編號:

197

國立成功大學九十七學年度碩士班招生考試試題

共/買,第/買

系所: 醫學工程研究所甲、乙、丁組

科目:工程數學

本試壓是否可以使用計算機: □可使用 , ☑不可使用 (請命題老師勾選)

考試日期: 0301· 節次: 3

1. (20 points) Solve the following Second-order differential equation and discuss damping conditions

$$my'' + cy' + ky = 0$$

2. (7 points) (a) Solve the following system by the Gauss elimination

$$\begin{cases} -5x_1 + 2x_2 = 5 \\ 2x_1 - 2x_2 = 16 \end{cases}$$

(10 points) (b) Find the eigenvalues and eigenvectors of the following matrix

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

- (8 points) (c) What is the relationship between the solution (x_1, x_2) of (a) and the eigenvectors of (b)
- 3. (10 points) (a) Find the mean and standard deviation of examination scores: 96, 65, 87, 90, 84, 78, 91, 82, 76, 69.
 - (10points) (b) Find the probability of obtaining at least three "four" in rolling a fair die 4 times
- 4. (20 points) For a half-wave rectification of Cos wt, find its Laplace transform and Fourier series representation.
- 5. (15 points) Evaluate the integral $I = \int_{c} (3x^{2}dx + 2yz dy + y^{2}dz)$ from A:(0, 1, 2) to B:(1, -1, 7).