

Important Assertion Reason Questions on Real Numbers

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): Every composite number can be expressed as a product of prime numbers.

Reason (R): According to the Fundamental Theorem of Arithmetic, every composite number has a unique prime factorisation.

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 decimal expansion of $(13/125)$ is terminating.

Reason (R): 125 can be written as (5^3) .

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.
 $125=5^3$

Question 3:

Assertion (A): $\sqrt{5}$ is an irrational number.

Reason (R): Irrational numbers cannot be expressed in the form $\frac{p}{q}$.

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.

Question 4:

Assertion (A): The HCF of two consecutive integers is always 1.

Reason (R): Consecutive integers have no common factor other than 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 5:

Assertion (A): The decimal expansion of $\frac{7}{12}$ is non-terminating recurring.

Reason (R): 12 has a prime factor other than 2 or 5.

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. $12=22 \times 3$

Question 6:

Assertion (A): Every rational number is a real number.

Reason (R): Real numbers include both rational and irrational numbers.

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 two irrational numbers is always irrational.

Reason (R): Irrational numbers cannot be written in fractional form.

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. $2 \times 2 = 2$

Question 8:

Assertion (A): If two numbers are co-prime, then their LCM is equal to their product.

Reason (R): The HCF of co-prime numbers is 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.
 $HCF \times LCM = \text{Product of two numbers}$

Question 9:

Assertion (A): The decimal expansion of every irrational number is non-terminating and non-recurring.

Reason (R): Irrational numbers cannot be expressed in the form $(\frac{p}{q})$.

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.

Question 10:

Assertion (A): When a positive integer is divided by 5, the possible remainders are 0, 1, 2, 3, and 4.

Reason (R): According to Euclid's Division Lemma, $a = bq + r$, $0 \leq r < b$

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): $(\frac{1}{227})$ has a non-terminating recurring decimal expansion.

Reason (R): The denominator 7 contains a prime factor other than 2 or 5.

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): Every even number is divisible by 2.

Reason (R): Prime factorisation of every even number contains 2 as a factor.

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): $(3+2)$ is an irrational number.

Reason (R): The sum of a rational number and an irrational number is irrational.

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 square of any odd number is odd.

Reason (R): Every odd number can be written in the form $(2n+1)$.

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. $(2n+1)^2=4n^2+4n+1$

Question 15:

Assertion (A): The number $5 \times 7 \times 11 + 7$ is composite.

Reason (R): 7 is a common factor of both terms.

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. $5 \times 7 \times 11 + 7 = 7(5 \times 11 + 1)$

