93學年度國立成功大學 電信管理研究所 乙組 工程數學 試題 共 / 頁 第 / 頁
研究所招生考試

20% 1. Evaluate the det(A) and the rank of A, where

$$A = \begin{bmatrix} 2 & 7 & 2 & 1 \\ -6 & 4 & 5 & 6 \\ -1 & 7 & 2 & 4 \\ -7 & 4 & 5 & 7 \end{bmatrix}$$

20% 2. Solve the ordinary differential equation of

$$(y+1)\frac{dy}{dx} + x(y^2+2y) = x$$

20% 3. Determine the inverse Laplace transform of

$$Y(s) = \frac{s^3 - 4s^2 + 4}{s^2(s^2 - 3s + 2)}$$

20% 4. Find the maximum value of the cost function $f = -5x_1 + x_2$ subject to the constraints

$$x_1 \geq 0,\ x_2 \geq 0,\ -x_1 + x_2 \geq -1,\ x_1 + x_2 \leq 6,\ x_2 \leq 5.$$

20% 5. A cage contains 100 mices, three of which are male. What is the probability that two male mices will be included if 10 mice are randomly selected?

F MS10 2-2