

TCS Latest Placement Paper Questions - 2014 (10)

1. Ahmed, Babu, Chitra, David and Eesha each choose a large different number. Ahmed says, "My number is not the largest and not the smallest". Babu says, "My number is not the largest and not the smallest". Chitra says, "My number is the largest". David says, "My number is the smallest". Eesha says, "My number is not the smallest". Exactly one of the five children is lying. The others are telling the truth. Who has the largest number?

- a) Eesha
- b) David
- c) Chitra
- d) Babu

Ans: A

Largest ->	A	B	C	D	E
A	F	T/F	T/F	T/F	T/F
B	T/F	F	T/F	T/F	T/F
C	F	F	T	F	F
D	T/F	T/F	T/F	F	T/F
E	T/F	T/F	T/F	T/F	T

From the above table, If we assume that A has the largest then A and C both are lying. Similarly if we find the truthfulness of the remaining people, it is clear that E has the largest and C lied. (Only one F in the last column)

2. In the equation $A + B + C + D + E = FG$ where FG is the two digit number whose value is $10F + G$ and letters A, B, C, D, E, F and G each represent different digits. If FG is as large as possible. What is the value of G?

- a) 4
- b) 2
- c) 1
- d) 3

Ans: B

FG is as large as possible and all the 7 numbers should be different.

By trial and Error method,

$$9 + 8 + 7 + 6 + 5 = 35 \dots 5 \text{ is getting repeated twice.}$$

$$9 + 8 + 7 + 6 + 4 = 34 \dots 4 \text{ is getting repeated}$$

$$9 + 8 + 7 + 5 + 4 = 33 \dots 3 \text{ repeats}$$

$$9 + 8 + 6 + 5 + 4 = 32$$

None of the numbers repeat in the above case and 32 is the maximum number FG can have. The value of G is 2.

3. A farmer has a rose garden. Every day he either plucks 7 or 6 or 24 or 23 roses. The rose plants are intelligent and when the farmer plucks these numbers of roses, the next day 37 or 36 or 9 or 18 new roses bloom in the garden respectively. On Monday, he counts 189 roses in the garden. He plucks the roses as per his plan on consecutive days and the new roses bloom as per intelligence of the plants mentioned above. After some days which of the following can be the number of roses in the garden?

- a) 4
- b) 7
- c) 30
- d) 37

Ans: A

If he plucks 23, then only 18 grows the next day. This means total roses get decreases by 5. So after n days assume the number of roses got decreased 185 where n = 37, then 4 roses left.

4. What is the value of $(44444445 \times 88888885 \times 44444442 + 444444438) / 4 \times 4444444^2$

- a) 88888883
- b) 88888884
- c) 88888888
- d) 44444443

Ans: A

Let $x = 44444444$

$$\frac{(x+1) \times (2x-3) \times (x-2) + (x-6)}{x^2} \\ \frac{(x^2 - x - 2) \times (2x-3) + (x-6)}{x^2} \\ \frac{2x^3 - 2x^2 - 4x - 3x^2 + 3x + 6 + x - 6}{x^2} \\ \frac{2x^3 - 5x^2}{x^2} = 2x - 5$$

Substituting the value of x in $2x - 5$, we get 88888883

4. For which of the following "n" is the number $2^{74} + 2^{2058} + 2^{2n}$ is a perfect square?

- a) 2012
- b) 2100
- c) 2011
- d) 2020

Ans: D

$$2^{74} + 2^{2058} + 2^{2n} = K^2$$

$$2^{74} + 2^{2058} + 2^{2n} = (2^{37})^2 + 2^{2058} + (2^n)^2$$

We try to write this expression as $(a+b)^2 = a^2 + 2ab + b^2$

Now $a = 2^{37}$, $2ab = 2^{2058}$ and $b = 2^n$

Substituting the value of a in $2ab$, we get $b = 2020$

5. Raj writes a number. He sees that the number of two digits exceeds four times the sum of its digit by 3. If the number is increased by 18, the result is the same as the number formed by reversing the digit. Find the number

- a) 35
- b) 57
- c) 42
- d) 49

Ans: A

Going by the options, $35 = 8(4) + 3$.

6. Weight of M, D and I is 74. Sum of D and I is 46 greater than M. I is 60% less than D. What is D's weight.

Ans: 10

$$M + D + I = 74 \quad \text{--- (1)}$$

$$(D + I) - M = 46 \quad \text{--- (2)}$$

$$I = \frac{4}{10} D \Rightarrow 5I = 2D \Rightarrow I = \frac{2D}{5} \quad \text{--- (3)}$$

Adding (1) and (2) we get $2D + 2I = 120$

Substituting the value of I in the above equation,

$$2D + 2\left(\frac{2D}{5}\right) = 120$$

$$\Rightarrow 14D = 600$$

$$\Rightarrow D = 300/7 = 42.8$$

7. Father is 5 times faster than son. Father completes a work in 40 days before son. If both of them work together, when will the work get complete?

- a. 8 days
- b. $8 \frac{1}{3}$ days
- c. 10 days
- d. 20 days

Ans: B

As efficiency is inversely proportional to days, If Father : son's efficiency is $5 : 1$, then Days taken by them should be $1 : 5$. Assume, the days taken by them are $k, 5k$.

Given that father takes 40 days less. So $5k - k = 40 \Rightarrow k = 10$

Father takes 10 days to complete the work. Total work is $10 \times 5 = 50$ units.

If both of them work together, they complete $5 + 1$ units a day. 6/day. To complete 50 units, they take $50/6 = 8 \frac{1}{3}$ days.

8. A beaker contains 180 liters of alcohol. On 1st day, 60 l of alcohol is taken out and replaced by water. 2nd day, 60 l of mixture is taken out and replaced by water and the process continues day after day. What will be the quantity of alcohol in beaker after 3 days

Ans: 53.3

Use the formula,

$$\text{Final Alcohol} = \text{Initial Alcohol} \times \left(1 - \frac{\text{Replacement quantity}}{\text{Final Volume}}\right)^n$$

$$\text{Final Alcohol} = 180 \left(1 - \frac{60}{180}\right)^3 = 180 \times \left(\frac{2}{3}\right)^3 = 53.3$$

9. If $f(f(n)) + f(n) = 2n+3$, $f(0) = 1$ then $f(2012) = ?$

Ans: 2013

$$f(f(0)) + f(0) = 2(0) + 3 \Rightarrow f(1) = 3-1 = 2, f(1) = 2$$

$$f(f(1)) + f(1) = 2(1) + 3 \Rightarrow f(2) = 5-2 = 3, f(2) = 3$$

$$f(f(2)) + f(2) = 2(2) + 3 \Rightarrow f(3) = 7-3 = 4, f(3) = 4$$

.....

$$f(2012) = 2013$$

10. What will be in the next series

1, 7, 8, 49, 56, 57, 343, ...

Ans: 344

$$1 = 1$$

$$7 = 1 \times 7$$

$$8 = 1 \times 7 + 1$$

$$49 = 7 \times 7 + 1$$

$$50 = 7 \times 7 + 1$$

$$56 = 8 \times 7$$

$$57 = 8 \times 7 + 1$$

$$343 = 49 \times 7$$

$$\text{Next term should be } 49 \times 7 + 1 = 344$$

11. In a 3×3 grid, comprising 9 tiles can be painted in red or blue. When tile is rotated by 180 degrees, there is no difference which can be spotted. How many such possibilities are there?

a. 16

b. 32

c. 64

d. 256

Ans: B

2	3	1
4	5	4
1	3	2

This grid even rotated 180 degrees the relative positions of the tiles do not change. So we paint tile number 1's with red or blue (only one color should be used), 2's with red or blue.....tile 5 red or blue. Then total possibilities are $2^5 = 32$