





KATHMANDU UNIVERSITY  
End Semester Examination  
January/ February 2024

Level : B. Tech.  
Year : II  
Time : 2 hrs. 30 mins.

15 FEB 2024

Course : BIOL 207  
Semester : II  
F.M. : 55

---

SECTION "B"  
[7Q. × 5 =35 marks]

Attempt *ALL* questions.

1. A group of researchers went on a sample collection in the hills. During their sample analysis in the microbiology laboratory, they found an unknown mass of bacterial cell. A microbiologist is tasked to identify an unknown bacterium. The microbiologist decides to start the identification protocol by separating the bacteria on the basis of the cell wall composition, Gram Staining Technique.  
Answer in brief: [5Q. ×1 =5 marks]
  - a. Describe the initial measures that should be taken to sterilize the lab bench and equipment before conducting the staining process.
  - b. Briefly outline the key steps involved in the Gram staining procedure?
  - c. If, after Gram staining, bacterial cells appear pink under the microscope, what does this suggest about the cell wall composition?
  - d. Illustrate the difference in cell wall composition seen among gram positive and gram negative cell wall.
  - e. Give one example each of gram positive and gram negative bacteria.
2. Discuss the application and future of microbiology.
3. Discuss in brief about lytic and lysogenic cycles of viral replication.
4. Describe the different phases of the bacterial growth curve. What are the useful properties of fungi? [3+2]
5. Write short notes on bacteriophage.
6. Explain about the Koch's postulates and their limitations.
7. Discuss about five different types of antibodies. [5]

**OR**

Discuss about the composition of viruses. [2+3]

SECTION "C"

8. Give TWO differences between for each of the following: [5Q ×2=10 marks]
- a. Generalized transduction and Specialized transduction
  - b. Active Immunity and Passive Immunity
  - c. Gram Positive and Gram Negative
  - d. Yeast and Mold
  - e. Bacterial Transformation and Bacterial Conjugation
9. Explain WHY/HOW. [5Q ×2=10 marks]
- a. Sulphur oxidizing Bacteria are considered as chemoautotrophs
  - b. Genetic recombination is unidirectional
  - c. Fungi release antibodies
  - d. 70% ethanol used as disinfectant instead of 100% ethanol
  - e. Many pathogenic fungi are dimorphic