

Chapter 5 Arithmetic Progression

UNIT TEST

Duration: 1 hour

Marks: 30

SECTION A

Each carry 1 mark

1. The first four terms of an AP whose first term is $3x + y$ and common difference is $x - y$ are
 - a) $3x + y, 2x + 2y, x + 3y, 4y$
 - b) $3x - y, 2x - 2y, x - 3y, 4y$
 - c) $3x + y, 2x, x - y, -2y$
 - d) $3x + y, 4x, 5x - y, 6x - 2y$
2. The common difference of an AP, the sum of whose n terms is S_n , is
 - a) $S_n - 2S_{n-1} + S_{n-2}$
 - b) $S_n - 2S_{n-1} - S_{n-2}$
 - c) $S_n + S_{n+1}$
 - d) $S_n - S_{n-1}$
3. If 9th term of an AP be zero, then the ratio of its 29th and 19th term is:
 - a) 1:2
 - b) 2:1
 - c) 1:3
 - d) 3:1
4. Assertion: The sum of the first n terms of an AP is given by $S_n = 3n^2 - 4n$. Then its n^{th} term $a_n = 6n - 7$.

Reason: n^{th} term of an AP, whose sum to n terms S_n , is given by $a_n = S_n - S_{n-1}$

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true but Reason (R) is false.
- (d) Assertion (A) is false but Reason (R) is true.

SECTION B

Each carry 2 marks

5. If 7 times the 7th term of an AP is equal to 11 times its 11th terms, then find its 18th term.
6. Find the number of natural numbers between 101 and 999 which are divisible by both 2 and 5.
7. Find x , if $3x^2 + 4x + 4, 2x^2 + 3x + 3$ and $3x + 8$ are three consecutive terms are in AP such that $x \in N$.

SECTION C

Each carry 3 marks

8. Divide 56 into four parts which are in AP such that the ratio of product of extremes to the product of means is 5: 6.
9. The sum of first six term of an A.P is 42. The ratio of the 10th term to its 30th term is 1:3. Calculate the first and 13th term of the A.P.

SECTION D

Each carry 5 marks

10. If S_n denote the sum of the first n terms of an A.P., prove that $S_{30} = 3(S_{20} - S_{10})$.
11. If the sum of p terms of an A.P. is q and the sum of q terms is p , show that the sum of $(p + q)$ terms is $-(p + q)$.

SECTION E

12. Meena's mother start a new shoe shop. To display the shoes, she put 3 pairs of shoes in 1st row, 5 pairs in 2nd row, 7 pairs in 3rd row and so on.

On the basis of above information, answer the following questions

- (i) Find the difference of pairs of shoes in 17th row and 10th row.
- (ii) On next day, she arranges x pairs of shoes in 15th row, then find x .
- (iii) If She puts a total of 120 pairs of shoes, then find the number of rows required

(Or)

- (iv) If She puts a total of 120 pairs of shoes, then how many shoes will be there in last row?

UNIT TEST

1. d) $3x + y, 4x, 5x - y, 6x - 2y$

2. a) $S_n - 2S_{n-1} + S_{n-2}$

3. b) 2:1

4. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

5. 0

6. 89

7. 4

8. 8, 12, 16, 20

9. 2 and 26

10. Proof

11. Proof

12. i) 14 ii) 31 iii) 10 (Or) 2