Chapter- 1

Number Systems

WORKSHEET

1 Mark

(1) Decimal representation of an irrational number is always
(a) terminating (b) terminating repeating
(c) non-terminating repeating
(d) non-terminating non-repeating

(2) The product of any two irrational numbers is
(a) always an irrational number
(b) always a rational number
(c) always an integer
(d) sometimes rational, sometimes irrational

(3) The decimal expansion of the number $\sqrt{2}$ is
(a) a finite decimal.
(b) 1.41421
(c) non-terminating recurring
(d) non-terminating non-recurring

(4) The number of rational numbers between 10 and 15 is
(a) 4 (b) 6 (c) finite (d) infinite

(5) Which of the following is irrational?
(a) $\sqrt{\frac{4}{9}}$ (b) $\sqrt{\frac{12}{13}}$ (c) $\sqrt{7}$ (d) $\sqrt{81}$

2 Marks

(6) Find the value of $\sqrt{12}\times\sqrt{8}$.

(7) Which numbers have their decimal expansions non-terminating and non-repeating?

(8) What is the simplified value of $(81)^{-\frac{1}{4}} \div (81)^{\frac{1}{4}}$?

(9) Simplify : $\frac{2\sqrt{3}}{3} - \frac{\sqrt{3}}{6}$.

(10) If x =3 +$2\sqrt{2}$, then find whether x + $\frac{1}{x}$ is rational or irrational.

3 Marks

(11) Express $\frac{1}{1+\sqrt{2}-\sqrt{3}}$ with rational denominator.

(12) Simplify :$\frac{\sqrt{7}+\sqrt{2}}{1+\sqrt{2}-\sqrt{3}}$ with rational denominator.

(13) Evaluate: $[8]^{1/2}(64^{1/3} + 125^{1/3})^3]^{1\backslash 4}$

(14) Simplify :$\frac{7}{2\sqrt{3}-\sqrt{5}} - \frac{2}{\sqrt{3}+\sqrt{2}} - \frac{3}{\sqrt{5}-\sqrt{2}}$.

(15) Express $\frac{1}{1+\sqrt{2}-\sqrt{3}}$ with rational denominator.

4 Marks

(16) Simplify : $\left[\left(625^{-\frac{1}{2}}\right)^{-\frac{1}{4}}\right]^2$

(17) Find the value of $\frac{4}{(216)^{-\frac{2}{3}}} + \frac{1}{(256)^{-\frac{3}{4}}} + \frac{2}{(243)^{-\frac{1}{5}}}$

(18) Prove that : $\left(\frac{x^a}{x^b}\right)^{a+b} . \left(\frac{x^b}{x^a}\right)^{b+c} . \left(\frac{x^c}{x^a}\right)^{c+a} = 1.$

(19) Find a and b from the following:

$$\frac{1+\sqrt{48}}{5\sqrt{3}+4\sqrt{2}-\sqrt{72}-\sqrt{108}+\sqrt{8}+2} = a + b\sqrt{3}$$

(20) If $x = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $y = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, find the $x^3 + y^3$.