Sequence and Series

SECTION A: (1 MARK)

1.	Which term of the G.P 18 , -12 , 8 , … is $\frac{512}{729}$?	(9^{th} term)
2.	Find the sum to infinity: $1 + \frac{3}{5} + \frac{9}{25} + \ldots\ldots$	5/2
3.	Insert 4 geometric means between 6 and 192.	12, 24, 48,96
4.	Find the G.P whose 5^{th} and 8^{th} terms are 80 and 640 respectively.	5, 10, 20, 40,….
5.	If a , b , c are in A.P, then find the value of $\frac{(a-c)^2}{b^2-ac}$	4
6.	Find the sum of the series $2^2 + 4^2 + 6^2 + \ldots$ to n terms.	2n(n+1)(2n+1)/3
7.	The third term of a G.P. is 3. Find the product of first 5 terms of the G.P.	243
8	What is the 20^{th} term of the sequence defined by $a_n = (n-1)(n-2)(3+n)$	7866

SECTION B: (4 MARKS)

9.	Find the sum of first n terms of the series: 1 + (1+2) + (1+2+3) + ……	n(n+1)(n+2)/6
10.	Find the sum of the first n terms of the series 5 + 7 + 13 + 31 + 85 + …….	$(3^n -1)/2+4n$
11.	The product of first three terms of a G.P. is 1000. If we add 6 to its second term and 7 to its third term, the three terms form an A.P. Find the terms of the G.P.	5, 10, 20; 20, 10, 5
12.	The first term of a G.P is 1 and the sum of the third and fifth term is 90. Find the common ratio and 10^{th} term of the G.P.	r =± 3; ± 729
13.	Find the sum of integers from 1 to 100 that are divisible by 2 or 5.	3050
14.	If $\frac{a^n + b^n}{a^{n-1} + b^{n-1}}$ is the A.M between a and b, then find the value of n.	n=1
15.	If the first and n^{th} term of a G.P are a and b respectively, and if P is the product of n terms, prove that $P^2 = (ab)^n$.	
16.	Find the sum to n terms of the series: $3 + 15 + 35 + 63 + \cdots$	$n(4n^2 +6n-1)/3$

17.	F ind the sum to n terms of the series $\frac{1^3}{1} + \frac{1^3+2^3}{2} + \frac{1^3+2^3+3^3}{3} + \cdots$	n(n+1)(n+2)(3n+5)/48
18.	The inventor of the chess board suggested a reward of one grain of wheat for the first square, 2 grains for the second, 4 grains for the third and so on, doubling the amount of the grains for subsequent squares. How many grains would have to be given to the inventor? (There are 64 squares in the chess board)	$2^{64} - 1$
19.	Three numbers are in A.P and their sum is 15. If 1 , 3, 9 be added to them respectively, they form a G.P, find the numbers.	3, 5, 7; 15, 5, -5
20.	If A.M. and G.M. of two positive numbers a and b are 20 and 18 respectively, find the numbers.	32, 8