

3 Yr. Degree/4 Yr. Honours 3rd Semester Examination, 2025 (CCFUP)**Subject : Botany****Course : BOTN3011 (MAJOR)****(Microbiology)****Time: 2 Hours****Full Marks: 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer *any five* questions of the following: 2×5=10
 - (a) Distinguish between episome and plasmid.
 - (b) What are chemolithotrophs? Give example.
 - (c) Distinguish between innate and acquired immunity.
 - (d) What is porin?
 - (e) Distinguish between a bacteriostatic and a bacteriocidal agent.
 - (f) Why endospores are heat resistant?
 - (g) Differentiate between prion and viroid.
 - (h) Name one virus having single stranded DNA. What is complex virus? 1+1
2. Answer *any two* questions of the following: 5×2=10
 - (a) With suitable diagram describe the ultrastructure of typical flagellum in gram-negative bacteria.
 - (b) Draw and label a typical T-cell. Write on the different types of T-cell and mention their respective function. 2+3
 - (c) Briefly describe the role of bacteria in food and pharmaceutical industry.
 - (d) Write a short note on Archaea.
3. Answer *any two* of the following: 10×2=20
 - (a) Write on the mechanism of biological N_2 fixation. What is denitrification? Mention the function of *nif* gene. 6+2+2
 - (b) Give structure of a typical immunoglobulin. Briefly discuss the characteristics of different classes of human immunoglobulin. 5+5
 - (c) With proper labelled diagram explain the ultrastructural details of cell wall of a typical gram-negative bacterium. 3+7
 - (d) Describe with diagram the structure, formation and function of bacterial endospore. 3+5+2