

Time-3 hr

Marks – 100

- N. B.** 1. All questions are compulsory.
 2. Draw neat labeled diagrams wherever necessary.
 3. All questions carry equal marks.

Q.1 Attempt any two

20

- A. Discuss merits and demerits of Hutchinson’s system of classification.
- B. Explain Indian botanical garden Howrah as a major botanical garden of India.
- C. Give the classification, distinguishing characters and floral formula of family Rhamnaceae.
- D. Assign *Calotropis* to its respective family giving reasons and describe its morphological peculiarities.

Q.2 Attempt any two

20

- A. What are hydrophytes? Explain ecological adaptations exhibited by hydrophytes.
- B. Describe ecological adaptation in mesophytes.
- C. What are xerophytes? Explain the anatomical adaptation with suitable example in xerophytes.
- D. Give brief account of ecological adaptations in epiphytes with suitable example.

Q.3 Attempt any two

20

- A. Describe the structure of microsporangium and the process of microsporogenesis in angiosperms.
- B. Explain the structure of embryo sac and the process of megasporogenesis in angiosperms.
- C. Discuss the process of double fertilization and its significance.
- D. With a neat labeled diagram explain the stages in development of *Capsella* type of embryo.

Q.4 Attempt any two

20

A) In a nutritional study, 13 children were given a usual diet plus vitamin A & D tablets. While the second comparable group of 12 children was taking the usual diet. After 12 months, the gain weight in pounds was noted as given in the table. Can you say that vitamin A & D were responsible for this difference?

Group T	5	3	4	3	2	6	3	2	3	6	7	5	3
Group C	1	3	2	4	2	1	3	4	3	2	2	3	--

(Tabulated 't' at $P < 0.005 = 2.07$)

B) An I.Q. test was administered to 5 persons before and after they were trained. The results are given below.

Test whether there is any change in I.Q. after training program.

Candidates	I	II	III	IV	V
I.Q. before training	110	120	123	132	125
I.Q. after training	120	118	125	136	121

(Tabulated 't' at $P < 0.001 = 4.60$)

C) The following is the data obtained in an experiment:

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

Sr. No.	Mg of proteins (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

D) The three wheat varieties are grown on 4 plots and allocated completely at random which are given in the table. Find out if differences are significant.

Varieties	Plots			
	1	2	3	4
Variety A	28	28	27	31
Variety B	18	21	19	22
Variety C	16	19	18	19

(Tabulated 't' at $P \leq 0.001=4.26$)

Q.5 Attempt any four

20

- Give an account of economic importance of family Combrataceae.
- Write short note on ecological anatomy of sciophytes.
- Write note on ecological adaptations of halophytes.
- Enlist various types of Angiospermic ovules.
- Write the functions of Tapetum.
- Give an account on ANOVA and its applications.