# (A) Case Study: Ravi's Savings Plan

Ravi is a 32-year-old man living in Bengaluru. In 2024, he receives ₹10,00,000 as a bonus. He wants to save this money for 10 years to buy a house. He looks at the following options:

### Option A – Bank Fixed Deposit

- Rate of interest: 6.5% per annum, compounded quarterly
- 20% tax on the interest every year

### Option B – National Savings Certificate (NSC)

- Rate of interest: 7.7% per annum, compounded annually
- Interest is added back to the amount
- 20% tax on total interest at maturity

### Option C – ELSS Mutual Fund

- Rate of return: 11% per annum, compounded annually
- 10% tax on gains at maturity

Assume the rate of inflation is 5% per annum.

### Questions

Q1. Find the amount after 10 years for Option A and Option B (after tax).Which option gives Ravi more money in real value after considering inflation?

Q2. Ravi thinks that quarterly compounding always gives more return than annual compounding**.** Is he correct? Give reasons using Option A and Option B**.**

Q3. Suppose Option C gives only 9% per annum return.

1. Compare the final amount of Option B and Option C**.**
2. Write two reasons why Ravi may or may not choose Option C.

Q4. Ravi divides his money as follows:

- 40% in Option A
- 30% in Option B
- 30% in Option C (11%)

Is this plan better than putting all the money in Option B**?** Give reasons based on compound interest, inflation, and risk**.**

# (B) Case Study: Water Tank for a Village School

A government school in a village of Rajasthan plans to install a cylindrical water tank on its roof under the *Jal Jeevan Mission*.
The tank has a radius of 1.4 m and a height of 3.5 m.

Water is supplied to the tank using a pump that fills 700 litres of water in 10 minutes.

# Questions

**Q1.**Find the total capacity of the cylindrical tank in litres and the time required to completely fill the empty tank using the pump.

**Q2.**During summer, the school decides to increase the height of the tank by 50% while keeping the radius the same**.**Will the capacity of the tank increase by 50%**?** Justify your answer using calculations.