

Work Sheet – 01 (Higher Mathematics) for class – Ten (02.11.2020) Chapter – Seven, Exercise – 7, Infinite Series

Creative Multiplication Choice Questions

1. What is the n^{th} term of the series: $2 + 5 + 8 + \dots$? [D.B.- 20]
 a) $n + 1$ b) $3n - 1$
 c) $2n$ d) $4n - 2$

Answer to the questions No. (2 – 3) from the following information: $1 + \frac{2}{\sqrt{3}} + \frac{4}{3} + \frac{8}{3\sqrt{3}} + \frac{16}{9} + \dots$ is a series.

2. What is the 7th term of the series? [D.B.- 20]
 a) $\frac{32}{9\sqrt{3}}$ b) $\frac{32}{27}$
 c) $\frac{64}{27}$ d) $\frac{64}{27\sqrt{3}}$

3. What is the sum of the series? [D.B.- 20]
 a) $\frac{\sqrt{3}}{2 - \sqrt{3}}$ b) $\frac{\sqrt{3}}{\sqrt{3} - 2}$
 c) $\frac{2}{\sqrt{3} - 2}$ d) Not possible

4. $\{2, 0, 2, 0, \dots\}$ is a sequence whose – [My.B.- 20]
 i. General term is $1 + (-1)^{n+1}$.
 ii. 10th term is 2.
 iii. Sum of the first 10 terms is 10.

Which one of the following is correct?

- a) i and ii b) ii and iii
 c) i and iii d) i, ii and iii
5. What is the general ratio of the first term of a geometric series $\frac{1}{3}$ and the infinite sum to $\frac{5}{6}$? [R.B.- 20]
 a) $\frac{1}{3}$ b) $\frac{2}{5}$
 c) $\frac{5}{6}$ d) $\frac{5}{3}$

6. Which one is the general term of $\frac{1}{3}, \frac{1}{3^2}, \frac{1}{3^3}, \dots$? [R.B.- 20]
 a) $\frac{1}{3^n}$ b) $\frac{3}{3^{n+1}}$
 c) $\frac{n}{3^{n-1}}$ d) $\frac{n}{3^n}$

7. General term of the sequence $\{1, \sqrt{3}, \sqrt{5}, \sqrt{7}, \dots\}$ is – [Dj.B.- 20]

- a) $\sqrt{2n + 1}$ b) $\sqrt{2n - 1}$
 c) $\sqrt{n + 1}$ d) $\sqrt{n - 1}$

8. What is the sum of the infinite geometric series: $\frac{1}{4} + \frac{1}{4^2} + \frac{1}{4^3} + \dots$? [C.B.- 20]
 a) $\frac{1}{5}$ b) $\frac{1}{3}$
 c) $\frac{4}{5}$ d) $-\frac{4}{3}$

9. What is the sum up to the infinity of the geometric series: $1 + \frac{1}{\sqrt{2}} + \frac{1}{2} + \frac{1}{2\sqrt{2}} + \dots$? [Ctg.B.- 20]
 a) $\frac{1}{2\sqrt{2}}$ b) $\frac{\sqrt{2}}{\sqrt{2} + 1}$
 c) $\frac{1}{\sqrt{2}}$ d) $\frac{\sqrt{2}}{\sqrt{2} - 1}$

10. In a sequence of n^{th} term, $U_n = 4 + (-1)^n$ then – [S.B.- 20]
 i. 5th term is 3.
 ii. Difference between 8th term and 5th term is 2.
 iii. The sum of the first 6 terms is 24.

Which one of the following is correct?

- a) i and ii b) ii and iii
 c) i and iii d) i, ii and iii
11. What is the value of 14th term of the sequence: 3, 6, 9, 12,? [S.B.- 20]
 a) 48 b) 42
 c) 36 d) 30

12. $2 - 1 + \frac{1}{2} - \frac{1}{4} + \dots$ is a geometric series. Which one is the sum of the infinite series? [J.B.- 20]
 a) $-\frac{4}{3}$ b) $-\frac{3}{4}$
 c) $\frac{4}{3}$ d) $\frac{3}{4}$

Answer to the questions no. (13 – 14) according to the following information: $1 + \frac{1}{4} + \frac{1}{16} + \dots$ is an infinite series.

13. What is the 10th term of the series? [B.B.- 20]
 a) $\frac{1}{4^9}$ b) $\frac{1}{4^{10}}$
 c) $\frac{1}{4^{11}}$ d) $\frac{1}{4^{12}}$

14. What is the sum of infinite series? [B.B.- 20]
 a) $\frac{4}{3}$ b) $\frac{5}{4}$
 c) $\frac{4}{5}$ d) $\frac{3}{4}$

Answer to the questions no. (15 – 16) according to the following information: $2 + 0.2 + 0.02 + 0.002 + 0.0002 + \dots$

15. What is the 10th term of the series? [D.B.- 19]

- a) 10^{-9} b) 10^9
c) 2×10^9 d) 2×10^{-9}

16. What is the sum up to the infinity? [D.B.- 19]

- a) $\frac{9}{5}$ b) $\frac{10}{9}$
c) $\frac{20}{9}$ d) $\frac{20}{11}$

Answer to the questions no. (17 – 18) on the basis of the information given below: $5 + \frac{5}{4} + \frac{5}{16} + \frac{5}{64} + \dots$

17. Which is the sum of the given series up to infinity? [R.B.- 19]

- a) 4 b) 5
c) $\frac{25}{4}$ d) $\frac{20}{3}$

18. Which is the 7th term? [R.B.- 19]

- a) $\frac{5}{4^7}$ b) $\frac{5}{4^6}$
c) $\frac{20}{3} \left(1 - \frac{1}{4^7}\right)$ d) $\frac{20}{3} \left(1 - \frac{1}{4^6}\right)$

19. What is the 15th term of a sequence whose nth term = $\frac{2 - (-1)^{3n}}{3}$? [Dj.B.- 19]

- a) $\frac{1}{3}$ b) 1
c) 15 d) $\frac{47}{3}$

20. What is the 20th term of a sequence whose nth term = $\frac{1 - (-1)^n}{2}$? [C.B.- 19]

- a) 2 b) 1
c) 0 d) -1

21. What is the sum of the infinite geometric series: $\frac{1}{5} + \frac{1}{5^2} + \frac{1}{5^3} + \dots$? [Ctg.B.- 19]

- a) $\frac{1}{6}$ b) $\frac{1}{5}$
c) $\frac{1}{4}$ d) $\frac{5}{4}$

22. Which one of the following is the geometric series when the common ratio is 3? [S.B.-19]

- a) $\frac{1}{3} + \frac{1}{9} + \frac{1}{27} + \dots$
b) $\frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \dots$
c) $3 + 9 + 27 + \dots$
d) $64 + 32 + 16 + \dots$

23. If the common ratio of any geometric series is $\frac{1}{2x+3}$ and sum up to the infinity is $\frac{1}{2(x+1)}$. Which one is the first term of the series? [J.B.- 19]

- a) $\frac{1}{2x-3}$ b) $\frac{1}{2(x-1)}$
c) $\frac{1}{2x+2}$ d) $\frac{1}{2x+3}$

24. If the nth term of a sequence is $3n - 5$, $n \in \mathbb{N}$ then which one is the 9th term of sequence? [J.B.- 19]

- a) -2 b) 22
c) 27 d) 32

25. What is the sum of the series: $2 + 0.2 + 0.02 + \dots$ up to infinity? [B.B.- 19]

- a) $\frac{9}{20}$ b) $\frac{11}{20}$
c) $\frac{20}{11}$ d) $\frac{20}{9}$

26. What is the sum of the series up to infinity: $1 + \frac{1}{3} + \frac{1}{9} + \dots$? [All B.- 18]

- a) $\frac{2}{3}$ b) $\frac{3}{4}$
c) $\frac{13}{9}$ d) $\frac{3}{2}$

27. What is the 15th term of a sequence whose nth term is $\frac{1 - (-1)^n}{1+n}$? [D.B.- 17]

- a) $-\frac{1}{8}$ b) 0
c) $\frac{1}{16}$ d) $\frac{1}{8}$

28. What is the sum of first 30 terms of $7 - 7 + 7 - 7 + \dots$? [R.B.- 17]

- a) 210 b) 30
c) 0 d) -210

29. Which one is the summation of $\frac{1}{3} + \frac{1}{3^2} + \frac{1}{3^3} + \dots$ up to infinity?

[R.B.- 17, J.B.- 16]

- a) $\frac{1}{3}$ b) $\frac{1}{2}$
c) 2 d) 3

30. What is the sum of the first n terms of the series: $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots$?

[Dj.B.- 17]

- a) $2 + \frac{1}{2^{n+1}}$ b) $2 - \frac{1}{2^{n+1}}$
c) $2 - \frac{1}{2^n}$ d) $2 - \frac{1}{2^{n-1}}$