Time: 3 Hours **Total Marks: 100**

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

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

A) Describe the structure of a plant vacuole. Enumerate any two of its functions .
B) Enlist and explain the steps involved in elongation of a protein chain.
C) Describe the process of initiation of translation in eukaryotes.
D) What are Polytene chromosomes? Write a note on their structure, occurrence and possible functions.

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

A) "Transpiration is a necessary evil". Justify and comment on various modes of transpiration.
B) Explain how water potential helps in the translocation of solutes in plants.
C) Describe the role of carriers in transport of solutes across cell membranes.
D) What are macronutrients? Describe the role and deficiency symptoms of any two macronutrients studied by you.

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

A) What is bioremediation? Explain the role of microbial population in bioremediation.
B) What is phytoremediation? Explain phytoremediation of organic pollutants by plants.
C) Define plant succession. Explain any three stages of a hydrosere citing suitable examples of plants.
D) Explain the term bioaccumulation? How does bioaccumulation take place in an ecosystem?

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

A) What are artificial seeds? State the various steps involved in production of artificial seeds.
B) Write a detailed note on aspects of micropropagation with reference to cultivation of Orchids.
C) Explain the method of production of Shikonin by suspension culture
D) Give a detailed account of Somatic hybridisation**.**

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

a) Degeneracy of genetic code
b) Composition of phloem sap
c) Electrofusion of protoplasts
d) Monoclimax theory
e) Nucleolus
f) Plasmolysis

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