TCS Latest Placement Paper Questions with solutions -2014 (16)

1. The value of diamond varies directly as the square of its weight. If a diamond falls and breaks into two pieces with weights in the ratio 2:3. what is the loss percentage in the value?

Sol: Let weight be "x"

the cost of diamond in the original state is proportional to x^2

when it is fallen it breaks into two pieces 2y and the 3y

x = 5y

Original value of diamond = $(5y)^2 = 25y^2$

Value of diamond after breakage = $(2y)^2 + (3y)^2 = 13y^2$

so the percentage loss will be = $\dfrac{25y^2 - 13y^2}{25y^2} \times 100 = 48\%$

2. Five college students met at a party and exchanged gossips. Uma said, "Only one of us is lying". David said, "Exactly two of us are lying". Thara said, "Exactly 3 of us are lying". Querishi said, "Exactly 4 of us are lying". Chitra said "All of us are lying". Which one was telling the truth?

a)David

b)Querishi

c)Chitra

d)Thara

Sol: As all are contradictory statements, it is clear that ONLY one of them is telling the truth. So remaining 4 of them are lying. Querishi mentioned that exactly 4 are lying. So, he is telling the truth.

Explanation: Let us 1st assume that Uma is telling the truth. Then according to her only one is lying. But if only one is lying then all the others' statements are contradicting the possibility. In the same way all the other statements should be checked. If we assume the Querishi is telling the truth, according to him exactly 4 members are lying. So all the others are telling lies and he is the one who is telling the truth. This case fits perfectly.

3. Cara, a blue whale participated in a weight loss program at the biggest office. At the end of every month, the decrease in weight from original weight was measured and noted as 1, 2, 6, 21, 86, 445, 2676. While Cara made a steadfast effort, the weighing machine showed an erroneous weight once. What was that.

a) 2676

b) 2

c) 445

d) 86

SOL: This is a number series problem nothing to do with the data given.

1x 1+1=2

2 x 2+2=6

6 x 3+3=21

21 x 4+4=88 and not 86

88 x 5+5 = 445

445*6+6 = 2676

4. The letters in the word ADOPTS are permuted in all possible ways and arranged in alphabetical order then find the word at position 42 in the permuted alphabetical order?

a) AOTDSP

b) AOTPDS

c) AOTDPS

d) AOSTPD

SOL:

In alphabetical order : A D O P S T

A _ _ _ _ _ : the places filled in 5! ways = 120, But we need a rank less than 120. So the word starts with A.

A D _ _ _ _ : empty places can be filled in 4!=24

A O _ _ _ _ : the places filled with 4! ways = 24. If we add 24+24 this total crosses 42. So We should not consider all the words starting with AO.

A O D _ _ _ : 3!= 6

A O P _ _ _ : 3!=6

Till this 36 words are obtained, we need the 42nd word.

AOS _ _ _ : 3!= 6

 Exactly we are getting the sum 42. So last 3 letters in the descending order are TPD.

So given word is AOSTPD

4. A man who goes to work long before sunrise every morning gets dressed in the dark. In his sock drawer he has 6 black and 8 blue socks. What is the probability that his first pick was a black sock, but his second pick was a blue sock?

SOL: This is a case of without replacement. We have to multiply two probabilities. 1. Probability of picking up a black sock, and probability of picking a blue sock, given that first sock is black.

$$\frac{^6C_1}{^{14}C_1} \times \frac{^8C_1}{^{13}C_1} = \frac{24}{91}$$

5. There are 6 red balls,8 blue balls and 7 green balls in a bag. If 5 are drawn with replacement, what is the probability at least three are red?

Sol: At least 3 reds means we get either : 3 red or 4 red or 5 red. And this is a case of replacement.

case 1 : 3 red balls : 6/21 x 6/21 x 6/21 x 15/21 x 15/21

case 2 : 4 red balls : 6/21 x 6/21 x 6/21 x 6/21 x 15/21

case 3 : 5 red balls : 6/21 x 6/21 x 6/21 x 6/21 x 6/21

Total probability = = (6/21 x 6/21 x 6/21 x 15/21 x 15/21)+(6/21 x 6/21 x 6/21 x 6/21 x (15)/21)+ (6/21 x 6/21 x 6/21 x 6/21 x 6/21)

= 312/16807

6. Total number of 4 digit number do not having the digit 3 or 6.

Sol:

consider 4 digits _ _ _ _

1st blank can be filled in $^{7}C_1$ ways (0,3,6 are neglected as the first digit should not be 0)

2st blank can be filled in $^{8}C_1$ ways (0 considered along with 1,2,4,5,7,8,9)

3st blank can be filled in $^{8}C_1$ ways

4st blank can be filled in $^{8}C_1$ ways

Therefore total 4 digit number without 3 or 6 is 7 x 8 x 8 x 8=3584

7. Find the missing in the series: 70, 54, 45, 41,_____.

Sol: 40

70-54 = 16 = 4^2

54-45 = 9 = 3^2

45-41 = 4 = 2^2

41-40 = 1 = 1^2

8. A school has 120, 192 and 144 students enrolled for its science, arts and commerce courses. All students have to be seated in rooms for an exam such that each room has students of only the same course and also all rooms have equal number of students. What is the least number of rooms needed?

Sol: We have to find the maximum number which divides all the given numbers so that number of roots get minimized. HCF of 120,192 & 144 is 24. Each room have 24 students of the same course.

Then rooms needed $\dfrac{120}{24} + \dfrac{192}{24} + \dfrac{144}{24}$ = 5 +8 + 6 = 19

9. A farmer has a rose garden. Every day he picks either 7,6,24 or 23 roses. When he plucks these number of flowers the next day 37,36,9 or 18 new flowers bloom. On Monday he counts 189 roses. If he continues on his plan each day, after some days what can be the number of roses left behind? (Hint : Consider number of roses remaining every day)

a)7

b)4

c)30

d)37

Sol:

let us consider the case of 23. when he picks up 23 roses the next day there will be 18 new, so in this case., 5

flowers will be less every day. So when he counts 189, the next day 184, 179,174,169,................

finally the no. of roses left behind will be 4.

10. What is the 32nd word of "WAITING" in a dictionary?

Sol: Arranging the words of waiting in Alphabetical Order : A,G,I,I,N,T,W

Start with A_ _ _ _ _ _ This can be arranged in 6!/2! ways=720/2=360 ways

so can't be arranged starting with A alone as it is asking for 32nd word so it is out of range

AG_ _ _ _ _then the remaining letters can be arranged in 5!/2! ways so,120/2=60 ways. Out of range as it has to be within 32 words.

AGI_ _ _ _ Now the remaining letters can be arranged in 4! ways =24

AGN _ _ _ _ can be arranged in 4!/2! ways or 12 ways

so,24+12 =36th word so out of range. So we should not consider all the words start with AGN

now AGNI_ _ _can be arranged in 3! ways =6 ways

so 24+6=30 within range

Now only two word left so, arrange in alphabetical order.

AGNTIIW - 31st word

AGNTIWI - 32nd word