

國立臺灣科技大學

九十三學年度博士在職專班招生考試試題

系所組別：工程技術研究所甲組

科 目：科技實務

總分為 100分

1. Consider a matrix $A = \begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix}$

(1) Find the eigenvalues. (6%)

(2) Find the eigenvectors and state the physical meaning. (8%)

(3) Compute $A^4 - A^3 - 5A^2 - A$. (6%)

2. Rewrite the following description in Chinese. (20%)

For the past decade, the impact of web-enabled technologies has added "velocity" to the design, manufacturing, and aftermarket service of the manufacturing industry. Today's competition depends not just on lean manufacturing, but also on the ability to integrate manufacturing and supplier systems with agility and velocity. Internet and wireless technologies have transformed companies from a local factory automation to a global enterprise and business automation. The success of this transformation is dependent upon the advancement of web-enabled infotonics technologies and embedded predictive intelligence.

3. According to the following description, rewrite or give comments in English. (10%)

根據近期現代化生產系統的發展，自動化角色的增加，需要一些新方法來有效率地管控日趨複雜之自動化系統。

4. Explanation: (50%)

(1) CAE

(2) CMM

(3) AS/RS

(4) SCADA

(5) MES

(6) RFID

(7) Controllability

(8) Observability

(9) Gain Margin

(10) Intelligent control