

**National Institute of Open Schooling**  
**Senior Secondary Course: Mathematics**  
**Lesson 6: Sequences and Series**  
**Worksheet-6**

1. Write any five terms of the sequences whose  $n^{\text{th}}$  terms are as:
  - i.  $a_n = \frac{2n}{n+1}, \text{ for } n \in N$
  - ii.  $a_n = (-1)^{n+1} 7^{n-1}, \text{ for } n \in N$
2. Develop any two Arithmetic Progressions (APs) whose common differences are 5 and -3 respectively. Find the 5<sup>th</sup> and 10<sup>th</sup> terms of Arithmetic Progression.
3. Find the sum of 15<sup>th</sup> and 20<sup>th</sup> terms of the sequence defines by
 
$$T_n = n(n+3), \text{ if } n \text{ is even number}$$

$$T_n = \frac{3n}{n^2 + 1}, \text{ if } n \text{ is odd number}$$
4. In an Arithmetic Progression, the first term is 4 and the sum of the first five terms is one – fourth of the next five terms. Find out 10<sup>th</sup> terms of the Arithmetic Progression.
5. Insert five Arithmetic means between 7 and 25. Find the sum of terms of the sequence.
6. The income of a person is Rs.5, 00,000 in the first year and for the next 15 years the person receives an increment of Rs. 5,000 per year. Find the total amount to be received in 16 years.
7. If  $\frac{a^n + b^n}{a^{n-1} + b^{n-1}}$  is the Arithmetic mean between ‘a’ and ‘b’, find the value of n.
8. In a Geometric Series  $1+4+6+64+\dots\dots\dots$  , find out the number of terms that will make the sum 5461.
9. The sum of first three terms of a Geometric Progression (G.P) is 16 and the sum of the next three terms is 128. Find the sum of 5<sup>th</sup> and 10<sup>th</sup> terms of the Geometric Progression.
10. Write any one series of natural numbers and find its sum to n terms.