Mathematics — Ganita Manjari

Chapter 8 Test 1

Predicting What Comes Next: Exploring Sequences and Progressions

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. Choose one option in A; show working in B–D.
2. No calculators. Give exact answers unless an approximation is requested.
3. Term positions start at 1 unless a stage number of 0 is explicitly given.

SECTION A

(5 questions × 1 mark = 5 marks)

1. Which feature is essential to the definition of a sequence?

(A) All terms are positive
(B) The terms have a specified order
(C) All terms are different
(D) The terms increase

2. How many terms are in the finite sequence 6,12,24,48,96?

(A) 4
(B) 6
(C) 5
(D) 96

3. In the square-number sequence, what does $t_5 = 25$ mean?

(A) The fifth term is 25
(B) The twenty-fifth term is 5
(C) There are 25 terms
(D) Every term is multiplied by 5

4. Which formula gives $1 + 2 + \cdots + n$?

(A) n^2
(B) $n(n-1)$
(C) $2n + 1$
(D) $\frac{n(n+1)}{2}$

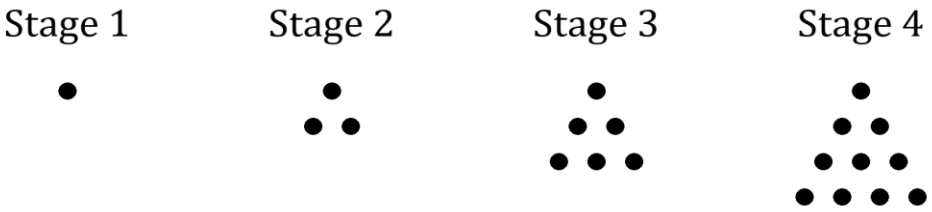
5. Which sequence has a constant ratio of 3 between consecutive terms?

(A) 3,6,9,12, …
(B) 2,6,18,54, …
(C) 1,3,6,10, …
(D) 3,9,15,21, …

SECTION B

(4 questions × 2 marks = 8 marks)

6. The dot arrangements in figure continue by adding one longer row each time. Find the number of dots at Stage 8 and the number added from Stage 7 to Stage 8.



7. For $t_n = 3n - 7$, find t_1 and t_{12}. Explain why a negative first term is allowed.

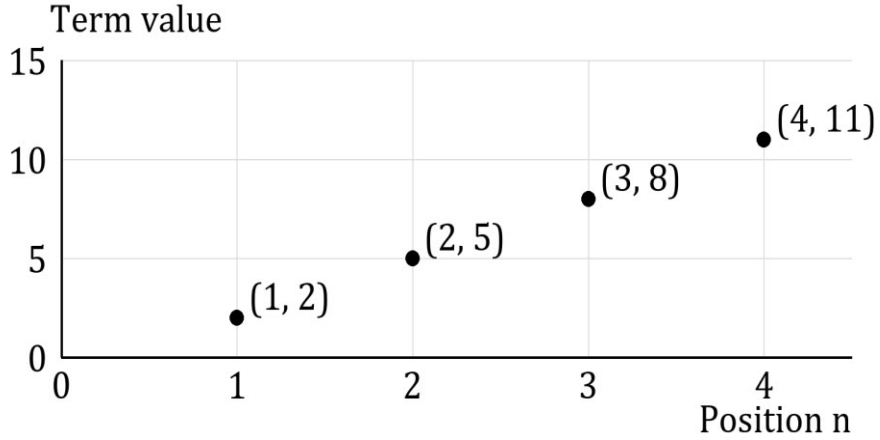
8. Write both an explicit and a recursive rule for 11,8,5,2, ….

9. The Virahanka–Fibonacci sequence starts 1,2,3,5,8, …, with each later term the sum of the previous two. Find V_6, V_7, V_8.

SECTION C

(3 questions × 3 marks = 9 marks)

10. The plotted points in figure are the first four terms of an AP. Find its common difference, an explicit rule and the point for the tenth term.



11. Find $25 + 26 + \cdots + 58$ using sums of natural numbers.

12. A GP has common ratio 2 and eighth term 192. Find its twelfth term, explaining how many multiplications are needed.

SECTION D

(1 application question × 3 marks = 3 marks)

13. A taxi charges a booking fee of ₹200 and ₹40 per kilometre. Write the fares for 1, 2 and 3 km, and find the greatest whole number of kilometres affordable with ₹700.