(3 Hours) **[Total Marks : 100]**

N.B.: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary.

Q.1 Answer any **Two** of the following:- **20**

A) Describe the structure and functions of the nuclear envelope and nucleolus.
B) Give a detailed account of the type of Giant chromosome studied by you.
C) Explain in detail the formation of peptide bonds during elongation of the protein chain.
D) Describe the process of termination of translation in both prokaryotes and eukaryotes.

Q.2 Answer any **Two** of the following:- **20**

A) Define Osmosis. State its significance in transport of water in plants.
B) What are the various factors which contribute to water potential? Explain each in detail.
C) Describe the process of phloem loading and unloading.
D) State the significance of any two micronutrients in plants.

Q.3 Answer any **Two** of the following:- **20**

A) What is bioremediation? Discuss the factors affecting bioremediation.
B) With respect to phytoremediation explain the following terms
i) Phytoextraction ii) Rhizofiltration
C) What is plant succession? Explain two stages of a Hydrosere. Give examples of at least two plants of each stage.
D) What are the causes of succession? Distinguish between primary and secondary succession.

Q.4 Answer any **Two** of the following:- **20**

A) How are Orchids cultivated by micropropagation? Explain.
B) What is protoplast fusion? Explain Chemofusion with an example.
C) What are synthetic seeds? Give the methods of their synthesis by encapsulation.
D) What is suspension culture? How is it used in the production of the secondary metabolite Shikonin?

Q.5 Answer any **Four** of the following:- **20**

a) Role of Vacuoles in pH and ionic homeostasis
b) Universality of the genetic code
c) Ecesis
d) Plasmolysis
e) Direct and indirect somatic embryogenesis
f) Factors affecting transpiration

****