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1 (Sem-2/FYUGP) BOT 21 MJ

2026

BOTANY

(Major)



Paper : BOT4200104 MJ

(Cell Biology and Biomolecules)

Full Marks : 45

Time : 2 hours

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

1. Answer the following questions : $1 \times 5 = 5$

- (i) Which RNA codes for proteins ?
 - (a) rRNA
 - (b) mRNA
 - (c) tRNA
 - (d) Primer RNA
- (ii) Nucleotide is composed of —
 - (a) Sugar and nitrogen bases
 - (b) Phosphate and nitrogen bases
 - (c) Nucleoside and nitrogen bases
 - (d) Only nitrogen bases
- (iii) Which type of DNA shows left handed coiling ?
 - (a) A - DNA
 - (b) B - DNA
 - (c) Z - DNA
 - (d) C - DNA
- (iv) MUFA is a —
 - (a) Saturated fatty acid
 - (b) Unsaturated fatty acid
 - (c) Both saturated and unsaturated fatty acid
 - (d) Protein
- (v) Name the protein of which spindle fibres are made of ?

2. Answer **any five** of the following questions :
 $2 \times 5 = 10$

- (i) What do you mean by G_0 state in cell cycle ?
- (ii) What is the difference between saturated and unsaturated fatty acid ?
- (iii) What is passive and active transport ?
- (iv) What is hnRNA ? From where it is originated or formed ?
- (v) What is exocytosis and endocytosis ?
- (vi) What do you mean by genetic RNA ? Cite example.
- (vii) In the Clover leaf model of tRNA how many unpaired loops are formed ? Name them.
- (viii) What is Primer RNA ?
- (ix) What is the role of mesosome?
- (x) Name the proteins involved in regulating cell cycle ?

3. Answer **any four** of the following questions :
 $5 \times 4 = 20$

- (i) Write a short note on different forms of RNA.

- (ii) Explain the basic structure of an amino acid with a neat diagram.
- (iii) Describe the Clover leaf model of tRNA.
- (iv) Write the difference between DNA and RNA.
- (v) What is endoplasmic reticulum ? Differentiate SER from RER.
- (vi) Write the biological role of peroxi-somes.
- (vii) Write a brief note on different forms of DNA.
- (viii) Write about the nuclear dynamism seen during mitotic cell division.

4. Answer **any one** of the following questions :

10×1=10

- (i) Describe the third mosaic model of plasma membrane with a neat diagram.
- (ii) Describe the generalized structure of DNA as described by Watson and Crick in 1953 with a neat diagram.
- (iii) Describe the different structure of proteins.
- (iv) What are carbohydrates ? Classify and describe the different forms citing suitable examples.