

2019

BOTANY

( Major )

Paper : 6.1

( Molecular Biology and Plant Biochemistry )

Full Marks : 60

Time : 3 hours

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

1. Fill in the blanks with appropriate words :

1×7=7

- (a) The theory of inheritance was proposed by \_\_\_\_\_ in 1941.
- (b) Left handed helical coiling of DNA molecules is characteristic of \_\_\_\_\_.
- (c) Conversion of nitrate to ammonia is a \_\_\_\_\_ process.
- (d) Cloned DNA sequence can be physically mapped by \_\_\_\_\_.

- (e) \_\_\_\_\_ is the smallest unit of DNA capable of recombination.
- (f) Carbohydrates are \_\_\_\_\_ of substances that yield such compounds on hydrolysis.
- (g) Nomenclature of enzymes are done by the \_\_\_\_\_.

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

- (a) Selfish genes
- (b) Nucleotides and nucleosides
- (c) Pleiotrophic mutation
- (d) Stereoisomerism in carbohydrates

3. Write short notes on any *three* of the following : 5×3=15

- (a) Tautomerisation
- (b) Genetic code
- (c) Structural organization of nitrogenase enzyme
- (d) Pribnow box
- (e) Nitrate reductase

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

- (a) What is promoter gene? Explain the mechanism involved in the positive control system for the regulation of gene activity in *E. coli* lac operon.  $2+8=10$
- (b) Explain briefly the point-mutation. Describe the meiotic behaviour of frame-shift mutation.  $2+8=10$
- (c) What are amino acids? Give an account of synthesis of amino acids in plants.  $2+8=10$
- (d) What are the family of D-ketoses? Explain briefly the physical and chemical properties of mono-saccharides.  $2+8=10$
- (e) What is leader sequence or Shine-Dalgarno (SD) sequence? Describe the differences between transcription and translation.  $2+8=10$

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