**2.1 Sets**

**Q8.** **Determine whether each of these statements is true or False ?**

**a) 0 ∈ ∅**

false

**b) ∅ ∈ {0}**

false

**c) {0} ⊂ ∅**

false

**d) ∅ ⊂ {0}**

true

**e) *x* ∈ {*x*}**

true

**f) {*x*} ⊆ {*x*}**

true

**g) {*x*} ∈ {*x*}**

false

**h) {*x*} ∈ {{*x*}**

true

**i) ∅ ⊆ {*x*}**

true

**Q14. What is the cardinality of each of these sets?**

**a) {*a*}**

1

**b) {{*a*}}**

1

**c) {*a,* {*a*}}**

2

**d) {*a,* {*a*}*,* {*a,* {*a*}}}**

3

**Q22.Let *A* = {*a, b, c*}, *B* = {*x, y*}, and *C* = {0*,* 1}. Find :**

**a) *A* × *B* × *C***

{(a, x, 0) , (a, x, 1) , (a, y, 0) , (a, y, 1) , (b, x, 0) , (b, x, 1) , (b, y, 0) , (b, y, 1) , (c, x, 0) , (c, x, 1) , (c, y, 0), (c, y, 1)}

**b) *C* × *B* × *A***

{(0, x, a) , (0, x, b) , (0, x, c) , (0, y, a) , (0, y, b) , (0, y, c) , (1, x, a) , (1, x, b) , (1, x, c) , (1, y, a) , (1, y, b) , (1, y, c)}

**c) *C* × *A* × *B***

{(0, a, x) , (0, a, y) , (0, b, x) , (0, b, y) , (0, c, x) , (0, c, y) , (1, a, x) , (1, a, y) , (1, b, x) , (1, b, y) , (1, c, x) , (1, c, y)}

**d) *B* × *B* × *B***

{(x, x, x) , (x, x, y) , (x, y, x) , (x, y, y) , (y, x, x) , (y, x, y) , (y, y, x) , (y, y, y)}