

Time – 2 ½

Marks - 75

- N.B.**
1. All questions are compulsory.
 2. Draw neat labelled diagrams wherever necessary.
 3. All questions carry equal marks.
 4. Use of simple calculator is allowed

Q.1 Attempt any two

15

- a Describe the structure and function of nuclear pore complex.
- b Enlist and briefly describe the various functions of cell vacuoles.
- c What are giant chromosomes? Describe in detail the morphology of giant chromosome occurring in the salivary glands of some insect larvae.
- d Describe the process of initiation of translation in prokaryotes.

Q.2 Attempt any two

15

- a Describe the role of cytokinins as a plant growth regulator.
- b Describe the various environmental factors affecting plant growth.
- c Describe the anatomy of sieve tube elements and companion cells.
- d Define transpiration. State significance of transpiration in plants.

Q.3 Attempt any two

15

- a With respect to phytoremediation explain the following terms
a) Phytoextraction b) Phytodegradation
- b What is bioaccumulation? Describe the process of bioaccumulation of pollutants in the ecosystem.
- c What is bioremediation? Discuss the factors involved in bioremediation.
- d Discuss the role of aquatic ecosystem in biomagnification.

Q.4 Attempt any two

15

- a Obtain the equation of the line of regression of yield of rice (Y) and water (X)

Water in inches (X)	12	18	24	30	36	42	48
Yield in tons (Y)	5.27	5.68	6.25	7.21	8.02	8.71	8.42

Calculate the most probable yield of rice for 40 inches of water

- b Albino rats were administered with an ayurvedic medicine of 10mg/10kg for 7 days. Initial and final body weights were recorded as shown below. Analyse using paired t test, if the drug has any significant effect on body weight.

Rat. No	1	2	3	4	5	6	7	8	9	10
Initial body weight	110	115	102	98	112	110	97	120	102	110
Final body weight	109	116	100	95	108	112	98	115	98	111

(Tab t at 5% = 2.26)

c The following is the data obtained in an experiment

Sr. No	Mg of protein (X)	Absorbance (O.D.) (Y)
1	0	0.05
2	0.1	0.2
3	0.2	0.25
4	0.3	0.3
5	0.4	0.35
6	0.5	0.4
7	0.6	0.45
8	0.7	0.5
9	0.8	0.55
10	0.9	0.6

Find the linear regression equation of mg of protein (X) on absorbance (Y). also find out the mg of protein when O.D. is 0.38

d The effect of three different concentration of new PGR (plant growth regulators) in ppm is applied on root emergence from leaf cuttings of Begonia. Find out if there is any effect of PGR concentration on root emergence.

Replicates	Root emergence due to PGR concentration		
	10 ppm	20 ppm	30 ppm
1	5	7	4
2	4	9	3
3	6	8	5
4	5	10	3
5	6	9	4

(Tab f at 0.001=13.0)

Q.5 Attempt any three

- a Wobble hypothesis
- b Translocation
- c Experiment involving Girdling of phloem
- d Passive transport
- e Phytostabilization
- f Significance of Regression analysis

15
