

School of Biological and Life sciences**Bachelor of Science Honours in Microbiology
Semester End Examination - Jul 2024****Duration : 180 Minutes
Max Marks : 100****Sem III - C2UC304B - Microbial Genetics and Genomics**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) What are IS elements? K1(2)
- 2) What is the Ames test and how is it carried out? K2(4)
- 3) Explain the features of Degradative plasmids and R-plasmids. K2(6)
- 4) Explain the phenomenon with suitable examples: a) Additive Gene action ; b) Redundancy (duplicate genes) K3(9)
- 5) Assess the mechanism of plasmid replication. K3(9)
- 6) Identify the features and importance of chloroplast genome K5(10)
- 7) Assess the features of Ti-plasmid and discuss its importance. K4(12)
- 8) In an Hfr \times F ϕ cross, leu $^+$ enters as the first marker, but the order of the other markers is unknown. If the Hfr is wild type and the F ϕ is auxotrophic for each marker in question, what is the order of the markers in a cross where leu $^+$ recombinants are selected if 27 percent are ile $^+$, 13 percent are mal $^+$, 82 percent are thr $^+$, and 1 percent are trp $^+$? K5(15)
- 9) Plasmids are found in both prokaryotic and Eukaryotic cells. Interpret the features and importance of a plasmid found in each. K5(15)
- 10) Elaborate in detail the features of Tumor inducing-plasmid and the mechanism of transfer of T-DNA. K6(18)