

IX Test - 3

- MCA 1) Every rational number is (a) a natural no. (b) a real no.
(c) an integer (d) a whole no.
- MCA 2) Two rational numbers between $\frac{2}{3}$ and $\frac{5}{3}$ are
(i) $\frac{1}{6}$ and $\frac{2}{6}$ (ii) $\frac{1}{2}$ and $\frac{2}{1}$ (iii) $\frac{5}{6}$ and $\frac{7}{6}$ (iv) $\frac{2}{3}$ and $\frac{4}{3}$
- MCA 3) An irrational number between 1 and $\sqrt{2}$ is
(a) $\frac{\sqrt{2}}{2}$ (b) 1.413 (c) $\frac{1+\sqrt{2}}{2}$ (d) 1.42
- MCA 4) The product of any two irrational no. is
(a) always irrational (b) always rational
(c) always integer (d) sometimes rational, sometimes irrational
- MCA 5) Which of the following is irrational?
(a) $\sqrt{12}/\sqrt{3}$ (b) $\sqrt{18}/\sqrt{2}$ (c) $\sqrt{45}/\sqrt{5}$ (d) $\sqrt{42}/\sqrt{7}$
- 6) Express $0.\overline{134}$ in the form $\frac{p}{q}$
- 7) Classify as rational or irrational? Justify your answer.
(i) $6.412341234\dots$
(ii) $(\sqrt{2}+3) - (\sqrt{2}-5)$
- 8) Give example of two irrational numbers whose sum and product both are rational.
- 9) Find the value of (i) $5\sqrt{6} + 3\sqrt{6}$ (ii) $\sqrt{12} \times \sqrt{18}$
- 10) Find five rational no.s between $\frac{4}{9}$ and $\frac{4}{11}$.

Answers

- 1) (a) a real number (b)
- 2) $\frac{2 \times 2}{3 \times 2} \quad \frac{5 \times 2}{3 \times 2}$
 $\frac{4}{6} \quad \frac{10}{6}$
 $\therefore \frac{5}{6} \text{ and } \frac{7}{6} \text{ are the required rational numbers (c)}$

$$3) \frac{1+\sqrt{2}}{2} \quad (c)$$

4) sometimes rational, sometimes irrational

$$5) \frac{\sqrt{42}}{\sqrt{7}} = \sqrt{\frac{42}{7}} = \sqrt{6} \quad (d)$$

$$6) \text{ let } x = 0.1343434\ldots$$

$$10x = 1.343434\ldots$$

$$1000x = 134.343434\ldots$$

$$990x = 133$$

$$x = \frac{133}{990}, \text{ which is in the form } \frac{p}{q}$$

7) (i) $6.412341234\ldots = 6.\overline{4123}$, rational since the decimal expansion is non-terminating repeating.

$$(ii) (\sqrt{2}+3) - (\sqrt{2}-5) = \cancel{\sqrt{2}}+3 - \cancel{\sqrt{2}}+5 = 8, \text{ rational}$$

$$8) (5-\sqrt{3}) + (5+\sqrt{3}) = 5 - \cancel{\sqrt{3}} + 5 + \cancel{\sqrt{3}} = 10, \text{ rational}$$

$$(5-\sqrt{3})(5+\sqrt{3}) = (5)^2 - (\sqrt{3})^2 = 25 - 3 = 22, \text{ rational}$$

$$9) (i) 5\sqrt{6} + 3\sqrt{6} = 8\sqrt{6}$$

$$(ii) \sqrt{12} \times \sqrt{18} = 2\sqrt{3} \times 3\sqrt{2}$$

$$= 6\sqrt{6}$$

$$\begin{array}{r} 2 \overline{)12} \\ 2 \overline{)6} \\ 3 \end{array} \quad \begin{array}{r} 2 \overline{)18} \\ 3 \overline{)9} \\ 3 \end{array}$$

$$10) \frac{4 \times 11}{9 \times 11} \quad \frac{4 \times 9}{11 \times 9} \quad \left| \begin{array}{l} \frac{44}{99} \quad \frac{36}{99} \end{array} \right.$$

$\therefore$ The required no.s are

$$\frac{37}{99}, \frac{38}{99}, \frac{40}{99}, \frac{41}{99}, \frac{43}{99}$$