

P.G. Diploma in Bio - Informatics
Annual Examinations – 2006

Paper PBID – 106
Microbiology

Time allowed: Three hours

Maximum Marks: 80

1. Section I is compulsory.
- 2 Attempt any six questions from Section II.
- 3 Attempt any three questions from Section III

SECTION – I

Marks

1. Answer the following question as directed.
 - a. Following are some major contributions in the field of microbiology. Name the microbiologist associated with each of these contributions, and also mention the year of the contribution. 1X5
 - i) Gram Staining
 - ii) Discovery of Penicillin
 - iii) The concept of antiseptic surgery.
 - iv) Description of electron microscope.
 - v) Discovery of attenuated virus polio vaccine.
 - b. Below is provided a list of some infectious diseases. Name the specific microorganism associated with each of the following disease. 1X5
 - i) Crown gall
 - ii) Typhus fever
 - iii) Tuberculosis
 - iv) Tonsilitis or strep throat
 - v) Fire blight in apples and pears
 - c. Fill in the blank spaces in the following sentences. 2X5
 - i) Apart from carbon, oxygen, and nitrogen, _____ and _____ are among the most abundant major elements in bacterial cells.
 - ii) The loss of light that occurs by refraction at glass-air interfaces in microscopes can be reduced by using the _____, which has the same refractive index as _____.
 - iii) _____ and _____ are two unrelated groups of bacteria that are obligate intracellular parasites of eukaryotic cells.
 - iv) Adenine and guanosine are _____, while thymine, cytosine and uracil are _____.
 - v) Penicillin G is a _____ antibiotic that acts by _____.

SECTION – II

Q2. Attempt any six of the following

5X6=30

- i) Describe the archaebacteria.
- ii) Describe the components of a microscope
- iii) Describe the types and roles of inclusion bodies.
- iv) Write a short note on the methods of sterilization.
- v) Write a brief note on the composition of bacterial cell wall.
- vi) Describe the structure of the bacterial endospore and its formation.
- vii) Give a brief account of the surface structures of bacteria.
- viii) Write a short note on the application of microorganisms in industry.

SECTION – III

Attempt any three questions of the following

10X3=30

- i) Draw a neat and very well labeled diagram of a monotrichous bacterial cell, and describe the functions of its various structures. List major differences between prokaryotic and eukaryotic cells.
- ii) With the help of an appropriate figure, describe the phases of bacterial growth curve. Describe and differentiate the minimal medium and selective medium.
- iii) Give a detailed account of various gene transfer mechanisms in bacteria. Describe and differentiate the lytic and lysogenic cycles. Use appropriate diagrams to illustrate your answer.
- iv) Define antibiotics and antimicrobial agents, With the help of a flow chart, explain the mechanism of action of sulphonamides. What is antibiotic resistance?