DAILY PRACTICE PROBLEMS | QUANT | CAT 2023 PATTERN

DPP No. 01	**Section:** Quantitative Aptitude	**Questions:** 8	**Time:** 20 min

Instructions: Attempt all 8 questions. MCQs have one correct option; TITA questions require a numerical answer. Recommended time is 20 minutes. These are elite-level questions designed on the exact CAT 2023 Quant blueprint.

Q1 Time, Speed & Distance **Elite** **[TITA]**

A boat takes 2 hours to travel from point P to point Q downstream and 3 hours to return from Q to P upstream. If the speed of the stream were doubled, the boat would take 2 hours 24 minutes to travel downstream from P to Q. What is the ratio of the boat's speed in still water to the original speed of the stream?

[TITA -- Enter your numerical answer]

Q2 Mixtures & Alligation **Elite** **[MCQ]**

A vessel contains 80 litres of pure milk. 16 litres are drawn out and replaced with water. From the resulting mixture, 16 litres are again drawn out and replaced with water. This process is performed a total of three times. What is the ratio of milk to water in the final mixture?

A) 64 : 61

B) 61 : 64

C) 125 : 216

D) 64 : 125

Q3 Profit, Loss & Discount **Elite** **[TITA]**

A trader marks his goods 60% above the cost price. He sells half of the stock at the marked price, one-fourth at a 20% discount on the marked price, and the remaining one-fourth at a 40% discount on the marked price. What is his overall profit percentage on the whole stock?

[TITA -- Enter your numerical answer]

Q4 Algebra -- Functions **Elite** **[MCQ]**

Let f(x) = x / (1 + x) for all x > 0. Define f1(x) = f(x), and for n >= 2, fn(x) = f(f(n-1)(x)), i.e. f applied n times. What is the value of f5(2)?

A) 2/11

B) 2/9

C) 1/6

D) 2/13

Q5 Algebra -- Logarithms **Elite** **[TITA]**

If log base 2 of x, log base 4 of x, and log base 8 of x are three terms such that their sum equals 11, find the value of x.

[TITA -- Enter your numerical answer]

Q6 Algebra -- Quadratic Optimisation **Elite** **[MCQ]**

The product of two positive real numbers x and y is 36. If the sum x + y is to be minimised, what is the minimum possible value of x + y?

A) 12
B) 13
C) 15
D) 18

Q7 Number System -- Remainders **Elite** **[TITA]**

What is the remainder when 7^100 is divided by 24?

[TITA -- Enter your numerical answer]

Q8 Geometry -- Triangles **Elite** **[MCQ]**

In triangle ABC, the lengths of the sides are AB = 13 cm, BC = 14 cm, and CA = 15 cm. A point D lies on BC such that AD is perpendicular to BC. What is the length of AD (the altitude from A to BC)?

A) 12 cm
B) 11 cm
C) 12.5 cm
D) 10.5 cm