Self-Assessment Quiz: Sequence and Series (Lecture 9)

Ungraded Quiz – For Practice and Understanding

Self-Assessment Quiz (MCQs)

Instructions: This quiz is ungraded and for practice only. Choose the correct option in each question.

1. Which of the following is a correct definition of a sequence?
   (a) A finite list of numbers written in brackets.
   (b) A list of elements written in a specific order, usually indexed by natural numbers.
   (c) A set of unordered numbers without repetition.
   (d) A function whose domain is the set of real numbers.
2. The symbol "..." in a sequence means:
   (a) Continue until infinity.
   (b) Stop after the last written term.
   (c) And so forth.
   (d) Undefined values exist.
3. If a sequence is defined by $b_j = 1 + 2j$, what is b_3?
   (a) 5
   (b) 7
   (c) 9
   (d) 11
4. In an arithmetic sequence, the constant difference between consecutive terms is called:
   (a) Common ratio
   (b) Sequence factor
   (c) Linear increment
   (d) Common difference
5. Which sequence is an arithmetic progression?
   (a) $2, 4, 8, 16, \ldots$
   (b) $5, 9, 13, 17, \ldots$
   (c) $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \ldots$

(d) $1, -1, 1, -1, \ldots$

6. The general term of an arithmetic sequence is:

   (a) $a_n = a + (n-1)d$
   (b) $a_n = ar^{n-1}$
   (c) $a_n = \frac{n}{a+d}$
   (d) $a_n = \frac{a}{d^n}$

7. In the arithmetic sequence $3, 9, 15, 21, \ldots$, the common difference d equals:

   (a) 3
   (b) 6
   (c) 9
   (d) 12

8. A geometric sequence is defined as a sequence where:

   (a) Each term increases by adding a constant.
   (b) Each term is the sum of its two previous terms.
   (c) Each term is obtained by multiplying the previous term by a constant.
   (d) The difference between terms is steadily increasing.

9. Which of the following is a geometric sequence?

   (a) $4, 8, 12, 16, \ldots$
   (b) $1, 2, 4, 8, \ldots$
   (c) $1, 3, 5, 7, \ldots$
   (d) $5, 10, 15, 20, \ldots$

10. The general term of a geometric sequence is:

    (a) $a_n = a + (n-1)d$
    (b) $a_n = ar^{n-1}$
    (c) $a_n = \frac{a}{r^n}$
    (d) $a_n = \frac{a+r}{n}$

11. If a geometric sequence has first term $a = 4$ and common ratio $r = 3$, the 4th term is:

    (a) 27
    (b) 36
    (c) 81
    (d) 108

12. In a geometric sequence, if $a_2 = 9$ and $a_4 = 1$, the common ratio is:

(a) 3

(b) $\frac{1}{3}$

(c) -3

(d) $-\frac{1}{3}$

13. The value of the sequence $C_n = 1 + (-1)^n$ alternates between:

    (a) 0 and 1

    (b) 1 and 2

    (c) 2 and 0

    (d) -1 and 1

14. Which term of the geometric sequence with $a = 4$ and $r = \frac{1}{2}$ equals $\frac{1}{8}$?

    (a) 4th term

    (b) 5th term

    (c) 6th term

    (d) 7th term

15. In an arithmetic sequence, if $a_3 = 7$ and $a_8 = 17$, the common difference is:

    (a) 1

    (b) 2

    (c) 3

    (d) 4

Answer Key

1. (b)
2. (c)
3. (c)
4. (d)
5. (b)
6. (a)
7. (b)
8. (c)
9. (b)
10. (b)

11. (c)
12. (d)
13. (c)
14. (c)
15. (b)