PRACTICE PAPER

ICSE CLASS 10 – MATHEMATICS

Chapter 10 : Arithmetic Progression

(Algebra)

Maximum Marks: 40 Time allowed: One and a half hours

1. *Answers to this Paper must be written on the paper provided separately.*
2. *You will not be allowed to write during the first 10 minutes. This time is to be spent in reading the question paper.*
3. ***The time given at the head of this Paper is the time allowed for writing the answers.***
4. *Attempt* ***all*** *questions from* ***Section A*** *and* ***any two*** *questions from* ***Section B****.*
5. ***All working, including rough work, must be clearly shown, and must be done on the same sheet as the rest of the answer.***
6. ***Omission of essential working will result in loss of marks.***
7. *The intended marks for questions or parts of questions are given in brackets [ ].*
8. *Notation: a = first term, d = common difference, t_n = nth term, S_n = sum of the first n terms of an A.P.*

SECTION A (20 Marks)

*(Attempt **all** questions from this Section.)*

Question 1

Choose the correct answers to the questions from the given options. [8]

(Do not copy the question, write the correct answers only.)

(i) Which of the following sequences is **not** an A.P.?

(a) 7, 11, 15, 19, …
(b) 5, 2, −1, −4, …
(c) 1, 3, 6, 10, …
(d) 0.5, 1, 1.5, 2, …

(ii) The 15th term of the A.P. 4, 9, 14, … is:

(a) 69
(b) 74
(c) 79
(d) 84

(iii) The nth term of an A.P. is 7 − 3n. Its common difference is:

(a) 3
(b) −3
(c) 7
(d) 4

(iv) **Assertion (A):** The sum of the first 10 natural numbers is 55.

Reason (R): The sum of the first n terms of an A.P. is $S_n = (n/2)[2a + (n - 1)d]$.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation for (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation for (A).

(v) The sum of the first 12 terms of the A.P. 3, 7, 11, … is:

(a) 276
(b) 300
(c) 288
(d) 312

(vi) If k, (2k + 1) and (4k − 1) are three consecutive terms of an A.P., then k is:

(a) 2
(b) 3
(c) 4
(d) 5

(vii) The number of terms in the A.P. 5, 8, 11, …, 53 is:

(a) 15
(b) 16
(c) 17
(d) 18

(viii) **Assertion (A):** If the sum of n terms of an A.P. is $S_n = n^2 + 2n$, then its second term is 8.

Reason (R): The nth term of an A.P. is $t_n = S_n - S_{n-1}$.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation for (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation for (A).

Question 2

(i) The 5th term of an A.P. is 17 and its 9th term is 29. Find the first term and the common difference. Hence find the 25th term. [4]

(ii) How many terms of the A.P. 18, 15, 12, … must be taken so that their sum is 63? Explain the double answer. [4]

(iii) Insert four arithmetic means between 6 and 31. [4]

SECTION B (20 Marks)

*(Attempt **any two** questions from this Section.)*

Question 3

(i) How many multiples of 6 lie between 100 and 400? [3]

(ii) The sum of three numbers in A.P. is 27 and their product is 693. Find the numbers. [3]

(iii) The sum of the first n terms of an A.P. is $4n^2 - n$. Find the A.P. and its 20th term. [4]

Question 4

(i) Which term of the A.P. 7, 13, 19, … is 60 more than its 12th term? [3]

(ii) The 9th term of an A.P. is zero. Prove that its 29th term is double its 19th term. [3]

(iii) Find the number of multiples of 7 lying between 100 and 500 and hence find their sum. [4]

Question 5

(i) The nth term of a sequence is 3n + 4. Show that it is an A.P. and find the sum of its first 20 terms. [3]

(ii) The first term of an A.P. is 6, its last term is 62 and the sum of all its terms is 510. Find the number of terms and the common difference. [3]

(iii) In an A.P. the sum of the first 7 terms is 63 and the sum of the next 7 terms is 161. Find the A.P. [4]

Question 6

(i) A girl saves ₹ 500 in the first month and increases her saving by ₹ 50 every month. How much does she save in the 24th month, and what are her total savings in 2 years? [3]

(ii) If a, b and c are in A.P., prove that $(a - c)^2 = 4(b^2 - ac)$. [3]

(iii) Solve the equation $2 + 5 + 8 + \ldots + x = 155$. [4]

— End of Question Paper —