

**School of Agriculture**

**Bachelor of Science Honours in Agriculture  
Summer Term Examination – July - August 2024**

**Duration : 180 Minutes  
Max Marks : 100**

**Sem II - A1UA202B - Agricultural Microbiology***General Instructions*

*Answer to the specific question asked*

*Draw neat, labelled diagrams wherever necessary*

*Approved data hand books are allowed subject to verification by the Invigilator*

- 1) Tell me the differences between rhizosphere and phyllosphere? K1(2)
- 2) Explain the mechanisms of genetic recombination in bacteria? K2(4)
- 3) Illustrate the transformation process? K2(6)
- 4) Construct the challenges and opportunities associated with the biodegradation of agro-waste using microbes? K3(9)
- 5) Construct the role of biofertilizer in soil fertility? K3(9)
- 6) Measure the important differences between rhizosphere and phyllosphere? K5(10)
- 7) Analyze the microbes on the basis of their mode of nutrition? K4(12)
- 8) Justify the role of microbes in soil fertility and crop production, focusing on the carbon, nitrogen, phosphorus, and sulfur cycles. Discuss how microbes contribute to the decomposition of organic matter, mineralization of nutrients, and nutrient cycling in soil. Highlight specific microbial processes involved in each cycle and their significance in maintaining soil fertility for sustainable crop production? K5(15)
- 9) Justify the mechanisms of genetic recombination in bacteria, focusing on transformation, conjugation, and transduction. Describe the role of plasmids and transposons in bacterial genetics, emphasizing their significance in horizontal gene transfer and adaptation. Discuss how these genetic processes contribute to bacterial evolution and the emergence of antibiotic resistance? K5(15)
- 10) Design to classify the microbes in their on the basis of their mode of nutrition and classify the bacteria on their shape? K6(18)