國立屏東科技大學 九十九 學年度　碩士班甄試　招生考試

材料工程研究所　碩士 程數學 試題（*99N102016*）

1. For the matrix A

$$A=\begin{bmatrix}-5 & 2\\ 2 & -2\end{bmatrix}$$

Find the eigenvalues(特徵值) and the corresponding eigenvectors (特徵向量) of A. (20%)

2. The equation is

$y'' - 5y' + 6y = 6x$

Find the general solution of the equation. (20%)

3. For the matrix A

$$A=\begin{bmatrix}1 & -4 & 4\\ 0 & 1 & -1\\ 1 & -2 & 1\end{bmatrix}$$

Find the inverse matrix(反矩陣) A^{-1}.(20%)

4. Solve the Euler-Cauchy equation. (20%)

$x^2y'' - 2xy' + 2y = 0 \quad ; \quad y(1) = 3, y'(0) = 1$

5. Use the Laplace transform (拉普拉斯轉換)to find the solution. (20%)

$y'' - 3y' + 2y = 1 \quad ; \quad y(0) = y'(0) = 0$