

國立嘉義大學九十三年學年度

生物科技研究所碩士班招生考試（應用微生物組）試題

科目：微生物學

1. Describe what Koch's postulates are and how important of the postulates are influencing the development of clinical medicine. Based on your microbiological knowledge, are the postulates always correct? If not, please extensively discuss your comments. (10%)
2. Describe the possible mechanisms of bacterial DNA transfer of genetic information happening in the natural microbial community and how the transfer may influence human life. (10%)
3. Distinguish between plasmids and transposons. What effect would you expect the existence of plasmids and transposons to have on the rate of microbial evolution? Give your reasoning. (10%)
4. Your company has developed a new biocide for use in a paper manufacturing plant. Before this new compound can be released for sale, what types of environmental questions should you ask and what tests should you complete? (10%)
5. List 3 important viruses of plus and minus stranded RNA viruses, respectively? Clearly state the difference of properties between plus and minus stranded RNA viruses. (10%)
6. Describe each of the bacteria listed below. In each case give the Gram stain, cell morphology and arrangement and habitat, then describe some interesting features about the organism. (10%)
 - (1) *Streptomyces griseus*
 - (2) *Clostridium botulinum*
 - (3) *Azotobacter vinelandii*
 - (4) *Pseudomonas aeruginosa*
 - (5) *Mycobacterium tuberculosis*
7. Preservation of microbial cultures was critical for all individuals engaged in the search for patentable products from and patentable processes by microorganisms.
 - (1) What is the decisive idea in the preservation of microbial? (10%)
 - (2) Please try to list 3 procedures of preservation of cultures currently in use, and briefly compare each others. (10%)
8. 試述病毒產生變異的機制，並舉例說明之? (8%)
9. 試比較 positive-sense 與 negative-sense RNA 病毒之異同? (8%)
10. 名詞解釋：
 - (1) Persistent infection (2%)
 - (2) Tropism (2%)