Printed Pages : 3 EBT403

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 9591 Roll No. | | | | | | | | | | |

B.Tech.

(SEMESTER-IV) THEORY EXAMINATION, 2012-13

GENETICS & MOLECULAR BIOLOGY

Time : 3 Hours] *[Total Marks : 100*

SECTION – A

1. Attempt **all** question parts. **10 × 2 = 20**

(a) What do you mean by Hfr strains ?

(b) What is non-reciprocity and crisscross inheritance ?

(c) How did the observations of E.Chargaff help Watson & Crick in proposing double helix ?

(d) Name the types of DNA transposable elements.

(e) Differentiate conservative and semi conservative methods of replication.

(f) What is catenation ?

(g) How can you differentiate eukaryotic mRNA from prokaryotic mRNA ?

(h) Write notes on inhibitors of transcription with relevant example.

(i) Write notes on the properties of triplet codon.

(j) What do you mean by housekeeping genes ?

SECTION – B

2. Attempt any **three** question parts : **10 × 3 = 30**

(a) Explain the following :

(i) DNA repairing

(ii) Cell type regulation

(b) Why does more crossing occur between two distant linked genes than between two Genes that are very close together on the same chromosome ?

(c) Explain the molecular mechanism of replication in prokaryotes.

(d) Write short notes on the following :

(i) Sigma factor

(ii) Rho factor

(iii) Shine-Dalgarno sequences

(iv) Polysome

(e) Give a detailed account on genetic code.

SECTION – C

Attempt **all** questions : **10 × 5 = 50**

3. Attempt any **two** parts : **5 × 2 = 10**

(a) Write short note on multiple factor inheritance.

(b) How is transformation mapping useful in mapping bacterial chromosomes ?

(c) Give an account on Linkage.

4. Attempt any **one** part : **10 × 1 = 10**

(a) List out the possible kinds of mutations in DNA and discuss the characteristics of gene mutation.

(b) How do you prove that DNA is the genetic material ? Elaborate.

5. Attempt any **one** part : **10 × 1 = 10**

(a) Write notes on the following :

(i) DNA Polymerase

(ii) RNA Polymerase

(b) Elaborate various kinds of restriction endonucleases with examples.

6. Attempt any **one** part : **10 × 1 = 10**

(a) What is reverse transcriptase ? How it is affecting the central dogma ? Also state the advantages of this enzyme.

(b) Enumerate maturation of RNA and splicing of mitochondrial RNA.

7. Attempt any **two** parts : **5 × 2 = 10**

(a) Illustrate Polypeptide elongation process.

(b) Explain the role of hormones in the regulation of gene activity in eukaryotes.

(c) What is trp-operon ? Explain the regulation of tryptophan gene.
