SHIKSHA CLASSES

Sub. : Maths	**Question Paper**	**Total Marks : 30**
Std. X (CBSE)	**5 : Arithmetic Progression**	**Time : 1 hour**

Section : A (Each 1 Mark)

Multiple choice Questions (MCQs).

Q.1 : In an Arithmetic Progression, if $a = 28$, $d = -4$, $n = 7$, then a_n is:

     a) 4   b) 5   c) 3   d) 7

Q.2 : 11th term of the A.P. $-3, -\dfrac{1}{2}, 2 \ldots$ is

     a) 28   b) 22   c) -38 d) -48

Q.3 : The missing terms in AP: __, 13, __, 3 are:

     a) 11 and 9   b) 17 and 9

     c) 18 and 8   d) 18 and 9

Q.4 : Which term of the A.P. 3, 8, 13, 18, … is 78?

     a) 12th   b) 13th   c) 15th   d) 16th

Q.5 : The first four terms of an AP, whose first term is -2 and the common difference is -2, are

     a) $-2, 0, 2, 4$ b) $-2, 4, -8, 16$

     c) $-2, -4, -6, -8$ d) $-2, -4, -8, -16$

Q.6 : If the common difference of an AP is 5, then what is $a_{18} - a_{13}$?

     a) 5   b) 20   c) 25   d) 30

Q.7 : The middle most term (s) of the AP: $-11, -7, -3, ..., 49$ is:

     a) 18, 20   b) 19, 23   c) 17, 21   d) 23, 25

Q.8 : If 7 times the 7th term of an AP is equal to 11 times its 11th term, then its 18th term will be

     a) 7   b) 11   c) 18   d) 0

Q.9 : Two APs have the same common difference. The first term of one of these is -1 and that of the other is -8. Then the difference between their 4th terms is

     a) -1 b) -8 c) 7   d) -9

For question number 10 to 11 two statements are given one labeled Assertion and other labeled Reason select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below

a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

c) If Assertion is correct but Reason is incorrect.

d) If Assertion is incorrect but Reason is correct.

Q.10 : **Assertion :** If S_n is the sum of the first n terms of an A.P., then its nth term a_n is given by $a_n = S_n - S_{n-1}$.

Reason : The 10th term of the A.P. 5, 8, 11, 14, ………………. is 35.

Q.11 : **Assertion :** The sum of the series with the nth term, $t_n = (9 - 5n)$ is 465, when no. of terms $n = 15$.

Reason : Given series is in A.P. and sum of n terms of an A.P. is

$$S_n = \frac{n}{2}\left[2a + (n-1)d\right]$$

Section : B (Each 2 Marks)

Q.12 : The sum of 5th and 9th terms of an AP is 72 and the sum of 7th and 12th terms is 97, find AP.

Q.13 : How many numbers of two digits are divisible by 7 ?

OR

If pth term of an AP is q and the qth term is p, prove that its nth term is $(p + q - n)$.

Section : C (Each 3 Marks)

Q.14 : The sum of first six terms of an arithmetic progression is 42. The ratio of its 10th term to its 30th term is 1:3. Calculate the first and the thirteenth term of the AP.

OR

In a flower bed there are 23 rose plants in the first row, twenty one in the second row, nineteen in the third row and so on. There are five plants in the last row. How many rows are there in the flower bed?

Q.15 : If pth, qth and rth terms of an AP. are a, b and c respectively then prove that

$a(q - r) + b(r - p) + c(p - q) = 0.$

Section - D(Each 5 Marks)

Q.16 : The sums of first n terms of three arithmetic progressions are S_1, S_2 and S_3 respectively. The first term of each A.P. is 1 and their common difference are 1, 2 and 3 respectively. Prove that $S_1 + S_3 = 2S_2$.

OR

The ratio of the sums of m and n terms of an AP is $m^2 : n^2$. Show that the ratio of mth and nth terms is $(2m - 1) : (2n - 1)$.

Section : E

Q.17 : **Case study :**

Jaspal takes a loan from a bank for his car.Jaspal Singh repays his total loan of 118000 by paying every month starting with the first installment of 1000. If he increases the installment by 100 every month.

i) If the given problem is based on AP, then what is the first term and common difference?   1

ii) In how many months the loan will be cleared?   2

OR

Find the amount paid by him in 30 installments.

ii) Find the amount paid by him in 20th installment.   1

❄ ❄ ❄