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JAX-MICRO-313 Seat No. _____

M. Sc. (Microbiology) (Sem. III) (CBCS) (W.E.F. 2016) Examination

December - 2019

Micro - 313 : Genome Organization & Regulation of Gene Expression

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

1 Answer briefly any **seven** of the following : **14**

(i) Comment on the role of amino acids in genome packaging.

(ii) What are cohesins and condensins? Explain its role in genome structure.

(iii) What is C-value paradox?

(iv) Is the repression level variable? If yes, what could be the possible reasons?

(v) Why is cAMP referred as the global starvation signal?

(vi) State the characteristic features of Arabinose operon.

(vii) How is prion disease transmitted?

(viii) Which genes does Retrotransposon carry within it?

(ix) State the salient characteristics of Viroids.

(x) Define Transposition.

2 Answer any **two** of the following : **14**

(i) State the difference between nucleus and nucleoid? Comment on folded genome.

(ii) Describe the significance and strategies of genome organization in bacteria.

(iii) Discuss how histones are different than other DNA binding proteins.

3 Answer the following : 14

(i) Explain repressible operons with suitable examples.

(ii) Explaining the basic logic behind regulation, display various levels of control.

OR

3 Answer the following : 14

(i) Compare the basic regulatory strategies among the prokaryotes and eukaryotes.

(ii) Explain how carbon and nitrogen signals regulate the utilization of histidine.

4 Answer any **two** of the following : 14

(i) Describe development of competence and transformation in bacteria.

(ii) Comment on the genetic exchange between prokaryotes and eukaryotes and its implications.

5 Write short notes on any **two** of the following : 14

(i) Morphogenesis and maturation of T4 Phage

(ii) YAC

(iii) Mating type switching in yeast

(iv) Retrotransposon