

DHANAMANJURI UNIVERSITY

JUNE – 2021

Name of Programme : B.Sc. Botany
Semester : Fourth
Paper Code : BOT-204
Paper Title : Cytology, Genetics, Plant Breeding, Biotechnology & Introduction to Statistics

Full Marks : 50

The figures in the margin indicate full marks for the questions.

Be precise and concise. Unnecessarily long answer will lead to getting less marks.

Answer all questions.

1. Draw and label a mitochondrion and a chloroplast. Write the similarities between mitochondria and chloroplast. 10

Or

Write the differences between prophase of mitosis and that of meiosis. 10

2. What is complementary gene interaction? Find out its phenotypic ratio by showing a cross between two complementary genes. 6+2+2 = 10

Or

Describe the different types of structural chromosomal aberrations. 10

3. Write notes on Pureline Selection and mass selection 5+5 = 10

Or

How hybridization of self-pollinated crops is done? 5+5 = 10

4. Write the steps involved in tissue culture of shoot tip explant. 10

Or

Write notes on application of genetic engineering in Medicine and Agriculture by giving five points each. 5+5 = 10

5. a. Calculate the standard deviation for the following data for the height of pinus plant given in inches. 5

Height	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 - 35
No. of Pinus plant	4	8	16	8	4	3	2

- b. If mean > median > mode, what will be the type of skewness? What will be the type of frequency curve if the coefficient of kurtosis (β_2) > 3? 1+1 = 2
- c. By using dummy data, draw the scatter diagrams of 3
- Positive correlation;
 - Negative correlation and
 - No correlation

Or

- d. A field botanist collected plants from different places in the Ukhrul District. The following data is the number of plants.

Location	A	B	C	D
No. of plants	74	97	88	20

Represent the data in a pie diagram and label the proportion by percentage. 5

- e. There are two baskets A and B. The basket A contains 20 oranges, 30 mangoes and 40 lemons. The basket B contains 30 oranges, 20 mangoes and 40 lemons. A fruit is transferred from basket A to basket B and a fruit is drawn at random from the basket B. What is the probability that the selected fruit is an orange? 5
