

Important Assertion Reason Questions on Polynomials

Directions: In the following questions a statement of assertion (A) is followed by a statement of reason(R). Mark the correct choice as:

Choose the correct option for the following questions:

- (A). Both Assertion (A) and Reason (R) are true, and Reason is the correct explanation of Assertion.
- (B). Both Assertion (A) and Reason (R) are true, but Reason is not the correct explanation of Assertion.
- (C). Assertion (A) is true, but Reason (R) is false.
- (D). Assertion (A) is false, but Reason (R) is true.

Question 1:

Assertion (A): A polynomial of degree 2 is called a quadratic polynomial.

Reason (R): The highest power of the variable in a quadratic polynomial is 2.

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 2:

Assertion (A): The polynomial $x^2 - 5x + 6$ has zeros 2 and 3.

Reason (R): If $p(x) = 0$, then the value of (x) is called a zero of the polynomial.

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (B). Both A and R are true, but R is not the correct explanation of A.
 $x^2 - 5x + 6 = (x - 2)(x - 3)$

Question 3:

Assertion (A): The graph of a linear polynomial is a straight line.

Reason (R): A linear polynomial has degree 1.

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 4:

Assertion (A): A cubic polynomial can have at most three zeros.

Reason (R): The degree of a polynomial is equal to the maximum number of zeros it can have.

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 5:

Assertion (A): If one zero of the polynomial $x^2 - 9$ is 3, then another zero is -3 .

Reason (R): $x^2 - 9$ can be factorised as:

$$x^2 - 9 = (x - 3)(x + 3)$$

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 6:

Assertion (A): The sum of the zeros of $x^2 - 7x + 10$ is 7.

Reason (R): For a quadratic polynomial $ax^2 + bx + c$, the sum of zeros is: $-b/a$

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 7:

Assertion (A): The product of the zeros of $x^2 - 7x + 10$ is 10.

Reason (R): For a quadratic polynomial $ax^2 + bx + c$, the product of zeros is: c/a

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 8:

Assertion (A): Every polynomial has at least one zero.

Reason (R): The graph of every polynomial intersects the x-axis.

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (D). A is false, but R is true.

Question 9:

Assertion (A): If $x-2$ is a factor of a polynomial $p(x)$, then $p(2)=0$.

Reason (R): According to the Factor Theorem, if $p(a)=0$, then $(x-a)$ is a factor of $p(x)$.

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 10:

Assertion (A): A constant polynomial has degree 0.

Reason (R): The variable in a constant polynomial has power 0.

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 11:

Assertion (A): The polynomial x^2+2x+1 has equal zeros.

Reason (R): x^2+2x+1 can be written as $(x+1)^2$

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 12:

Assertion (A): A polynomial of degree 3 is called a cubic polynomial.

Reason (R): The highest exponent of the variable determines the degree of the polynomial.

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 13:

Assertion (A): The zero of the polynomial $x-5$ is 5.

Reason (R): A zero of a polynomial is the value of the variable that makes the polynomial equal to zero.

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 14:

Assertion (A): The polynomial x^2+4x+4 has only one distinct zero.

Reason (R): x^2+4x+4 can be factorised as: $(x+2)^2$

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.

Question 15:

Assertion (A): If $x+1$ is a factor of the polynomial x^2+x-2 , then $p(-1)=0$.

Reason (R): According to the Factor Theorem, if $(x-a)$ is a factor of $p(x)$, then $p(a)=0$.

Options:

- (A). Both A and R are true, and R is the correct explanation of A.
- (B). Both A and R are true, but R is not the correct explanation of A.
- (C). A is true, but R is false.
- (D). A is false, but R is true.

Correct Answer: (A). Both A and R are true, and R is the correct explanation of A.
 $x^2+x-2=(x+2)(x-1)$

