**Question** The set of all pairs of Real number $(x, y)$ with the operations.

$$(x, y) + (x', y') = (x + x', y + y')$$

$$k(x, y) = (x, ky)$$

**Solution :-**

→ **Axioms 07**

$$k(u + v) = ku + kv$$

$$u = (x, y), \quad v = (x', y')$$

$$k(u + v) = k((x, y) \oplus (x', y'))$$

$$= k((x + x'), (y + y'))$$

$$= ((x + x'), k(y + y'))$$

$$= ((x, ky) + (x', ky'))$$

$$ku + kv = k(x, y) \oplus k(x', y')$$

(Not Hold)

→ **Axioms 08**

$$(k + c)u = ku + cu$$

$$(k + c)u = (k + c).(x, y)$$

$$= (x, (k + c)y)$$

$$= (x, ky + cy)$$

$$ku + cu = k(x, y) + c(x, y)$$

$$= (x, ky + x, cy)$$

$$= (2x, ky + cy) \quad \text{L.H.S} \neq \text{R.H.S}$$

(Not Hold)