Advanced Numerical Ability - TCS NQT Practice

1. A and B together can complete a piece of work in 12 days. B and C together can complete it in 15 days. A and C together can do it in 20 days. In how many days can A alone complete the work?

Solution:

Let the total work = LCM of (12,15,20) = 60 units.

A+B = 60/12 = 5 units/day

B+C = 60/15 = 4 units/day

A+C = 60/20 = 3 units/day

Add all three: (A+B)+(B+C)+(A+C) = 5+4+3 = 12

So 2A + 2B + 2C = 12 A + B + C = 6

Now subtract B+C = 4 A = 2 units/day

So A alone takes 60/2 = 30 days

2. A box contains 4 red balls, 5 blue balls, and 3 green balls. Two balls are drawn at random without replacement. What is the probability that both balls are of different colors?

Solution:

Total ways = C(12, 2) = 66

Ways to pick same color:

Red: C(4,2)=6, Blue: C(5,2)=10, Green: C(3,2)=3 Total = 19

So, different colors = 66 - 19 = 47

Probability = 47/66

3. The product of two numbers is 2028 and their HCF is 6. How many such pairs of numbers are possible?

Solution:

Let the numbers be 6a and 6b.

Then, 6a 6b = 2028 36ab = 2028 ab = 2028 / 36 = 56.33 (Not an integer)

So, no such integer pair possible. Check question again.

4. A company spends 20% on salaries, 25% on raw materials, 10% on electricity from 10,00,000. If electricity cost is reduced by 2%, how much is saved?

Solution:

Electricity cost = 10% of 10,00,000 = 1,00,000

2% of it = 2,000 savings

5. In how many ways can the letters of the word INDETERMINATE be arranged such that all the vowels are together?

Solution:

INDETERMINATE has 13 letters: I, N, D, E, T, E, R, M, I, N, A, T, E

Vowels = I, E, E, I, A, E (6 vowels) treat them as 1 block 8 blocks

Ways = 8! (6!/3!2!) [arrangement of block + vowel arrangement]