J.E.E. Main/ Advanced Foundation - XI Maths Worksheet

Time: 60 min **Chapter#9. Sequences and Series** **Full Marks:**

Q.1	Insert 6 numbers between – 6 and 29 such that the resulting sequence is an A.P. (3 marks)
Q.2	Find the sum of the series : 3 + 8 + 13 + ... + 33
Q.3	Find the sum of odd integer from 1 to 21.
Q.4	Find the sum to n terms of the A.P., whose k^{th} term is 5k + 1. (3 marks)
Q.5	If $A_1, A_2, A_3, \ldots, A_n$ are n arithmetic means between a and b. Find the common difference between the terms. (2 marks)
Q.6	If the sum of n terms of an A.P. is $2mn + pn^2$, where m and p are constants, find the common difference. (3 marks)
Q.7	The ratio of the sums of m and n terms of an A.P. is $m^2 : n^2$. Show that the ratio of m^{th} and n^{th} term is (2m – 1): (2n – 1). (3 marks)
Q.8	Find the sum to n terms of the A.P., whose k^{th} term is 5k + 1. (3 marks)
Q.9	Show that the sequence $n^2 - 3$ is not an A.P. (1 mark)
Q.10	Find the sum to n terms of the series 1 × 2 + 2 × 3 + 3 × 4 + 4 × 5 + … (3 marks)
Q.11	What is the value of : $1^2+2^2+3^2+$ .....$+8^2$?
Q.12	Find the sum of the series : 2 + 6 + 18 + ... + 486
Q.13	Find the value of n so that $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ may be the geometric mean between a and b. (3 marks)
Q.14	What is the 20th term of the sequence, defined by $a_n = (n-1)(2-n)(3+n)$?
Q.15	Write the 16^{th} term of the sequence defined by $a_n = n^2 - n+1$. (1 mark)
Q.16	**Find the value of n so that $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ may be the geometric mean between a and b.**
Q.17	The number of bacteria in a certain culture doubles every hour. If there were 30 bacteria present in the culture originally, how many bacteria will be present at the end of 2^{nd} hour, 4^{th} hour and n^{th} hour? (3 marks)
Q.18	If the p^{th}, q^{th} and r^{th} terms of a G.P. are a, b and c, respectively. Prove that a^{q-r}, b^{r-p} and c^{p-q} = 1. (3 marks)
Q.19	If the fourth term of a G.P. is 3. Find the product of first 7 terms. (3 marks)
Q.20	Find the arithmetic mean of 6 and 12. (1 mark)