**Sets and Relations**

**MCQ-Single Correct**

1. Let A and B be two sets containing four and two elements respectively. Then the number of subsets of the set , each having at least three elements is:

(1) 256 (2) 275

(3) 510 (4) 219 **[2015]**

2. If  and , where N is the set of natural numbers, then is equal to

(1) N (2) Y – X

(3) X (4) Y **[2014]**

3. Let A and B be two sets containing 2 elements and 4 elements respectively. The number of subsets of having 3 or more elements is

(1) 220 (2) 219

(3) 211 (4) 256 **[2013]**

4. Let S be a non-empty subset of R. Consider the following statement:

P: There is a rational number such that x > 0.

Which of the following statements is the negation of the statement P?

1. There is no rational number such that 
2. Every rational number satisfies 
3. and  is not rational
4. There is a rational number such that  **[2010]**

5. Consider the following relations:

R = {(x,y)|x,y are real numbers and x=wy for some rational number w};

S = Then

1. neither R nor S is an equivalence relation
2. S is an equivalence relation but R is not an equivalence relation
3. R and S both are equivalence relations
4. R is an equivalence relation but S is not an equivalence relation

6. If A, B nd C are three sets such that  and , then

(1) A = B (2) A = C

(3) B = C (4)  **[2009]**

7. Let R be the real line. Consider the following subsets of the plane  .

S = {(x,y): y = x + 1 and 0 < x <2 }, T = {(x,y):x – y is an integer}. Which one of the following is true?

1. neither S nor T is an equivalence relation on R
2. Both S and T are equivalence relations on R
3. S is an equivalence relation on R but T is not
4. T is an equivalence relation on R but S is not **[2008]**

8. Let W denote the words in the English dictionary. Define the relation R by : **[2006]**

R = {(x,y)ε| the words x and y have at least one letter in common}. Then R is

1. Not reflexive, symmetric and transitive (2) reflexive, symmetric and not transitive

(3) reflexive, symmetric and transitive (4) reflexive, not symmetric and transitive

9. Let R = {(3,3), (6,6), (9,9),(12,12),(6,12),(3,9),(3,12),(3,6)} be a relation on the set A = {3,6,9,12} be a relation on the set A = {3,6,9,12}. The relation is

(1) reflexive and transitive only (2) reflexive only

(3) an equivalence relation (4) reflexive and symmetric only **[2005]**

10. Let R = {(1,3),(4,2),(2,4),(2,3),(3,1)} be a relation on the set A = {1,2,3,4}. The relation R is

(1) a function (2) reflexive

(3) not symmetric (4) transitive **[2004]**