2 0 1 8

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?

(Turn Over)

(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.

(Continued)

(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 : 10×3=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

(Turn Over)

(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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