**CLASS –XI** **SUBJECT – MATHEMATICS**
**ASSIGNMENT- 8** **TOPIC–SEQUENCES AND SERIES**

Q1. The first term of a G.P. is 1. The sum of third and fifth terms is 90. Find the common ratio of the G.P.

Q2. The sum of four numbers is G.P. is 60 and the A.M. between first and the last is 18. Find the numbers.

Q3. Find the sum of n terms of the series:- (a) $3 + 15 + 35 + 63 + \ldots\ldots\ldots\ldots..$
(b) $1 + 3 + 6 + 10 + 15 + \ldots\ldots\ldots\ldots..$ (c) $2 + 5 + 10 + 17 + 26 + \ldots\ldots\ldots\ldots$

Q4. The product of three numbers in G.P. is 216, but sum of their product in pairs is 156. Find the numbers.

Q5. If A.M. and G.M. of roots of a quadratic equation are 8 and 5 respectively, then obtain the quadratic equation.

Q6. Find the sum of 50 terms of the sequence:- $.7 + .77 + .777 + .7777 + \ldots\ldots\ldots\ldots..$

Q7. Find the sum of the series:-
(a) $1.2^2 + 3.3^2 + 5.4^2 + 7.5^2 + \ldots\ldots\ldots..$ to n terms
(b) $\frac{1^3}{1} + \frac{1^3+2^3}{2} + \frac{1^3+2^3+3^3}{3} + \ldots\ldots\ldots.$ to n terms
(c) $\left(1\frac{1}{2}\right)^2 \left(2\frac{1}{2}\right)^2 \left(3\frac{1}{2}\right)^2 \ldots\ldots\ldots.$ + n terms
(d) $1^2 + 4^2 + 7^2 + \ldots\ldots\ldots\ldots\ldots$ n terms

Q8. Find the sum of the following series whose nth term is given:-
(i) $n^2 + n + 1$ (ii) $n^3 - 4^n$ (iii) $3n^2 + n$

Q9. The sum of first three terms of a G.P. is to the sum of the first six terms is 125:152. Find the common ratio of the G.P.

Q10. Insert 5 geometric means between 576 and 9.

Q11. How many terms of the series $\sqrt{3} + 3 + 3\sqrt{3}$ will make the sum $39 + 13\sqrt{3}$ ?

Q12. Find the sum of n terms of:-
(i) $\frac{1}{2.5} + \frac{1}{5.8} + \frac{1}{8.11} + \ldots\ldots\ldots.$
(ii) $\frac{1}{2.4} + \frac{1}{4.6} + \frac{1}{6.8} + \ldots\ldots\ldots.$

Q13. Find the sum of 32 terms of an A.P. whose third term is 1 and the $6^{th}$ term is 11.

Q14. How many terms are there in an A.P. whose first and fifth term are -14 and 2 respectively and the sum of terms is 40?

Q15. Determine the common difference of an A.P. whose sum of n terms is $an^2 + bn$.

Q16. Solve the equation:- $1 + 6 + 11 + 16 + \ldots\ldots\ldots\ldots = 148$

Q17. Find the sum of 2 n terms of series $1^2 - 2^2 + 3^2 - 4^2 + 5^2 - 6^2 - \ldots\ldots\ldots\ldots..$

Q18. Find the sum of the series $1 + 3 - 5 + 7 + 9 - 11 + 13 + 15 - 17 + \ldots\ldots\ldots\ldots$ to 3n terms.

Q19. If ratio of the sum of p-terms and q-terms of an A.P. is $p^2 : q^2$. Prove that the common difference is twice the first term:-

Q20. Find the value of:- (i) $2^3 + 4^3 + 6^3 + \ldots\ldots\ldots (50)^3$ (ii) $4^2 + 6^2 + 8^2 + \ldots\ldots\ldots (30)^2$

Q21 Find the sum to infinity

a) $1 - 1/2 + 1/4 - 1/8$ _ _ _ _ _

b) $1/7 + 1/49 + 1/343$ _ _ _ _ _

**Answers to the above Assignment no 7.**

Q1 $r = \pm 3$

Q2 2,4,8,16 or 16,8,4,2.

Q3 a) $n( 4n^2 + 6n - 1 ) / 3$

b) $n( n+ 1 ) (n + 2 ) / 6$

c) $n (2n^2 + 3n + 7 ) /6$

Q4 18, 6, 2 or 2, 6, 18.

Q5 $x^2 - 16 x + 25 = 0$

Q6 $\frac{7}{9} \{ n - \frac{1}{9} ( 1 - ( 0.1 )^n ) \}$

Q7 a) $n ( 3n^3 + 10 n^2 + 9n - 4 ) /6$

b) $n ( n + 1) ( n + 2) (3n + 5 ) / 48$

c) $n ( n+ 2) ( 2n + 5) / 4$

d) $n ( 4n^2 + 12 n + 1 ) / 12$

Q9 $r = 3/5$

Q10 288 , 144 , 72, 36 ,18

Q11 $n = 6$

Q12 a) $n / (2 (3n + 2))$

b) $n / (4 (n +1))$

Q13 1472

Q14 $n =10$

Q15 2a

Q16 $n =8$

Q17 $-n ( 2n +1)$

Q18 $3n (2n -1 ) /2$

Q20 a) 84500

b) 4956

Q21 a) 2/3

b) 7/6