科目：工程數學一(線性代數)　　適用：電機系

編號：353
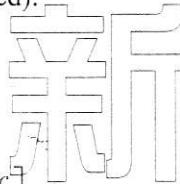
考生注意：
1.依次序作答，只要標明題號，不必抄題。
2.答案必須寫在答案卷上，否則不予計分。
3.限用藍、黑色筆作答；試題須隨卷繳回。

本試題
共 / 頁
第 / 頁

1. $A = \begin{bmatrix} 2 & 1 \\ -3 & 4 \\ 1 & 6 \end{bmatrix}$, $B = \begin{bmatrix} 0 & -1 & 0 \\ 4 & 0 & 2 \\ 8 & -1 & 7 \end{bmatrix}$

Find (a) AB (if they are defined).　(10 points)

(b) BA (if they are defined).　(10 points)

2. Find $(A^{-1})^T$ and $(A^T)^{-1}$ for　(20 points)

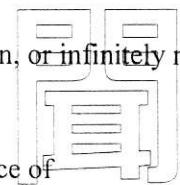$A = \begin{bmatrix} 1 & 0 \\ 9 & 3 \end{bmatrix}$ and also $A = \begin{bmatrix} 1 & c \\ c & 0 \end{bmatrix}$.

3. For which values of k does　(20 points)

$kx + y = 1$

$x + ky = 1$

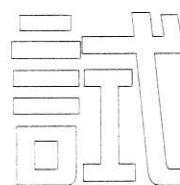have no solution, one solution, or infinitely many solutions?

4. Find the rank and the nullspace of　(20 points)

$B = \begin{bmatrix} 0 & 0 & 1 & 2 \\ 0 & 0 & 1 & 2 \\ 1 & 1 & 1 & 0 \end{bmatrix}$

5. If $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

Find (a) A^0　(10 point)

(b) A^n　(10 point)