




CHAPTER-9
SEQUENCES & SERIES
01 MARK TYPE QUESTIONS

Q. NO	QUESTION	MARK
1.	If the 7th term of HP is $\frac{1}{10}$ and the 12th term is $\frac{1}{25}$, then the 20th term is a) $\frac{1}{41}$ b) $\frac{1}{45}$ c) $\frac{1}{49}$ d) $\frac{1}{37}$	1
2.	If the sum of first n natural numbers is $\frac{1}{78}$ times the sum of their cubes, then the value of n is a)11 b)12 c)13 d)14	1
3.	The first two terms of a geometric progression add up to 12. The sum of the third and the fourth terms is 48. If terms of the geometric progression are alternately positive and negative, then the first term is a) 4 b) -4 c) -12 d) 12	1
4.	If a, b, c are in A.P., $b - a$, $c - b$ and a are in G.P., then a : b : c is a) 1 : 2 : 3 b) 1 : 3 : 5 c) 2 : 3 : 4 d) 1 : 2 : 4	1
5.	The HM of two numbers is 4. Their AM is A and GM is G. If $2A + G^2 = 27$, then A is equal to a) 9 b) $\frac{9}{2}$ c) 18 d) 27	1
6.	Find the 12th term of a G.P. whose 8th term is 192 and the common ratio is 2?	1
7.	Given a G.P. with $a=729$ and 7th term=64, determine S_7 ?	1
8.	Find the sum of 20 terms of an A.P, whose first term is 3 and last term is 57?	1
9.	If $a_n = \frac{n^2-1}{2}$ find first four terms?	1
10.	Which term of the sequence $\sqrt{2}, 2, 2\sqrt{2}, \dots$ is 256?	1
11.	How many ancestors i.e. parents, grandparents, great-grand parents and so on does a person has during the ten generations preceding his own. (a) 1024 (b) 2066 (c) 2046 (d) 1566	1
12.	G.M. of two numbers can't be calculated if (a) Both numbers are 0 (b) Both numbers are negative (c) Both numbers are positive (d) one number is positive and the other number is negative	1
13.	If the sum of first two terms of an infinite G.P. is 1 and every term is twice the sum of all the successive terms, then the first term is (a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{3}{4}$ (d) $\frac{1}{4}$	1
14.	$9^{\frac{1}{3}}, 9^{\frac{1}{9}}, 9^{\frac{1}{27}}, \dots, \infty$ is (a) 1 (b) 3 (c) 9 (d) 27	1
15.	In a G.P. first term is $\frac{3}{4}$, common ratio is 2 and the last term is 384, then the number of terms of G.P. is (a) 8 (b) 9 (c) 10 (d) 11	1
16.	If the first term of a G.P. is 27 and 8 th term is $\frac{1}{81}$, then the sum of its first ten terms is	1

	<p>(a) $\frac{27}{2} \left(1 - \frac{1}{3^{10}}\right)$ (b) $\frac{81}{2} \left(\frac{1}{3^{10}} - 1\right)$</p> <p>(c) $\frac{27}{2} \left(\frac{1}{3^{10}} - 1\right)$ (d) $\frac{81}{2} \left(1 - \frac{1}{3^{10}}\right)$</p>	
17.	The product of 5 terms of G.P. whose third term is 2 is (a) 5^2 (b) 2^5 (c) 3^2 (d) 3^5	1
18.	Find the 13 th and 14 th terms of the sequence defined by $a_n = \begin{cases} n^2, & \text{when } n \text{ is even} \\ n^2 + 1, & \text{when } n \text{ is odd} \end{cases}$ <p>(a) 170, 196 (b) 169, 196 (c) 13, 14 (d) 170, 197</p>	1
19.	<p>Statement I: If A and G respectively are A.M. and G. M. between two positive numbers, then the numbers are $A \pm \sqrt{A^2 - G^2}$</p> <p>Statement II: If A and G respectively are A. M. and G.M. between two positive numbers, then the numbers are the roots of quadratic equations $x^2 - 2Ax + G^2 = 0$</p> <p>(a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.</p>	1
20.	How many ancestors i.e. parents, grandparents, great- grand parents and so on does a person has during the ten generations preceding his own. (a) 1024 (b) 2066 (c) 2046 (d) 1566	1
21.	The fourth, seventh and tenth terms of a G.P. are p, q, r respectively, then : (a) $p^2 = q^2 + r^2$ (b) $q^2 = pr$ (c) $p^2 = qr$ (d) $pqr + pq + 1 = 0$	1
22.	The 20 th term of the sequence defined by $a_n = (n-1)(2-n)(3+n)$ is (a) 7866 (b) 786 (c) - 7866 (d) none of these	1
23.	The product of 5 terms of a G.P. whose 3 rd term is 2 is a) 5^2 b) 2^5 c) 3^3 d) 3^5	1
24.	The first term of a G.P. is 2 and the sum to infinity is 6. Then the common ratio is a) $1/2$ b) $1/3$ c) $1/4$ d) $2/3$	1
25.	$9^{1/3}, 9^{1/9}, 9^{1/27}, \dots$ to ∞ equals a) 1 b) 2 c) 3 d) 9	1
26.	<p>Statement –I: Sum of the series $- 3/4, - 3/16, - 3/64, \dots$ is $- 2/3$.</p> <p>Statement –II: $S = a/(1-r)$ denotes the sum of infinite G.P. with first term a and common ratio r.</p> <p>a) Both the statement I and Statement II are true and statement II is the correct explanation of Statement I b) Both the statement I and Statement II are true and statement II is not the correct explanation of Statement I c) Statement I is true but Statement II is false d) Statement I is false but Statement II is true</p>	1
27.	<p>Statement I: Four terms of the G.P. $3, 3^2, 3^3, \dots$ are needed to give the sum 120.</p> <p>Statement II: $T_n = ar^{n-1}$ is nth terms of G.P. whose first term is a and common ratio r.</p> <p>a) Both the statement I and Statement II are true and statement II is the correct explanation of Statement I b) Both the statement I and Statement II are true and statement II is not the correct explanation of Statement I c) Statement I is true but Statement II is false d) Statement I is false but Statement II is true</p>	1
28.	Geometric mean between 1 and 256 is: a) 8 b) 16 c) 14 d) 12	1

29.	For a G.P. the ratio of the 7th and the third terms is 16. The common ratio is: a) 2 b) ± 2 c) 4 d) ± 4	1
30.	If n^{th} term of a sequence is $a_n = (-1)^{n-1} n^3$, then its 9 th term is: a) 105 b) 177 c) 324 d) 729	1
31.	If 7 th and 13 th terms of an A.P. be 34 & 64 respectively, Then its 18 th term is (a) 87 (b) 88 (c) 89 (d) 90	1
32.	If a, b, c are in A.P. and x, y, z are in G.P., then the value of $x^{b-c} y^{c-a} z^{a-b}$ is (a) 0 (b) 1 (c) xyz (d) $x^a y^b z^c$	1
33.	If the sum of first n even natural numbers is equal to K- times the sum of first n odd natural numbers, then K is (a) $\frac{1}{n}$ (b) $\frac{n-1}{n}$ (c) $\frac{n+1}{2n}$ (d) $\frac{n+1}{n}$	1
34.	Two numbers whose A.M. is 34 and G.M. is 16 are (a) 64 & 4 (b) 25 & 4 (c) 68 & 60 (d) 25 & 64	1
35.	Consider the following statements: Assertion (A): If 5 th and 8 th term of a G.P. be 48 & 384 respectively then the common ratio of G.P. is 2. Reason (R): If 18, x, 14 are in A.P. then $x = 16$. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
36.	The first three of four given numbers are in G.P. and their last three are in A.P. with common difference 6. If first and fourth numbers are equal, then the first number is: (a) 2 (b) 4 (c) 6 (d) 8	1
37.	If x, 2y, 3z are in A.P., where the distinct numbers x, y, z are in G.P. then the common ratio of the G.P is: (a) 3 (b) $\frac{1}{3}$ (c) 2 (d) $\frac{1}{2}$	1

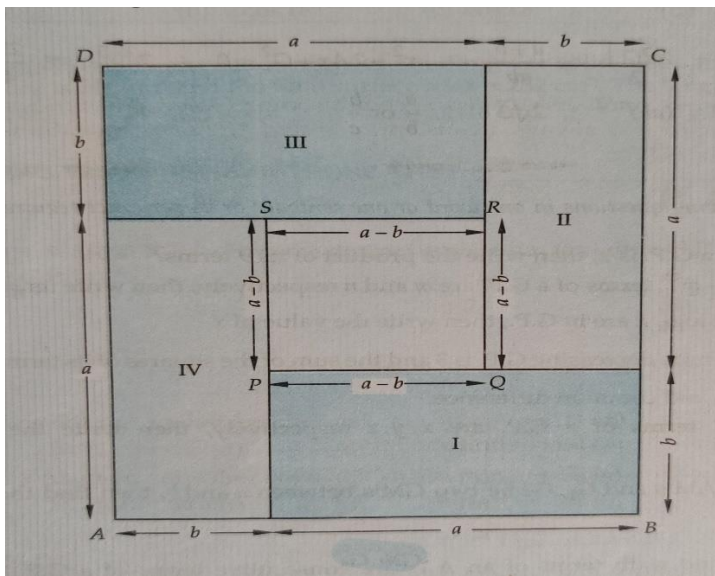
38.	<p>150 workers were engaged to finish a job in a certain number of days. 4 workers dropped out on second day, 4 more workers dropped out on third day and so on. It took 8 more days to finish the work.</p>  <p>The number of workers on the third day are: (a) 140 (b) 141 (c) 142 (d) 143</p>	1
39.	<p>In a cricket tournament 16 school teams participated. A sum of Rs. 8000 is to be awarded among themselves as prize money. If the last placed team is awarded Rs. 275 in prize money and the award increases by the same amount for successive finishing places, how much amount will the first-place team receive?</p> <p>a) ₹ 500 b) ₹ 725 c) ₹ 1050 d) ₹ 750</p>	1
40.	<p>In a potato race 20 potatoes are placed in a line at intervals of 4 m with the first potato 24 m from the starting point. A contestant is required to bring the potatoes back to the starting place one at a time. How far would he run in bringing back all the potatoes?</p> <p>a) 3500 m (b) 3120 m (c) 2600 m (d) 2480 m</p>	1
41.	<p>If a, b, c are in G.P. then $\frac{1}{\log_a m}, \frac{1}{\log_b m}, \frac{1}{\log_c m}$ are in</p> <p>(a) G.P. (b) H.P (c) A.P (d) none of these</p>	1
42.	<p>Assertion: If a, b, c are in A.P. then $b + c, c + a, a + b$ are in A.P. Reason: If a, b, c are in A.P. Then $10^a, 10^b, 10^c$ are in G.P.</p> <p>(a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.</p>	1
43.	<p>The Product of $3, 3^{1/3}, 3^{1/9}, 3^{1/27} \dots$ to ∞ is equal to</p>	1

	(a) $3^{3/2}$ (b) $3^{1/3}$ (c) 3 (d) $3^{4/3}$	
44.	 <p>The cost of constructing 500 feet of road is as follows: Rs.22 for the first foot and Rs.2 for each additional foot. Find the cost of building the last foot of the road.</p> <p>(a) 2010 (b) 1020 (c) 1010 (d) 2020</p>	1
45.	 <p>Mr. S. Roy borrowed Rs.32760 without interest on the condition that he would repay it in 12 monthly installments and each installment from the second installment would be twice the amount of the previous installment. Determine the amount of the second installment.</p> <p>(a) 10 (b) 14 (c) 16 (d) 20</p>	1
46.	<p>The petals of sunflower are in the Fibonacci sequence. Which of the following sequences are Fibonacci sequence</p> <p>(a) 1, 2, 4, 8, 16, 32, ... (b) 1, 4, 9, 16, 25, ... (c) 0, 1, 1, 2, 3, 5, 8, 13, ... (d) 0, 1, 2, 2, 4, 8, 32, 256, ...</p>	1
47.	<p>If a and b are distinct real numbers then which of the following relations between Arithmetic and geometric mean are true?</p> <p>(a) $A.M. \geq G.M.$ (b) $A.M. > G.M.$ (c) $A.M. \leq G.M.$ (d) $A.M. < G.M.$</p>	1
48.	<p>Rohan wants to insert three arithmetic means between 3 and 27. Which of the following sets of numbers will be the three possible numbers?</p> <p>(a) 6, 10, 14 (b) 7, 11, 15</p>	1

	(c) 8, 12, 16 (d) None of these	
49.	Let two numbers have arithmetic mean 9 and geometric mean 4. Then these numbers are roots of the quadratic equation. (a) $x^2-18x+16=0$ (b) $x^2-18x-16=0$ (c) $x^2+18x-16=0$ (d) $x^2+18x+16=0$	1
50.	Which of the following number you should add to each of the numbers 2, 14 and 62 so that the numbers may be in G.P. is (a) 1 (b) 3 (c) 2 (d) 4	1
51.	If in an infinite G.P., first term is equal to 10 times the sum of all successive terms then its common ratio is (a) $1/10$ (b) $1/9$ (c) $1/20$ (d) $1/11$	1
52.	If there are 10 cards placed on a table, a number is written on each card and are in G.P. If 2 is the number written on the 5 th card, then the product of numbers written on first 9 cards is (a) 64 (b) 512 (c) 128 (d) 256	1
53.	Which of the following is geometric mean between 3 and 27? (a) -9 (b) 9 (c) 15 (d) -15	1
54.	The 5 th term of a sequence whose nth term is given by $a_n = 1-4n^2 $ is? (a) 99 (b) -19 (c) -99 (d) 9.9	1
55.	ASSERTION (A): For $x = \pm 1$, the numbers $\frac{-2}{7}, x, \frac{-7}{2}$ REASON (R): Three numbers are in G.P. if $b^2=ac$ (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true, but R is not the correct explanation of A. (c) A is true, but R is false. (d) A is false, but R is true.	1
56.	The third term of a G.P. is 5. The products of its five terms is (a). a^5 (b) 5^5 (c) r^5 (d) 4^5	1
57.	Ramesh and Bikas, students of class IX are traveling to Shimla during winter vacation. While travelling through bus, on the sign board some precaution are written along with the distance of the destination. They found that the geometric mean of the two numbers is 16 and that of the arithmetic mean is 34. What are the two numbers?	1



(a) 4 & 64 (b) 0 & 32 (c) 16 & 34 (d) 16 & 64

58.	A person has 2 parents , 4 grand parents , 8 great grand parents and so on. What will be the number of his ancestors during decade generations preceding his own. (a) 1046 (b) 3074 (c) 2046 (d) 880	1
59.	Find the value of x if $x + 9$, $x - 6$ and 4 form three consecutive terms of a G.P. (a) 1, 2 (b) 2, 4 (c) 9, 16 (d) 0 , 16	1
60.	If the second and fifth terms of a G.P. are 24 and 3 respectively , then the sum of first six terms is (a) 181 (b) $181/2$ (c) 189 (d) $189/2$	1
61.	The third term of a G.P. is 9, The products of its first five terms is (a) 9^3 (b) 9^4 (c) 9^5 (d) 9^6	1
62.	The first two terms of a geometric progression add up to 12. The sum of the third and fourth term is 48. If the term of the geometric progression are alternately positive and negative, then the GP is (a) -12, 24 , -48 , 96 , (b) 12, -24 , 48, - 96 , (c) -12, 24, -36, 48 , (d) 12, -24 , 36 , -48 ,	1
63.	In the below diagram ABCD is a square each of side of length (a+ b) units, and PQRS is a square of side (a- b) units. From the below diagram it can be stated that 	1
	(a) It is related to a GM (b) It is related to a AM © It is GP (d) $AM > GM$	
64.	The sum of n number of geometric progression 5,10,20,..... is 1275, then the value of n is (a) 6 (b) 7 (c) 8 (d) 9	1
65.	In geometric progression which of the following cannot be possible ? (a) $r = 0$ (b) r is a positive number © r is an integer other than 0 (d) r is an natural number	1

ANSWERS:

Q. NO	ANSWER	MARKS
1.	1/49	1
2.	12	1
3.	4	1
4.	1:2:3	1
5.	9/2	1
6.	3072	1
7.	2059	1
8.	600	1
9.	0, 1.5, 4.5, 7.5	1
10.	16	1
11.	$2. \frac{(2^{10} - 1)}{2 - 1} = 2046$	1
12.	(d) one number is positive and the other number is negative	1
13.	$a + ar = 1$ Also, $a = 2 \left(\frac{ar}{1-r} \right)$ $A = \frac{3}{4}$	1
14.	3	1
15.	(c) 10	1
16.	(d) $\frac{81}{2} \left(1 - \frac{1}{3^{10}} \right)$	1
17.	(b) 2^5	1
18.	(a) 170, 196	1
19.	(a) Statement I is true and statement II is the correct explanation of the statement I	1
20.	(c) Statement I is true but statement II is false	1
21.	(b) $q^2 = pr$	1
22.	(c) - 7866	1
23.	b) 2^5	1
24.	d) 2/3	1

25.	c) 3	1
26.	d) Statement I is false but Statement II is true	1
27.	c) Statement I is true but Statement II is false	1
28.	b) 16	1
29.	b) ± 2	1
30.	d) 729	1
31.	C	1
32.	B	1
33.	D	1
34.	A	1
35.	B	1
36.	D	1
37.	B	1
38.	C	1
39.	B	1
40.	D	1
41.	c	1
42.	b	1
43.	a	1
44.	b	1
45.	c	1
46.	(c)	1
47.	(b)	1
48.	(b)	1
49.	(a)	1
50.	(c)	1
51.	(d)	1
52.	(b)	1
53.	(b)	1
54.	(a)	1
55.	(a)	1
56.	(b) 5^5	
57.	(a) 4 & 64	
58.	(c) 2046	
59.	(d) 0 , 16	
60.	(d) $189/2$	
61.	(c) 9^5	
62.	(a) -12, 24 , -48 , 96 ,	
63.	(d) $AM > GM$	
64.	(c) 8	
65.	(a) $r = 0$	