to find the remainder 33^34 when divided by 10. The remainder is nothig but unit digit of the number. Click here to learn this concept

33^34 gives unit digit of 9.

So 33^34 = 10 K + 9

$32^{33^{34}} = 32^{(10K+9)} = \left(32^{10}\right)^{K} . 32^{9}$

Now this expression when divided by 11 leaves a remainder of 32^{9} which inturn is equal to $(-1)^{9} = -1 = 10$

7. Find the option to replace the question mark in the series below

5 ? 15 75 525 4725

Sol: 5 x 1 = 5

5 x 3 = 15

15 x 5 = 75

75 x 7 = 525

525 x 9 = 4725

So ? = 5

8. There are several bags of same weight. A bag is 6 kgs plus three fourth of the weight of an other bag. What is the weight of a bag?

Let the bags weight is x

Then $6 + \dfrac{3}{4} x = x$,

Solving we get x = 24

9. Find the remainder when 6^50 is divided by 215

Ans: $6^{50} = (6^3)^{16} . 6^2 = 216^{16} . 6^2$

So this expression gives a remainder of 36

10. Find last two digits of the following expression (201*202*203*204*246*247*248*249)^2

To find the last two digits of a product take the last two digits in each number and multiply. 01*02*03......48*49 (use onscreen calculator)

this gives 76. So 76^2 = 576 So last two digits are 76