

LC 2016 (SET A): PAPER 1

QUESTION 5 (25 MARKS)

Question 5 (a) (i)

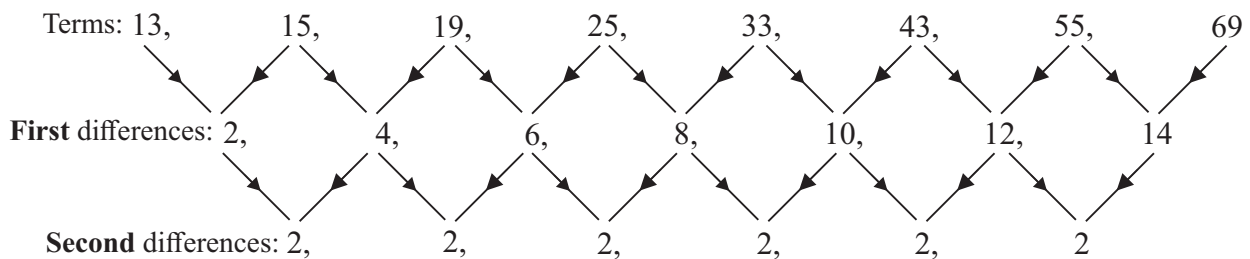
Sequence: 13, 15, 19, 25, 33, ...

[$13 + 2 = 15$, $15 + 4 = 19$, $19 + 6 = 25$,]

Sequence: 13, 15, 19, 25, 33, 43, 55, 69

Term	Number
U_1	13
U_2	15
U_3	19
U_4	25
U_5	33
U_6	43
U_7	55
U_8	69

Question 5 (a) (ii)



The sequence of second differences is a constant showing the pattern is quadratic.

MARKING SCHEME NOTES

Question 5 (a) [Scale 5C (0, 2, 4, 5)]

2: • One or two correct terms

4: • 3 terms correct but fails to show quadratic

Question 5 (b)

$$U_n = n^2 + bn + c$$

$$U_1 = (1)^2 + b(1) + c = 13$$

$$1 + b + c = 13$$

$$\therefore b + c = 12 \dots (1)$$

$$U_2 = (2)^2 + b(2) + c = 15$$

$$4 + 2b + c = 15$$

$$\therefore 2b + c = 11 \dots (2)$$

$$(2) - (1) : b = -1$$

$$\text{Into (1): } (-1) + c = 12 \Rightarrow c = 13$$

MARKING SCHEME NOTES

Question 5 (b) [Scale 15C (0, 3, 7, 15)]

3: • Some relevant substitution into U_n
 • Derives one correct equation

7: • Derives two correct equations

Question 5 (c)

$$a = T_1 = 12, d = 14 - 12 = 2$$

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

$$= 12 + (n-1)2$$

$$= 12 + 2n - 2$$

$$= 2n + 10$$

$$T_n = 2n + 10$$

$$T_{30} = 2(30) + 10 = 60 + 10 = 70$$

Term	Number
T_1	12
T_2	14
T_3	16
T_4	18
T_5	20

MARKING SCHEME NOTES**Question 5 (c) [Scale 5C (0, 2, 4, 5)]**

2: • a or d identified

• Writes $T_n = a + (n - 1)d$

4: • T_n correct and stops

• Finds T_{30} correctly using list method, without finding T_n