

Mathematics — Ganita Manjari

Chapter 2 Test 3

Introduction to Linear Polynomials

Class IX | 2026-27

Time Allowed: 45 Minutes

Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. Choose one option in A; show working in B-D.
2. Show the main steps and give reasons where asked. Calculators are not allowed.
3. Read graph scales carefully and state units where appropriate.

SECTION A

(5 questions $\times$ 1 mark = 5 marks)

1. Which polynomial has degree 3?

- | | |
|---------------|---------------------|
| (A) $z^2 + 3$ | (B) $3z + 1$ |
| (C) 8 | (D) $-2z^3 + z - 5$ |

2. The constant term of $9u^2 - 6u - 11$ is:

- | | |
|---------|--------|
| (A) -11 | (B) -6 |
| (C) 9 | (D) 11 |

3. The graph of $y = ax + b$ passes through the origin exactly when:

- | | |
|-------------|-------------|
| (A) $a = 0$ | (B) $b = 0$ |
| (C) $a = b$ | (D) $a = 1$ |

4. The slope of $3y = -6x + 15$ is:

- | | |
|--------|-------|
| (A) -6 | (B) 5 |
| (C) -2 | (D) 3 |

5. A machine is valued at ₹18000 and loses ₹1200 of value each year. Its value after t years is:

- (A) $1200 + 18000t$
(B) $18000 + 1200t$
(C) $1200t - 18000$
(D) $18000 - 1200t$

SECTION B

(4 questions $\times$ 2 marks = 8 marks)

6. Write one quadratic polynomial whose coefficient of x^2 is -4 and whose constant term is 7. State its degree.
7. If $f(x) = 8x - 3$, find $f(\frac{1}{2})$ and the input for which $f(x) = 21$.
8. For $y = -3x + 2$, find the values of y corresponding to $x = -1, 0$ and 2 . Write the resulting ordered pairs.
9. A display uses 95 bulbs at stage 0 and removes 6 bulbs at each new stage. Write the stage- n rule and find the count at stage 9.

SECTION C

(3 questions $\times$ 3 marks = 9 marks)

10. Let $p(x) = ax + b$ and $q(x) = cx + d$. Given $p(0) = 4$, $p(x) + q(x) = 5x + 1$ and $p(2) = q(2)$, find both polynomials.
11. A box contains ₹2 coins and ₹5 coins. The number of ₹2 coins is twice the number of ₹5 coins. Their total value is ₹99. Find both numbers of coins.
12. Show that every line $y = ax + 2a$, where $a > 0$, passes through a common point on the x -axis. Do these lines all have the same slope?

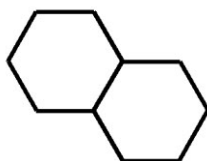
SECTION D

(1 application question $\times$ 3 marks = 3 marks)

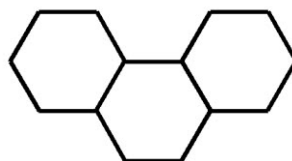
13. The hexagons are made of matchsticks. Each new hexagon shares exactly one side with the previous one. Find the stage- n rule, the number at stage 25 and the stage requiring 101 matchsticks.



Stage 1



Stage 2



Stage 3