The Open University of Sri Lanka
Foundation Course in Science – Level 02
Closed Book Test (CBT) 2004/2005
MAF 2301/MAE 2301 - Pure Mathematics

Duration :- One and Half Hours.

Date :- 27-02-2006 **Time:- 1.30 p.m. – 3.00 p.m.**

Answer All Questions.

01. If $A=\begin{pmatrix} 3 & 2 & 1 \\ 5 & 6 & -7 \\ 2 & -1 & 8 \end{pmatrix}$ $B=\begin{pmatrix} 3 & 2 & 1 \\ -3 & -7 & 8 \\ 5 & 2 & 0 \end{pmatrix}$ find the following.

(i) A^T (ii) B^2 (iii) AB.

02. Given the matrices

$$A=\begin{pmatrix} 3 & 2 & 5 \\ -1 & 6 & 7 \\ 2 & 1 & 0 \end{pmatrix} \quad B=\begin{pmatrix} 2 & 5 & -4 \\ 7 & 3 & 2 \\ 1 & 0 & 2 \end{pmatrix}.$$

Show that $\det(AB) = (\det A)(\det B)$.

03. (i) Prove that the point $(at^2, 2at)$ lies on the parabola $y^2 = 4ax$ and hence find the equation to the tangent at this point.

(ii) P is any point on the parabola $y^2 = 12x$. If the tangent at P meets the y axis at Q, find the locus at the midpoint line joining P and Q.