



Seat No. _____

HAJ-MICRO-313

**M. Sc. (Sem.-III) (Microbiology)
(CBCS) (WEF-2016) Examination**

May - 2023

**MICRO-313 : Genome Organization and
Regulation of Gene Expression**

Time : $2\frac{1}{2}$ Hours / Total Marks : 70

- 1** Answer briefly any **seven** of the following : (2 marks each) **14**
- (a) What are the differences between heterochromatin and euchromatin ?
 - (b) What is the role of DNA topoisomerase II ?
 - (c) Enlist the role of cohesin and condensin in the organization of genome.
 - (d) What is catabolite repression ?
 - (e) What is the function of repressors in operone system ?
Give suitable example.
 - (f) What is the role of sigma factor in transcription ?
 - (g) What is the function of F factor ?
 - (h) How to induce competence in prokaryotes ?
 - (i) Enlist types of Bacteriophages.
 - (j) What are prions ?
- 2** Answer any **two** of the following : (7 marks each) **14**
- (a) Discuss significance of histone like proteins in prokaryotic genome organization.
 - (b) What are nucleosomes ? Discuss various levels of genome organization after nucleosomes formation.
 - (c) Explain archaeal genome organization.

- 3** Answer the following : (7 marks each) **14**
- (a) Discuss positive and negative control of lac operon.
 - (b) Give a detailed account of translational and post-translational control.
- OR**
- (a) Explain trp operon and its importance in prokaryotic gene regulation.
 - (b) Describe genetic exchange by conjugation in bacteria.
- 4** Answer the following : (7 marks eac) **14**
- (a) Disuss the mechanism of bacterial transformation.
 - (b) Give an account of generalized and specialized transduction.
- 5** Answer any **two** of the following : (7 marks each) **14**
- (a) Yeast genetics.
 - (b) Viral replication and its control.
 - (c) Transposons.
 - (d) Plasmid replication, distribution and stability.
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