INDIAN SCHOOL AL WADI AL KABIR
DEPARTMENT OF MATHEMATICS 2023 – 2024
Sequences and Series
Work Sheet – Class XI

1	Let $a_1, a_2, a_3, \ldots\ldots$ be the sequence, then the sum expressed as $a_1 + a_2 + a_3 + \ldots\ldots + a_n$ is called …… (a) Sequence (b) Series (c) Finite (d) Infinite
2	The third term of a geometric progression is 4. The product of the first five terms is : (a) 4^3 (b) 4^5 (c) 4^4 (d) 4^7
3	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) $pqr + pq + 1 = 0$
4	For a, b, c to be in G.P. What should be the value of $\frac{a-b}{b-c}$? (a) ab (b) bc (c) $\frac{a}{b}$ or $\frac{b}{c}$ (d) None of these
5	The first and eight terms of a G.P. are x^{-4} and x^{52} respectively. If the second term is x^t, then t is equal to: (a) –13 (b) 4 (c) $\frac{5}{2}$ (d) 3
6	If 1, x, y, z, 16 are in geometric progression, then what is the value of x + y + z ? (a) 8 (b) 12 (c) 14 (d) 16
7	There are four arithmetic means between 2 and –18. The means are (a) –4, –7, –10, –13 (b) 1, –4, –7, –10 (c) –2, –5, –9, –13 (d) –2, –6, –10, –14
8	If m arithmetic means are inserted between 1 and 31 so that the ratio of the 7^{th} and $(m-1)^{th}$ means 5 : 9, then the value of m is (a) 10 (b) 11 (c) 12 (d) 14
9	How many terms of G.P. 3, 3^2, 3^3, ... are needed to give the sum 120? (a) 3 (b) 4 (c) 5 (d) 6

10	4^{th} term from the end of the G.P. 3, 6, 12, 24., ..., 3072 is (a) 348 (b) 843 (c) 438 (d) 384
11	The A. M. between two positive numbers a and b is twice the G. M. between them. The ratio of the numbers is (a) $(\sqrt{2}+3):(\sqrt{2}-3)$ (c) $(\sqrt{3}+1):(\sqrt{3}-1)$ (b) $(2+\sqrt{3}):(2-\sqrt{3})$ (d) None of these
	Directions: Each of these questions contains two statements, Assertion and Reason. Each of these questions also has four alternative choices, only one of which is the correct answer. You have to select one of the codes (a), (b), (c) and (d) given below. (a) Assertion is correct, reason is correct; reason is a correct explanation for assertion. (b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion (c) Assertion is correct, reason is incorrect (d) Assertion is incorrect, reason is correct.
12	**Assertion:** For $x=\pm 1$, the numbers $\frac{-2}{7}, x, \frac{-7}{2}$ are in G.P. **Reason:** Three numbers a, b, c are in G.P. if $b^2=ac$.
13	**Assertion:** Sum to n terms of the geometric progression $x^3, x^5, x^7, \ldots (x\neq\pm 1)$ is $\frac{x^3(1-x^{2n})}{(1-x^2)}$. **Reason:** If 'a' is the first term and r is common ratio of a G.P. then sum to n terms is $S_n=\frac{a(r^n-1)}{r-1}$ or $=\frac{a(1-r^n)}{1-r}$ if $r\neq 1$.
14	**Assertion:** If the third term of a G.P. is 4, then the product of its first five terms is 4^5. **Reason:** Product of first five terms of a G.P. is given as $a\,(ar)\,(ar^2)\,(ar^3)\,(ar^4)$
15	**Assertion:** The arithmetic mean (A.M.) between two numbers is 34 and their geometric mean is 16. The numbers are 4 and 64. **Reason:** For two numbers a and b, A.M. $= A=\frac{a+b}{2}$ G.M $=G=\sqrt{ab}$.
16	**Assertion:** If the sum of n terms of an A.P. is $3n^2+5n$ and its m^{th} term is 164, then the value of m is 27. **Reason:** 20^{th} term of the G.P. $\frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \ldots$ is $\frac{5}{2^{20}}$
17	**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.

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Sequences and Series (Answer Key)

1	(b)
2	(b)
3	(b)
4	(c)
5	(b)
6	(c)
7	(d)
8	(b)
9	(b)
10	(a)
11	(b)
12	(a)
13	(a)
14	(a)
15	(a)
16	(b)
17	(b)