1 (Sem–2/FYUGP) BOT 21 MJ

2026

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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 : 1×5=5

(i) Which RNA codes for proteins ?

(a) *r*RNA

(b) *m*RNA

(c) *t*RNA

(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 ?

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2. Answer ***any five*** of the following questions : 2×5=10

(i) What do you mean by G_o 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 *hn*RNA ? 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 *t*RNA 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 : 5×4=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 *t*RNA.

(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.

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