SHIKSHA CLASSES

Subject : Algebra | **Question Paper** | **Total Marks** : 20
Class : X | **3. Arithmetic Progression** | **Time** : 1 Hour

Q. 1 A) Choose the correct alternatives of the following questions. **2**

1) In an A. P. the common difference denoted by 'd' is.....
   a) Positive b) Negative c) Zero d) All the above.

2) The fifth term of an A. P. is

$\frac{1}{2}, \frac{1}{6}, \frac{1}{18}, \frac{1}{54}$ _ _ _ _ _ _ _

a) $\frac{1}{160}$ b) $\frac{1}{162}$ c) $\frac{1}{165}$ d) $\frac{1}{166}$

B) Define sequence with example. **1**

Q. 2 : A) Attempt any ONE of the following. **2**

1) Write whether the following sequences is in A. P. ? If it is in A. P. find the common difference. 2, 4, 6, 8, ----------

2) Which term of the following A. P. is 560? 2, 11, 20, 29 ----------

Given AP is

2, 11, 20, 29, ...

$\therefore$ n^{th} term of this A.P. is 560

$t_n = a + (n - 1) \times d$

$\square = 2 + (n - 1) \times \square$

$\therefore$ $560 = 2 + 9n - 9$

$\therefore$ $560 = 2 - 9 + 9n$

$\therefore$ $560 = -7 + 9n$

$\therefore$ $567 = 9n$

$\therefore$ $n = \frac{567}{9}$

$\therefore$ $n = \square$

$\therefore$ 83^{rd} term of A.P. is $\square$

Q. 2 B) Attempt any ONE of the following. **2**

1) The first term 'a' and common difference 'd' are given. Find first four terms of A.P.
   $a = -3$, $d = 4$.

2) Find t_n for following A.P.

3, 8, 13, 18, ...

Q. 3 : A) Attempt any ONE of the following. **3**

1) Find the sum of the first 'n' odd natural numbers. Hence find $1 + 3 + 5 + \text{—} + 101$.

2) Sum of first 55 terms in an A. P. is 3300, Find it's 28^{th} term.

$S_n = S_{55} = 3300$

$\therefore \quad S_n = \frac{n}{2}[2a + (n-1) \times d]$

$= \frac{\square}{2}[2a + \square \times d]$

$= \frac{55}{2}[2a + 54d]$

$\therefore \quad S_{55} = \frac{55}{2}[2a + 54d]$

$\therefore \quad \square = \frac{55}{2} \times 2[a + 27d]$

$\therefore \quad 3300 = 55\,(a + 27d)$

$\therefore \quad a + 27d = \square$ ..... (1)

$\therefore$ We have to find t_{28}

$t_n = a + (n-1) \times d$

$\therefore \quad t_{28} = a + (28-1) \times d$

$t_{28} = a + 27d$

From eq^n (1)

$\therefore \quad a + 27d = \square$

$\therefore \quad t_{28} = \square$

$\therefore$ The 28^{th} term is $\square$

Q. 3 B) Attempt any ONE of the following. **3**

1) The taxi fare is ₹ 14 for the first kilometer and ₹ 2 for each additional kilometer. What will be the fare for 10 kilometers?

2) Check whether 301 is in sequence.
5, 11, 17, 23, ... ?

Q. 4 : Attempt any ONE of the following. **4**

1) Find four consecutive terms in an A. P. whose sum is 12 and sum of 3^{rd} and 4^{th} term is 14.

2) The 10^{th} term and 18^{th} term of an A. P. are 25 and 41 respectively then find 38^{th} term of that A. P. similarly if n^{th} term is 99. Find the value of n.

Q. 5 : Attempt any ONE of the following. **3**

1) How many three digit Natural numbers are divisible by four?

2) Find three consecutive terms in an A. P. whose sum is -3 and the product of their cubes is 512.

***