本科目不得使用計算機　　　　　　　　　本科目試題共 1 頁

1. Consumer Reports' recent analysis of more than 300 raw chicken breasts purchased at stores across the U.S. found potentially harmful bacteria lurking in almost all of the chicken, including organic brands. Based on what you learned from Microbiology, what methods will you use to eliminate or reduce the bacterial loads on raw meats to meet the public health standards and explain their mechanisms in controlling bacterial growth? (10%)

2. Please describe the biological characteristics of the following microorganisms (30%).
   (1) Rabies virus (3%)
   (2) *Pseudomonas* spp. (4%)
   (3) *Escherichia coli* (4%)
   (4) *Agrobacterium tumefaciens* (4%)
   (5) *Meloidogyne* spp. (4%)
   (6) *Fusarium* spp. (4%)
   (7) *Rhizobium* spp. (4%)
   (8) Phytoplasma (3%)

3. Please explian the following terms and their functions in microbial growth or survival. (20%)
   (1) Nitrogen fixation (4%)
   (2) Bactoprenol (2%)
   (3) Phototrophy (3%)
   (4) Pilus (3%)
   (5) Gas vacuole (3%)
   (6) ABC transporter (3%)
   (7) MIC (2%)

4. Please use an example to explain the involvement of protein secretion systems in bacterial virulence (10%).

5. Please describe how bacteria sense, respond, and adapt to different growth conditions. (10%)

6. Please describe how oxygen concentration affects microbial growth. (10%)

7. Please design (1) an enrichment culturing protocol for the isolation and purification of endospore-forming bacteria and (2) analytic methods for subsequent identification of the isolated bacteria. (10%)