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BOTANY

(Major)

Paper : 6.1

(**Molecular Biology and Plant Biochemistry**)

(**Theory**)

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Fill up the blanks with appropriate words :

1×7=7

- (a) RNA having enzyme activity is called —.
- (b) Nucleotide base that changes from purine to pyrimidine is termed as —.
- (c) Protein synthesis takes place in — of the cells.
- (d) There is a number of sequences which is common to many *E.coli* and bacteriophages genes upstream to starting point of lac operon known as —.

(e) — is the most extensively studied alkylating agent both with regard to chemical effects as well as mutagenic effects.

(f) Starch is an example of — saccharide.

(g) Template DNA that produces 'Okazaki fragments' during replication is called — strand.

2. Define the following in brief : 2×4=8

(a) Exon

(b) Base transition

(c) Genetic code

(d) Coenzymes

3. Write short notes on any *three* of the following :

5×3=15

(a) Different forms and functions of RNA

(b) Operon concept

(c) Semi-conservative mode of DNA replication

(d) Properties of enzymes

(e) Fine structure of genes

4. Answer any *three* of the following : $10 \times 3 = 30$

(a) Define mutation. Classify different types of mutations citing examples. $2+8=10$

(b) Explain the 'central dogma of life'. Why is it important in molecular biology and genetics? 10

(c) Elaborate the process of biological nitrogen fixation. 10

(d) Discuss the 'lac operon' gene expression and regulation in prokaryotes. 10

(e) Discuss in detail about the structure and formation of polysaccharides. Differentiate it from disaccharides. $8+2=10$

(f) Write a critical account about the mechanism of enzyme action in plants. 10
