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BOTANY

( Major )

Paper : 2.2

( Theory )

( Cell Biology )

Full Marks : 60

Time : 3 hours

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

1. Answer the following : 1×7=7
- (a) Why are the DNAs charged negatively?
  - (b) Write the Svedberg units of eukaryotic ribosomes.
  - (c) What is a nucleoside?
  - (d) What forms the amide linkage between alpha amino group of one amino acid and the alpha carboxyl group of another?

- (e) What are splicing speckles?
- (f) Give an example of a globular protein.
- (g) What are collagens?

2. Differentiate between any *four* of the following : 2×4=8

- (a) V-class ion pump and F-class ion pump
- (b) Electrical and chemical synapse
- (c) B DNA and Z DNA
- (d) Carrier protein and channel protein
- (e) Chromosome and chromatin

3. Answer any *three* of the following : 5×3=15

- (a) What is passive transport? Explain about the two types of passive transport.
- (b) What is membrane potential? How does membrane potential arise?
- (c) Write briefly about positive and negative supercoiling of circular DNA.

- (d) What do you understand by signal recognition particle (SRP)? How does the eukaryotic SRP differ from that of a prokaryotic one?
- (e) Describe the structure of the nucleosome. When is it called a chromatosome?

4. Answer the following questions :  $10 \times 3 = 30$

- (a) Discuss briefly on the receptor-mediated endocytosis. Differentiate between phagocytosis and pinocytosis.  $6 + 4 = 10$

Or

Write briefly about primary active transport and secondary active transport and their types. 10

- (b) Mention why Adenine always pairs with Thymine and Guanine with Cytosine. Draw the different structures of purines and pyrimidines present in DNA and write their chemical names.  $4 + 6 = 10$

Or

Describe with the help of diagram lampbrush chromosomes and state its biological significance. 10

( 4 )

(c) What are supercoils? How does DNA gyrase act in introducing the supercoils? Write briefly about DNA topoisomerase I and II.  $2+3+5=10$

Or

Is RNA a primary transcript or a secondary transcript? Discuss the mechanism involved in the processing of pre-mRNA. What are importins?

$1+8+1=10$

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