The Open University of Sri Lanka
Foundation Course in Science –Level 02
Closed Book Test (CBT) 2010/2011
MAF 2301/ MAE 2301 – Pure Mathematics

Duration: One and half (1 ½) Hours

Date : 22-03-2011   **Time : 1.30 pm – 3.00 pm**

Answer ALL Questions

01.   If $A = \begin{pmatrix} 1 & 2 & 1 \\ 0 & -1 & 2 \\ 1 & 1 & 3 \end{pmatrix}$ and $B = \begin{pmatrix} 2 & 1 & 3 \\ -1 & 4 & 1 \\ -1 & 0 & -1 \end{pmatrix}$

    (i)   Find A^T and B^T

    (ii)   Find $(AB)^T$

    (iii)   Hence show that $(AB)^T = B^T A^T$.

02.   Solve the simultaneous equations by using Carmer's rule.
$$2x - y + z = 1$$
$$x - 2y + 3z = 2$$
$$3x + y - z = 4$$

03.   The coordinates of A and B which lie on the parabola with equation $y^2 = 4x$ are $(t^2, 2t)$ and $(4t^2, 4t)$ respectively. The tangents to the parabola at A and B meet at the point C and M is the mid point of the chord AB. Show that the line CM is parallel to the x –axis for all values of t. Where $t \neq 0$.