Nepal College of Information Technology

**Unit Test**

Fall 2012

Program : BE IT/ELX Time : 2 hrs

Semester : (III) FM : 70

Subject : Engineering Math-III PM : 35

* *Candidates are requested to give their answer as far as practicable in their own words.*
* *The figure in the margin indicates the full marks*
* ***Attempt ALL question***

**GROUP A**

**1** Define transpose of a matrix. In what condition matrix multiplication of two matrices exists. Show that . 6



**2** Show that = 2abc, by using the properties of determinants. 8



**3** Define inverse of a matrix. Write down the necessary condition for existence of inverse of a matrix. Find inverse of A = , if it exists. 8



**4** Define rank of a matrix. Find rank of the matrix A = . 5



**5** Define consistency of the system of linear equations. Check consistency of



If it is consistence, find its solution. 8

**6** Define eigen value and vectors of the square matrix with its characteristics equation. Find eigen value and corresponding eigen value of the matrix . 7



***GROUP B***

**7** If A + B = and A – B = , Find AB, where A and B are matrices. 2



**8** Show that the diagonal elements on the skew symmetric matrices are zero. 2

**9** Check linearly dependent and independent of the vectors (1,2) and (1,3). 2

**10** In what condition, the system of linear equation have unique solutions. 2