

Model Question Paper 3
SEQUENCE AND SERIES 3

11th Standard

Maths

Reg.No. :

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Answer all the Questions

Time : 02:00:00 Hrs

Total Marks : 70

10 x 1 = 10

Part A

- 1) 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
- 2) The sequence 2,2,2,2,... is
(a) A.P (b) G.P (c) A.P and G.P (d) H.P
- 3) 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) $2^n - 1$
- 4) 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
- 5) 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
- 6) 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
- 7) $\tan 70^\circ, \tan 50^\circ, \tan 20^\circ$ are in
(a) A.P (b) G.P (c) H.P (d) None
- 8) The arithmetic mean between 15 and 25 is
(a) 40 (b) 10 (c) 20 (d) 25
- 9) The arithmetic mean of $(3p-2q)$ and $(3p+2q)$ is
(a) 3p (b) -3p (c) -q (d) 2q
- 10) The arithmetic mean between 15 and 135 is
(a) 15 (b) 225 (c) 45 (d) 55

Part B

- 11) Find the sum of first n terms of the series $\sum_{n=1}^{\infty} 5n$
- 12) Find the sum of 101th terms to 200th term of the series $\sum_{n=1}^{\infty} \frac{1}{2^n}$
- 13) Find the first 5 terms of the sequence such that $t_1 = t_2 = 1, t_n = t_{n-1} + t_{n-2}; n \geq 3$
- 14) Insert 4 arithmetic means between 1 and 16.
- 15) Insert 3 geometric means between $\frac{1}{3}$ and 432.
- 16) Find two numbers whose A.M is 34 and G.M is 16
- 17) Insert 3 harmonic means between -2 and $\frac{2}{11}$.
- 18) Show that $\frac{1 \cdot 2^2 + 2 \cdot 3^2 + \dots + n(n+1)^2}{1^2 \cdot 2 + 2^2 \cdot 3 + \dots + n^2(n+1)} = \frac{3n+5}{3n+1}$
- 19) If x is very small in magnitude compared to a P.T. $\left(\frac{a}{a+x}\right)^{1/2} - \left(\frac{a}{a-x}\right)^{1/2} = 2 + \frac{3x^2}{4a^2}$
- 20) If x is small P.T. $\frac{\sqrt{16+5x} - (27-4x)^{1/3}}{5x+6} = \frac{1}{6} - \frac{13}{1296}x$

Part C

- 21) If a,b,c are in H.P., prove that $\frac{b+a}{b-a} + \frac{b+c}{b-c} = 2$
- 22) Find the 7th term of the sequence whose nth term is $(-1)^{n+1} \left(\frac{n+1}{n}\right)$
- 23) Find the nth partial sum of the series $\sum_{n=1}^{\infty} \frac{1}{2^n}$
- 24) If the 5th and 12th terms of a H.P. are 12 and 5 respectively, find the 15th term.
- 25) Find the n arithmetic means between a and b and find their sum.
- 26) Insert four A.Ms between - 1 and 14
- 27) Find n geometric means between two given numbers a and b and find their product.
- 28) Find 5 geometric means between 576 and 9.
