

## SAMPLE PAPER 6: PAPER 1

### QUESTION 4 (25 MARKS)

#### Question 4 (a)

$$T_1 = a = 9$$

$$T_n = a + (n-1)d$$

$$T_{12} = a + 11d = -35$$

$$\therefore 9 + 11d = -35$$

$$11d = -44 \Rightarrow d = -4$$

Sequence: 9, 5, 1, -3,.....

#### Question 4 (b)

Arithmetic sequence: 24, 21, 18,.....

$$a = 24, d = 21 - 24 = -3$$

$$\text{Put } S_n = 0$$

$$S_n = \frac{n}{2}[2a + (n-1)d]$$

$$\therefore \frac{n}{2}[2(24) + (n-1)(-3)] = 0$$

$$[48 - 3n + 3] = 0$$

$$51 = 3n$$

$$\therefore n = 17$$

ANSWER: At least 18 terms are needed to give a negative sum.

#### Question 4 (c)

Arithmetic sequence: 1000, 1500, 2000,.....

$$a = 1000, d = 500$$

$$T_n = 12\,500$$

$$T_n = a + (n-1)d$$

$$\therefore 1000 + (n-1)500 = 12\,500$$

$$(n-1)500 = 11\,500$$

$$n-1 = \frac{11\,500}{500} = 23$$

$$\therefore n = 24$$

ANSWER: He covers 12 500 m on the 24<sup>th</sup> day.

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