

2024

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 : 2×5
 - (a) What is the function of miRNA?
 - (b) Mention two properties of genetic code.
 - (c) What is riboswitch? Mention its function.
 - (d) Differentiate necrosis from apoptosis.
 - (e) Name the initiation factors involved in eukaryotic translation.
 - (f) What is the full form of SnRNA? State briefly any one of its regulatory roles.
 - (g) What do you mean by diffused centromere? How is Kinetochore related to Centromere?
 - (h) What do you mean by aminoacylation of tRNA?

2. Answer *any two* questions from the following :
 - (a) Explain serial endosymbiotic origin of an eukaryotic cell with labelled sketches. 5
 - (b) Write down a note on the structure and dynamic nature of microtubules. 5
 - (c) Distinguish between benign and malignant tumour. How does protooncogene contribute towards cancer development? 1+4
 - (d) Discuss PCR technique and its application. 5

3. Answer *any three* questions from the following :
 - (a) What is operon? Distinguish between an inducible and a repressible operon. Explain the mechanism of negative control in *lac*-operon with suitable diagrams. 2+3+5
 - (b) How does MPF work in cell cycle? Enumerate the different check-points in yeast cell. Give an example of CDK-inhibitor. What is its importance? Define apoptosis. 3+3+1+2+1

Please Turn Over

(0384)

- (c) Describe with sketches the process involved in prokaryotic transcription. What are the steps involved in the conversion of pre mRNA to mature mRNA in eukaryotic cells? 7+3
- (d) Describe RNA interference. State the salient features of organellar DNA. Mention the concept of the first cell in the context of RNA. 4+3+3
- (e) Define Restriction endonuclease. Mention different types and their roles. Distinguish between genomic and cDNA library. 2+4+4
-