Shahjalal University of Science & Technology, Sylhet
Department of Biochemistry & Molecular Biology
2nd Year 2nd Semester Examination 2012
Course No: BMB 226, Course Title: Microbiology
Credit: 3.0, Time: 3.0 hours, Marks: 70

Answer any two questions from each part

Part A

1. (a) Show the disciplines within the field of microbiology by schematic diagram — 3
   (b) Write down Koch's Postulates in establishing the cause of a disease. — 3
   (c) Briefly describe the following disciplines of microbiology. — 7
      (i) Microbial Ecology
      (ii) Molecular Biology
   (d) Write short note on electron microscope — 4.5

2. (a) Discuss the hypothetical stages in the evolution of Prokaryotes and Eukaryotes. — 5
   (b) Explain Symbiotic hypotheses for the origins of organelles in the eukaryotic cell. — 5
   (c) What are the environmental conditions required for bacterial cultivation? Describe briefly. — 4.5
   (d) What are the differences between selective medium and differential medium? — 3

3. (a) Discuss streak technique for isolating pure cultures of a bacteria. — 4.5
   (b) What is bacterial growth curve? Explain different stages of the bacterial growth curve. — 5
   (c) Define following terms. (Any two)
      (i) Antiseptic (ii) Disinfectant (iii) Sterilization (iv) Pasteurization — 5
   (d) What are the differences between a microbiostatic agent and a microbiocidal agent? Give an example of each. — 3

Part B

4. (a) Discuss the sexual process of biodospore formation. — 3
   (b) Compare the physiology of fungi and bacteria — 3
   (c) Depict the life cycle of Saprolegnia — 4
   (d) Describe the lytic cycle of a bacteriophage. — 5.5
   (e) Define lysogeny — 2

5. (a) What are three major sources of energy used by microorganism? Define phototroph and chemoorganotrph. — 7
   (b) What kinds of electron acceptor do microorganisms use? Define fermentation, aerobic respiration and anaerobic respiration — 6
   (c) Name different microorganisms that produce alcohol and acetone which are used in the industrial process. — 4.5

6. (a) Write short notes of the following terms. — 4x3=12
      (i) Nitrogen Cycle (ii) Biogas production (iii) Microbial greenhouse gases.
   (b) List the parts of a light microscope and write their function. — 5.5