Chapter 1 Number Systems

Q.1: Is zero a rational number? Can you write it in the form $\frac{p}{q}$pq, where p and q are integers and q ≠ 0?

Ans : Zero is a rational number as it can be represented as $\frac{0}{1}$ or $\frac{0}{2}$ or $\frac{0}{3}$01 or 02 or 03 etc.

Q.2: Find six rational numbers between 3 and 4.

Ans : There are infinite rational numbers in between 3 and 4.

3 and 4 can be represented as $\frac{24}{8}$ and $\frac{32}{8}$ Therefore, rational numbers between 3 and 4 are $\frac{25}{8}, \frac{26}{8}, \frac{27}{8}, \frac{28}{8}, \frac{29}{8}, \frac{30}{8}$3 and 4 can be represented as 248 and 328 Therefore, rational numbers between 3 and 4 are 258,268,278,288,298,308

Q.3: Find five rational numbers between $\frac{3}{5}$35 and $\frac{4}{5}$45 .

Ans : There are infinite rational numbers between $\frac{3}{5}$ and $\frac{4}{5}\frac{5}{3}=\frac{3\times6}{5\times6}=\frac{18}{30}\frac{4}{5}=\frac{4\times6}{5\times6}=\frac{24}{30}$ There are infinite rational numbers between 35 and 4535=3×65×6=183045=4×65×6=2430

Therefore,

rational numbers between $\frac{3}{5}$ and $\frac{4}{5}$35 and 45.

$\frac{19}{30}, \frac{20}{30}, \frac{21}{30}, \frac{22}{30}, \frac{23}{30}$1930,2030,2130,2230,2330

Q.4: State whether the following statements are true or false. Give reasons for your answers.

(i) Every natural number is a whole number.

(ii) Every integer is a whole number.

(iii) Every rational number is a whole number

Ans : (i) True; since the collection of whole numbers contains all natural numbers.

(ii) False; as integers may be negative but whole numbers are positive. For example: —3 is an integer but not a whole number.

(iii) False; as rational numbers may be fractional but whole numbers may not be. For Example :$\frac{15}{15}$ is rational number but not a whole number.