

**M.Sc. (Micro) Semester - 1 (CBCS) Examination****Oct/Nov. -2018(New Course)****MOLECULAR BIOLOGY , GENETICS AND EVOLUTION(CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Q.1 Answer the following : (Any Seven) (14)
- (1) What are pseudogene, divided gene and split gene?
  - (2) What are polystronic and nested genes?
  - (3) Define : open transcription complex and active centre cleft
  - (4) Give examples of aneuploidy of autosomes and allosomes.
  - (5) What are conditional mutation and pseudoreversion?
  - (6) Define : Theory of special creation and Inbreeding depression.
  - (7) What is adaptive radiation?
  - (8) What is the Sturtevant's law?
  - (9) Explain major feature of Z-DNA.
  - (10) What is the role of Swiveling protein in DNA replication?
- Q.2 Answer the following : (Any two) (14)
- (1) Describe various DNA repair mechanisms in detail.
  - (2) Explain any three genetic disorders in humans in detail.
  - (3) Write a note on mechanisms of chemical mutagens.
- Q.3 Answer the following :
- a) Write a note on : Gene – Cistron relation in eukaryotes. (05)
  - b) Write a note on : Bacterial RNA polymerase (05)
  - c) Explain the mechanism of Induction & Repression. (04)
- OR
- Q.3 Answer the following :
- a) Discuss the tools of protein synthesis and protein processing. (07)
  - b) Explain RNA processing in prokaryotes and eukaryotes. (07)
- Q.4
- a) Write Any two out of three questions. (10)
    - (1) Explain differences between prokaryotic and eukaryotic genetic material.
    - (2) Discuss enzymatic machinery of DNA replication.
    - (3) Explain C value paradox.
  - b) Write Any one out of two questions. (04)
    - (1) Describe Linkage in *Drosophila* and throw light on proportion of recombinant progeny among linked and non linked genes.
    - (2) Describe proof of linkage as explained by Bateson and Punnett in *Lathyrus odoratus*.
- Q.5 Answer the following : (Any Two out of four) (14)
- (1) Explain various types of speciation with suitable examples.
  - (2) Describe principles of Mendelian genetics.
  - (3) Write a note on Oparin Haldane hypothesis and Miller's experiment.
  - (4) Describe Hardy – Weinberg equilibrium and genetic drift.

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