1. What is gram stain? Please describe the process of gram staining. (10%)

2. Give three examples to show how the combinations of factors have been used to control mycotoxins contamination. (10%)

3. You are working for a development group which interests in marketing a new rapid method for detection of foodborne pathogens. What type of macromolecules in pathogens would you target? And what kind of methods do you use in these detection systems? (at least list 3 different methods) (10%)

4. Please define the following terms. (20%)
   (1) prebiotics
   (2) aflatoxins
   (3) reverse transcription polymerase chain reaction (RT-PCR)
   (4) lactic acid bacteria

5. How does temperature and time affect microbial growth? (10%)

6. List three bacteria and two fungi most frequently found on meats. (10%)

7. Describe the coliforms and enterococci as indicators of food sanitary quality. (10%)

8. Please indicate the *E. coli* criteria and standards for dairy products. (5%)

9. Define and explain the following terms. (15%)
   a. Antimicrobial constituents
   b. Relative humidity
   c. Hazard analysis critical control point