

D531

**Dual Degree B. Sc. (Hons.) Biotechnology–M. Sc. Biotechnology
EXAMINATION, 2020**

(Fourth Semester)

(Re-appear Only)

BT

DBT202

INTRODUCTION TO GENETICS AND MOLECULAR BIOLOGY

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

- 1.** Answer the following questions briefly : **3×5=15**
- (a) Describe somatic cell flybridization.
 - (b) What is meant by chromosomal aberrations ?
 - (c) Why is Nuclear splicing important ?
 - (d) Write about hormonal control of gene expression.
 - (e) How does variation contribute to heredity and evolution.

Unit I

- 2.** (a) Give an account of Mendels' experiment and concept of inheritance. **7½×2=15**
(b) How is genetic mapping done by tetrad analysis ?

3. Differentiate between : **$7\frac{1}{2} \times 2 = 15$**
- (a) Sex-linked, Sex-limited and Sex-influenced inheritance
- (b) Linkage and Crossing over.

Unit II

4. (a) Discuss various properties and helical model of DNA. **$7\frac{1}{2} \times 2 = 15$**
- (b) Describe mechanism of DNA replication in prokaryotes.
5. (a) Write about the role of RNA as genetic material with examples. **$7\frac{1}{2} \times 2 = 15$**
- (b) What are mutations and how are they caused ? Discuss physical and chemical mutagens.

Unit III

6. (a) Explain Transcription in Eukaryotes in detail. **$7\frac{1}{2} \times 2 = 15$**
- (b) Describe post-transcriptional processing of *r*RNA, *t*RNA and *m*RNA.
7. (a) Why is Genetic Code called as Universal Code and what is Wobble Hypothesis ? **$7\frac{1}{2} \times 2 = 15$**
- (b) On what basis translation mechanism in prokaryotes and eukaryotes differ ?

Unit IV

8. (a) Explain concept of lac and trp operons in prokaryotes. **$7\frac{1}{2} \times 2 = 15$**
- (b) Describe catabolite repression and attenuation.
9. Discuss in detail the gene regulation in Eukaryotes Methylation and Acetylation. **15**