



Shahjalal University of Science & Technology, Sylhet

Department of Biochemistry and Molecular Biology

B. Sc. (Hons) 2nd Year 1st Semester Final Examination, 2014

Course No: BMB -226 Course Title: microbiology

Credit-3 Total Marks-70 Time-3 hours



Instructions:

- Answer any two (2) questions from each part (A and B)
- All questions have equal marks

Part A

- What are the major characteristics of microorganisms? 4
 - Deduce Koch's Postulates. 'Koch's Postulates are not evenly applicable for all the pathogens'- Explain. 3+2
 - What is resolving power or resolution of a microscope? Write about the advantages and limitations of Bright field and Dark field microscopy. 2+3.5
 - What is Gram staining? How it is used in identification and classification of bacteria? 3
- Write about the basic chemical composition of a bacterial cell wall. What are the contrasting features between the composition of Gram negative and Gram positive bacteria? 2+3
 - What are exospores and endospores? Briefly write about bacterial energy and electron requirements. 4.5
 - What do you mean by optimum growth temperature of bacteria? Classify bacteria on the basis of their temperature relationships. 4
 - Why O₂ is toxic to cell? How the aerobic bacteria overcome this toxicity? 4
- Draw a typical growth curve and label the various phase. Discuss the factors which determine the beginning and end of each phase. 5
 - Discuss the streak-plate technique for isolating pure culture. 4
 - What do you mean by temperate virus? Illustrate the λ phage lysogenic cycle. 4.5
 - Write about the morphological and structural characteristics of TMV. 4

Part B

- What are Hyphae? Name the different ways of asexual reproduction of fungi. 1+3
 - What are sexual spores? Illustrate the formation of basidiospores. 4.5
 - Compare on physiological characteristics of Fungi and Bacteria. 4
 - Briefly describe the life cycle of *Rhizopus stolonifer*. 5
- Define virulence and pathogenicity. 2.5
 - Discuss the characteristics of exotoxin and endotoxins. 4
 - 'Cholera toxin causes modification in the regulatory protein of cells'- justify. 5
 - Write about causal agent, transmission and treatment of Tuberculosis. 6
- Give a few examples of energy production by aerobic process and anaerobic process in microbes. Discuss one example of energy production from each process briefly. 7
 - Name several foods that are prepared by microbial fermentations. Write the name of the microorganisms involved to prepare that food. 4.5
 - Write short note on any two (2) of the following:
(i) Carbon cycle (ii) Nitrogen cycle (iii) Microbes in sewage disposal 6