國立嘉義大學九十三學年度

生物科技研究所碩士班招生考試（分子生物學組）試題

科目：生物技術概論

一、簡答題：

1. What's the scale of "P4" laboratory used in SRAS research?（5%）
2. When do you need the RT-PCR machine to facilitate your research?（5%）
3. Two dimensional (2-D) electrophoresis appears to be a very useful technique in both drug design and proteomics. Briefly describe the principle of this method.（10%）
4. Hybridization procedure is widely used in modern biotechnology including gene chip development. This procedure is heavily relied on stringency control during hybridization. What is the stringency? And, how to control it?（10%）

二、申論題：

1. How to design the transgenic plants to develop the herbicide, virus and insect resistance?（20%）
2. Describe the basic principle of DNA analysis in paternity testing.（20%）
3. Polymerase chain reaction (PCR) is among the most important techniques used in Biotechnology. Based on what you have learned, answer the following questions. (1) What are the criteria concerns on primer design? (2) Which cycling parameter (e.g. denaturation) appears to be critical for sensitivity and specificity of PCR reaction. (3) Random amplified polymorphic DNA (RAPD) is a very useful application of PCR in genome typing. What is RAPD?（30%）