Exam.Code:0004
Sub. Code: 0358

2071

B.A./B.Sc. (General) Fourth Semester

Biotechnology

BIOT-Elect-Sem-IV-T: Fundamentals of Molecular Biology and Genetics

Time allowed: 3 Hours Max. Marks: 75

NOTE: *Attempt five questions in all, including Question No. IX (Unit-III) which is compulsory and selecting two questions each from Unit I - II.*

x-x-x

UNIT – I

I. a) Explain the experiment that led to the elucidation of DNA structure.

b) Discuss the molecular mechanism of DNA recombination in prokaryotes. (8,7)

II. a) Write a note on the different forms of DNA.

b) Describe the components of eukaryotic DNA polymerase. (8,7)

III. a) Discuss the termination of transcription in prokaryotes.

b) Diagrammatically explain the structure of eukaryotic gene. (8,7)

IV. a) Explain the concept of operons in prokaryotic gene organization.

b) Write a note on past transcriptional modification in eukaryotes. (5,10)

UNIT – II

V. a) Discuss the initiation of translation in eukaryotes.

b) Discuss the significance of insertion elements and transporons. (8,7)

VI. a) Explain catebolite repression in lactose operon.

b) Discuss the types of mutation and mutagens. (8,7)

VII. Write a note on the tryptophan operon explaining the process of altenuation. (15)

VIII. a) Discuss the role of enhances in eukaryotic gene expression.

b) Explain the chromosome structure and organization in eukaryotes. (7,8)

P.T.O.

UNIT – III

IX. Attempt briefly:-

a) Discuss the role of σ subunit DNA polymerase. (2)

b) Nucleoside (1)

c) Insulators (2)

d) Explain any one numerical aberration in chromosomes. (2)

e) Chromosomal bonding. (2)

f) Importance of induced mutation in plants. (2)

g) Law of independent assortment. (2)

h) Kozak sequence (2)

x-x-x