Guess Paper Test – 2013  
Class - XII  
SUBJECT – MATHEMATICS

*Time-1.5 hr*  *Marks-50*

***RELATIONS AND FUNCTIONS***

Q.1: Let X be a non-empty set and \*’ be a binary operation on P(x). the power set of A, defined by

A \* B = AUB for all A, B Є P(x)

1. find the identity element w.r.t. \*
2. show that Ф Є P(x) is the only invertible element w.r.t.’ \*’

Q.2 : Given a non-empty set X, consider the binary operation \* P(X) × P(X) P(X) given by

A \* B = A∩B for all A,B Є P(X) where P(X) is the power of X, show that X is the identity

element for this operation and X is the invertible element in P(X) with respect to the

operation \*’

Q.3 : Let A = Q\*Q. let ‘\*’ be a binary operation on A defined by :

(*a, b*) \* (*c, d*) = (*ac, ad + b*).

Find : (i) the identity element of (A, \* ). (ii) the invertible element of (A, \* ).

Q.4 : If R is a relation in N × N, show that the relation R is defined by (*a, b*)R(c, d) if and only if

*ad = bc* is an equivalence relation .

Q.5 : Let L be the set of all lines in the plane and R be the relation in L, defined as :

R = {(L1, L2) : L1 is perpendicular L2 }

Show that R is symmetric but neither reflexive nor transitive.

Q.6 : Find the Number of binary operations on the set {*a, b*} .

Q.7 : Give examples of two functions f : N Z and g : Z Z such that gof is injective but g is

not injective.

Q.8 : Find gof and fog, if

F(x) = 8x3 and g(x) = .

Q.9 : Consider f: { 1, 2, 3 } { *a, b, c* } given by f(1) = *a*, f(2) = *b*, and f(3) = *c*, find f -1 and show

that (f -1)-1 = f.

Q.10: If f : R R is defined by f(x) = x2 – 3x +2, find *f ( f(x) ) .*

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