# 2021

#### **BOTANY — HONOURS**

Paper: CC-11

(Cell and Molecular Biology)

Full Marks: 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

## 1. Answer any five questions from the following:

 $2 \times 5$ 

- (a) What is ribozyme? Give one example.
- (b) What is Wobble hypothesis?
- (c) What is meant by RNA interference?
- (d) Differentiate between codon and anticodon.
- (e) What are Okazaki fragments? Why such fragments are formed?
- (f) What is quiescent stage in cell cycle?
- (g) Name the enzyme required for PCR and mention its source.
- (h) What is meant by RNA editing?

#### 2. Answer *any two* questions from the following:

5×2

- (a) Give a brief account of apoptosis.
- (b) Explain briefly the role of licensing factor in DNA replication.
- (c) Give a brief account of point centromere and regional centromere.
- (d) Describe with diagram the positive control of lac-operon.

## 3. Answer any three of the following:

- (a) Define gene cloning. Mention the properties of an ideal gene cloning vector. Write a note on the types of restriction endonucleases with one example of each. What is cDNA library? 2+3+3+2
- (b) Explain amino-acylation of t-RNA. Describe in detail the different steps in prokaryotic translation with references to different factors involved in this process. Mention any two differences between prokaryotic and eukaryotic translation.

  2+6+2
- (c) (i) Describe briefly the packaging of DNA with reference to nucleosome concept.
  - (ii) Describe the ultrastructure of NPC.

7+3

Please Turn Over

(2)

- (d) Write a note on fidelity of DNA replication. Mention the post-transcriptional modifications observed in eukaryotic mRNA.
- (e) (i) What is meant by tumor suppressor genes? Cite examples.
  - (ii) What will happen in a cell, if the p53 gene is mutated?
  - (iii) Differentiate between benign and malignant tumor.
  - (iv) What is meant by metastasis of cancer? What is v-oncogene?

3+2+2+3