Number Systems

Assertion & Reason Type Questions

Directions: In the following questions, a statement of Assertion (A) is followed by a statement of a Reason (R). Choose the correct option:

a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

b. Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

c. Assertion (A) is true but Reason (R) is false.

d. Assertion (A) is false but Reason (R) is true.

Q1. Assertion (A): Rational number lying between $\frac{1}{5}$ and $\frac{1}{3}$ is $\frac{4}{15}$.

Reason (R): Rational number lying between two rational numbers a and b is $\frac{a+b}{2}$.

Answer : (a) Assertion (A): Rational number lying between

$\frac{1}{5}$ and $\frac{1}{3}$ is $\frac{\frac{1}{5}+\frac{1}{3}}{ü} = \frac{3+5}{} = \frac{8}{30}$

$= \frac{4}{15}$

So, Assertion (A) is true.

Reason (R): It is true to say that rational number lying between two rational numbers a and b is $\frac{a+b}{2}$.

Hence, both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

Q2. Assertion (A): 6.527 is a terminating decimal number.

Reason (R): Any decimal number is said to be a recurring decimal number, if set of digits is repeated periodically.

Answer : (b) Assertion (A): In decimal number 6.527, their is no set of digits is repeated, so it is a terminating decimal number.

So, Assertion (A) is true.

Reason (R): It is true to say that any decimal number is said to be a recurring decimal number, if set of digits is repeated periodically.

Hence, both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

Q3. Assertion (A): The rationalising factor of $8 - \sqrt{7}$ is $8 + \sqrt{7}$.

Reason (R): If the product of two irrational numbers is rational, then each one is said to be the rationalising factor of the other.

Answer : (a) Assertion (A): It is true that the rationalising factor of $8 - \sqrt{7}$ is $8 + \sqrt{7}$.

Reason (R): It is true to say that each one is rationalising factor in the product of two irrational numbers.

Hence, both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

Q4. Assertion (A): The simplified form of $7^4 \times 7^5 = (7)^{4+5} = (7)^9$.

Reason (R): If $a > 0$ be a real number and p and q be rational numbers.

Then $a^p \times a^q = a^{p+q}$.

Answer : (d) Assertion (A): $7^4 \times 7^5$ is 7^{20}.

So, Assertion (A) is false.

Reason (R): It is true to say that $a^p \times a^q = a^{p+q}$.

Hence, Assertion (A) is false but Reason (R) is true.

Q5. Assertion (A): The sum of two irrational numbers $3 - \sqrt{5}$ and $5 + \sqrt{5}$ is rational number.

Reason (R): The sum of two irrational numbers is always an irrational number.

Answer : (c) Assertion (A): Here, $3 - \sqrt{5} + 5 + \sqrt{5} = 8$, which is a rational number.

So, Assertion (A) is true.

Reason (R): It is not always true to say that sum of two irrational number is always an irrational number.

Hence, Assertion (A) is true but Reason (R) is false.