SEQUENCES AND SERIES

GEOMETRIC PROGRESSION

EXERCISE

Q1. If p^{th}, q^{th} and r^{th} terms of G.P. are x, y, z respectively, the $x^{q-r}y^{r-p}z^{p-q}$ is equal to

(a) 0 (b)1 (c)-1 (d)None of these

Q2. Find the value of n so that $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ may be the geometric mean between a & b.

(a) $n = \frac{-4}{5}$ (b) $n = \frac{-1}{2}$ (c) $n = \frac{-1}{5}$ (d) $n = \frac{-2}{3}$

Q3. The determinant $\Delta = \begin{vmatrix} a & b & a\alpha + b \\ b & c & b\alpha + c \\ a\alpha + b & b\alpha + c & 0 \end{vmatrix}$ is equal to zero, if

(a) a, b, c are in A.P. (b) a, b, c are in G.P.

(c) a, b, c are in H.P. (d) a is a root of $ax^2 + bx + c = 0$

Q4. Consider an infinite geometric series with the first term a and common ratio r. If its sum is 4 and the second term is $\frac{3}{4}$, then

(a) $a = \frac{4}{7}, r = \frac{3}{7}$ (b) $a = 2, r = \frac{3}{8}$

(c) $a = \frac{3}{2}, r = \frac{1}{2}$ (d) $a = 3, r = \frac{1}{4}$

Q5. If the fifth term of a geometric progression (G.P.) is 2, then the product of its first 9 terms is

(a) 256 (b)512 (c)1024 (d)None of these

Q6. Find a G.P. for which sum of the first two terms is – 4 and the fifth term is 4 times the third term

(a) $\frac{-4}{3}, \frac{-8}{3}, \frac{-16}{3}, \ldots$ (b) $4, -8, 16, -32$

(c) Both (a) & (b) (d)None of these

Q7. Find the sum of the sequence 7, 77, 777, 7777, ... to n terms.

(a) $\frac{7}{9}\left[\frac{10(10^n-1)}{9} - n\right]$ (b) $\frac{2}{3}\left[\frac{10(10^n-1)}{9} - n\right]$

(c) $\frac{2}{3}\left[\frac{4(4^n-1)}{9} - n\right]$ (d) $\frac{2}{3}\left[\frac{1(1^{n-1})}{9} - n\right]$

Q8. How many terms of G.P. 2, 4, 8, 16, ……. are required to give sum 254?

(a) 4 (b) 5 (c) 6 (d)7

Q9. $i^2 + i^4 + i^6 + \cdots$ upto $(2k + 1)$ terms, $k \in N$ is

(a) 0 (b) 1 (c) -1 (d) k

Q10. If $1 + \cos a + \cos^2 a + \cdots \infty = 2 - \sqrt{2}$, then a, $(0 < a < \pi)$ is

(a)$\frac{\pi}{8}$ (b)$\frac{\pi}{6}$ (c)$\frac{\pi}{4}$ (d)$\frac{3\pi}{4}$

ANSWER

1. (b)

2. (b)

3. (b)

4. (d)

5. (b)

6. (c)

7. (a)

8. (d)

9. (c)

10. (d)