Mathematics — Ganita Manjari

Chapter 8 Test 4

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. When $1 + 2 + \cdots + n$ is added to its reverse, how many pairs are formed?

(A) $n - 1$ (B) n

(C) $2n$ (D) $n + 1$

2. If $T_n = 1 + 2 + \cdots + n$, then $T_n - T_{n-1}$ equals:

(A) 1 (B) $n - 1$

(C) n (D) $2n - 1$

3. The sum of the first n positive even numbers equals:

(A) $n(n + 1)$

(B) n^2

(C) $2n^2 + 1$

(D) $n(n - 1)$

4. Which expression equals $1 + 3 + 5 + \cdots + 19$?

(A) 19^2 (B) 9^2

(C) 20^2 (D) 10^2

5. How many integers occur from 14 through 32, including both endpoints?

(A) 18 (B) 19

(C) 20 (D) 46

SECTION B

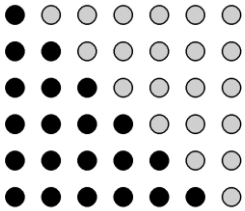
(4 questions × 2 marks = 8 marks)

6. A triangular arrangement contains 210 dots. Find its number of rows, given that row k contains k dots.

7. How many two-digit numbers are divisible by 3, and what is their sum?

8. The numbers 1 through 30 are added, but one number is accidentally omitted. The reported sum is 448. Find the omitted number.

9. Figure contains two equal triangular dot groups forming a rectangle. Use the picture to find $1 + 2 + \cdots + 6$ without adding term by term.



6 rows × 7 columns

SECTION C

(3 questions × 3 marks = 9 marks)

10. Derive a formula for $S_n = 1 + 2 + \cdots + n$ by writing the sum in forward and reverse order.

11. Find the smallest positive integer n for which $1 + 2 + \cdots + n > 1000$. Justify that your value is the smallest.

12. Find all ways to express 15 as a sum of at least two consecutive positive integers.

SECTION D

(1 application question × 3 marks = 3 marks)

13. A student follows the weekly saving pattern in figure. Find the amount saved in Week 12 and the total saved in the first 12 weeks.

Week	1	2	3	4
Saving (₹)	20	40	60	80