MCQ:

1. If a relation R on the set {1,2,3,4] be defined by R= {(1,2)}, then R is

a) Reflexive b) Transitive c) Symmetric d) None of these

2. Which of the following functions from Z to Z are one-one and onto?

a) $f(x) = x^3$ b) $f(x) = x+2$ c) $f(x)= 2x + 1$ d) $f(x) = x^2 + 1$

3. The function $f: R \to R$ given by $f(x) = \cos x, x \in R$ is

a) one-one but not onto b) onto but not one-one

c) one-one and onto d) neither one-one nor onto

4. Greatest integer function f(x) =[x] is

a) one-one b) many-one c) both (a) & (b) d) none of these

5. The maximum number of equivalence relations on the set A = {1, 2, 3} are

a) 1 b) 2 c) 3 d) 5

6. If $R = \{(x, y) : x^2 + y^2 = 4, x,y \in Z\}$ is a relation of Z , then the domain of R is

a) {0,1,2} b) {-2 ,0,2} c) {-2, -1,1,2} d) { 1,2}

7. Consider the non-empty set consisting of children in a family and a relation R defined as a R b if a is sister of b. Then R is

a) symmetric but not transitive b) transitive but not symmetric

c) neither symmetric nor transitive d) both symmetric and transitive

8. Number of relations that can be defined on the set A = {a, b, c, d} is

a) 2^3 b) 4^4 c) 4^2 d) 2^{16}

9. Let R be the relation in the set Z of all integers defined by R = {(x, y): x – y is an integer}. Then R is

a) Reflexive b) Transitive c) Symmetric d) an equivalence relation

10.Let S be the set of all real numbers. Then the relation R = {(a, b): 1 + ab > 0} on S is

a) reflexive, symmetric but not transitive b) reflexive, transitive but not symmetric

c) reflexive, symmetric and transitive d) both symmetric and transitive but not reflexive

Assertion –reasoning:

a) Both A and R are true and R is the correct explanation of A

b) Both A and R are true and R is not the correct explanation of A

c) A is true but R is false

d) A is false but R is true.

11. Assertion(A): a relation R ={ $|a-b|< 2$ } defined on the set A ={ 1,2,3,4,5} is reflexive.

Reason(R): A relation R on the set A is said to reflexive if for (a,b) ϵ R and (b,c) ϵ R we have (a,c) ϵ R

12. Assertion(A): Let A= {2,4,6} , B={3,5,7,9} and defined a function f = { (2,3),(4,5), (6,7)} from A to B ,then f is not onto.

Reason(R): A function f: A$\rightarrow$ B is said to be onto, if every element of B is the image of some element of A under f.

13. Assertion(A): The smallest integer function f(x) is one-one.

Reason(R): A function is one-one if $f(x) = f(y) \Rightarrow x = y$.

14. Assertion(A): The function f: R$\rightarrow$ R, $f(x) = |x|$ is not one-one.

Reason(R): The function $f(x) = |x|$ is not onto.

Hint or Answer keys of Selected Questions

1 – b	4 - b	7 - b	10 – a	13 - d
2 – b	5 - d	8 - d	11 – c	14 - b
3 – d	6 - b	9 - d	12 – d	