

Model Question Paper 1
SEQUENCE AND SERIES 1

11th Standard

Maths

Reg.No. :

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Answer all the Questions

Time : 02:00:00 Hrs

Total Marks : 75

20 x 1 = 20

Part A

- 1) If a, b, c are in A.P., then $3^a, 3^b, 3^c$ are in
(a) A.P (b) G.P (c) H.P (d) A.P and G.P
- 2) If the n th term of an A.P is $(2n-1)$, then the sum of n terms is
(a) $n^2 - 1$ (b) $(2n - 1)$ (c) n^2 (d) $n^2 + 1$
- 3) The sum of n terms of an A.P is n^2 . Then its common difference is
(a) 2 (b) -2 (c) ± 2 (d) 1
- 4) The sum to the first 25 terms of the series $1 + 2 + 3 + \dots$ is
(a) 305 (b) 325 (c) 315 (d) 335
- 5) The n th term of the series $3 + 7 + 13 + 21 + 31 + \dots$ is
(a) $4n - 1$ (b) $n^2 + 2n$ (c) $n^2 + n + 1$ (d) $n^3 + 2$
- 6) What number must be added to 5, 13 and 29 so that sum may form a G.P?
(a) 2 (b) 3 (c) 4 (d) 5
- 7) The third term of a G.P is 5, the product of its first 5 terms is
(a) 25 (b) 625 (c) 3125 (d) 625×25
- 8) The first term of a G.P is 1. The sum of third and 5th terms is 90. Find the common ratio of the G.P.
(a) ± 2 (b) $\sqrt{10}$ (c) ± 3 (d) -3
- 9) When the terms of a G.P are written in reverse order the progression formed is
(a) A.P (b) G.P (c) H.P (d) A.P and H.P
- 10) If A, G, H are respectively arithmetic means, geometric mean and harmonic them is
(a) $A > G > H$ (b) $A < G > H$ (c) $A < G < H$ (d) $A > G < H$
- 11) Is the sequence $a_n = n^2 - 1, n \in \mathbb{N}$ is a
(a) A.P (b) G.P (c) H.P (d) not an A.P
- 12) The 100th term in $-1, -2, -3, -4, \dots$ is
(a) 100 (b) -100 (c) n (d) $-n$
- 13) If a, b, c are in A.P., then $\frac{1}{ab}, \frac{1}{ca}, \frac{1}{bc}$ are in
(a) A.P (b) G.P (c) H.P (d) None
- 14) If a, b, c are in A.P., then $b+c, c+a, a+b$ are in
(a) A.P (b) G.P (c) H.P (d) None
- 15) The 4th term in G.P when $a=1$ and $r=2$ is
(a) $\frac{1}{8}$ (b) 8 (c) $\frac{1}{2}$ (d) 2
- 16) The sequence $2, 2, 2, \dots$ is
(a) A.P (b) G.P (c) A.P and G.P (d) H.P
- 17) The sum to n terms of the series $\frac{1}{2} + \frac{3}{4} + \frac{7}{8} + \frac{15}{16} + \dots$ is
(a) $2^n - n - 1$ (b) $1 - 2^{-n}$ (c) $2^{-n} - n - 1$ (d) $2^n - 1$
- 18) If $b+c, c+a, a+b$ are in H.P., then $\frac{a}{b+c}, \frac{b}{c+a}, \frac{c}{a+b}$ are in
(a) A.P (b) G.P (c) H.P (d) None
- 19) If $(1+x^2)^2(1+x)^n = a_0 + a_1x + a_2x^2 + \dots$ and if a_0, a_1, a_2 are in A.P then $n =$
(a) 1 (b) 2 (c) 3 (d) 4
- 20) The numbers $\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}+\sqrt{2}}, \frac{1}{\sqrt{3}+2\sqrt{2}} \dots$ forms an
(a) A.P (b) G.P (c) H.P (d) None

Part B

5 x 3 = 15

- 21) The difference between two positive numbers is 18, and 4 times their G.M is equal to 5 times their H.M. Find the numbers.
- 22) If the A.M between two numbers is 1, prove that their H.M is the square of their G.M
- 23) If a, b, c are in A.P. and a, mb, c are in G.P then prove that a, m^2b, c are in H.P
- 24) If the p th and q th terms of a H., P are q and p respectively, show that $(pq)^{\text{th}}$ term is 1.
- 25) Three numbers form a H.P. The sum of the number is 11 and the sum of the reciprocals is one. Find the numbers.

Part C

8 x 5 = 40

- 26) Write the first four terms of $\frac{1}{(2+x)^4}$ where $|x| < 2$

- 27) Write the first four terms of $\frac{1}{\sqrt[3]{6-3x}}$ where $|x| < 2$
- 28) Evaluate $\sqrt[3]{1003}$ correct to 4 places of decimals
- 29) Evaluate $\frac{1}{\sqrt[3]{128}}$ correct to 2 places of decimals
- 30) If x is so small show that $\sqrt{\frac{1-x}{1+x}} = 1 - x + \frac{x^2}{2}$ (app.)
- 31) If x is so large prove that $\sqrt{x^2 + 25} - \sqrt{x^2 + 9} = \frac{8}{x}$ nearly
- 32) Find the 5th term in the expansion of $(1 - 2x^3)^{\frac{11}{2}}$
- 33) Find the $(r+1)^{\text{th}}$ term in the expansion of $(1-x)^{-4}$

