CLASS IX : ASSIGNMENT : CHAPTER-1 : NUMBER SYSTEM : MATHEMATICS

1. Complete the following sentences:
   a) Every point on a number line corresponds to a_____number which may be either____ or____.
   b) The decimal form of an irrational number is neither ____nor _____.
   c) The decimal representation of a rational number is either_____or ____.
   d) Every real number is either_____or_____.

2. Find the decimal representation of the following:
   a) 16/45
   b) 22/7

3. Express each of the following decimals in the form p/q.
   a) $0.\overline{1}$
   b) $23.4\overline{3}$
   c) $0.\overline{32}$
   d) $0.003\overline{52}$
   e) $15.7\overline{12}$
   f) 0.23535353535……
   g) 15.712121212….

4. Insert Rational and Irrational numbers:
   a) Insert a rational and an irrational number between 2 and 3.
   b) Find two irrational numbers lying between √2 and √3.
   c) Find two rational numbers between 0.23233233332…. and 0.252552555255552….
   d) Find three rational numbers between -2 and 5.
   e) Insert 100 rational numbers between -3/13 and 9/13.

5. Prove that the following are irrational numbers:
   a) √2
   b) √n, if n is not a perfect square.
   c) √3 - √2
   d) $(√2 + 2)^2$

6. Represent √6, √7 and√8 on number line.

7. Represent √10.5 on number line.

8. If $x = 9 + 4√5$, find the value of $√x – 1/√x$.

9. If $x = 1/(√5 – 2)$, find the value of $x^3 – 3x^2 – 5x +3$

10. Find the values of a and b if:
    a) $(5 + 2√3)/(7 + 4√3) = a + b√3$
    b) $(3 + √7)/(3-4√7) = a + b√7$

11. Simplify each of the following:
    a) $(625)^{-1/4}$
    b) $(243 x^{10} y^5 z^{10})^{1/5}$
    c) $(0.001)^{1/3}$
    d) $\{(25)^{3/2} \times (243)^{3/5} \} ÷ \{(16)^{5/4} \times (8)^{-1/3} \}$
    e) $(16 \times 2^{n+1} – 4 \times 2^n) ÷ (16 \times 2^{n+2} – 2 \times 2^{n + 2})$

12. Prove that:
    a) $(x^{-1}y) (y^{-1}z) (z^{-1} x) = 1$
    b) $(x^{a+b})^2 (x^{b+c})^2 (x^{c + a})^2 ÷ (x^a x^b x^c)^4 = 1$
    c) $m – n = 1$, if $\{9^n \times 3^2 \times (3^{-n/2})^{-2} - (27)^n \} ÷ 3^{3m} \times 2^3 = 1/27$
    d) $(2^n + 2^{n-1})/ (2^{n + 1} - 2^n) = 3/2$

13. Find the value of x if:
    a) $27^x = 9/3^x$
    b) $5^{x-3} \times 3^{2x-8} = 225$
    c) $2^{x-5} \times 5^{x-4} = 5$