Sequence and Series

SECTION A: (1 MARK)

1.	Find the next two terms of the A.P given by: $2x - 3y$, $x - 4y$, $-5y$, $-x - 6y$, ……
2.	How many terms are there in the sequence 4, 10, 16, 22, … 208?
3.	Insert 4 arithmetic means between 4 and 29.
4.	Solve for x : $2 + 5 + 8 + 11 + … + x = 345$
5.	If the sum of n terms of an A.P. is given by $S_n = (3n^2 + 4n)$ and its mth term is 49, then find m.
6.	Find the G.P. whose 4th and 7th terms are $\frac{1}{18}$ and $\frac{-1}{486}$ respectively.

SECTION B: (4 MARKS)

7.	Find the sum of first 24 terms of the A.P., if $a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24} = 225$
8.	The ratio of the sums of n terms of two A.Ps is $(7n + 1) : (4n + 27)$, find the ratio of their 11th terms.
9.	If a, b, c are in A.P, prove that $(b+c)^2 - a^2$, $(c+a)^2 - b^2$, $(a+b)^2 - c^2$ are also in A.P.
10.	The product of 3 numbers in an A.P is 224 and the largest number is 7 times the smallest. Find the numbers.
11.	If the roots of the equation $(b-c) x^2 + (c-a) x + (a - b) = 0$ are equal, then show that a, b, c are in A.P.
12.	If the first term of an A.P is 2 and the sum of first 5 terms is equal to one-fourth of the sum of the next 5 terms, find the sum of first 30 terms.
13.	The sum of first three terms of a G.P is $\frac{13}{12}$ and their product is $- 1$. Find the G.P.
14.	The ratio of the sum of the first three terms is to that of first 6 terms of a G.P is 125 : 152. Find the common ratio.
15.	If two geometric means g_1 and g_2 and one arithmetic mean A be inserted between two numbers, then show that $2A = \frac{g_1^2}{g_2} + \frac{g_2^2}{g_1}$
16.	Find the sum to n terms of the series: $\frac{1}{2 \times 5} + \frac{1}{5 \times 8} + \frac{1}{8 \times 11} + \ldots.$
17.	If $\frac{1}{x+y}$, $\frac{1}{2y}$, $\frac{1}{y+z}$ are in A.P. Prove that x , y , z are in G.P.
18.	If a, b, c are in A.P; b, c, d are in G.P and $\frac{1}{c}, \frac{1}{d}, \frac{1}{e}$ are in A.P. Prove that a, c, e are in G.P
19.	Find the sum of all integers between 100 and 300 which are divisible by 2 or 5.
20.	Find the sum to n terms of the series: $0.4 + 0.44 + 0.444 + …$