



বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2021

(Under CBCS Pattern)

Semester - V

Subject: BOTANY

Paper : DSE 2 -T & P

Full Marks : 60 (Theory-40 + Practical-20)

Time : 3 Hours

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Plant Breeding

[Theory]

Group - A

- A. Answer any **three** questions from the followings : 12×3=36
1. State the contrivances and consequences of self-pollination in crops. Briefly describe apomixis mode of reproduction. 6+6
 2. What is hybrid vigour? How does it differ from common hybrid? Illustrate overdominance hypothesis to explain hybrid vigour. Why hybrid vigour diminishes in following generations? 2+2+6+2

3. Compare pedigree method with bulk method. Define hybridization. Contrast pureline selection and mass selection. 6+2+4
4. Differentiate between monogenic and polygenic inheritance. What is introgressive hybridization? How heterosis is utilized in plant breeding? 6+2+4
5. Define polyploidy. Describe with suitable examples the role of polyploids in plant improvement. What is inbreeding depression? 3+6+3
6. Write short notes on the center of origin of crop plants and domestication. What are endemic plants? Write down the role of mutation in crop improvement. 3+3+2+4

Group - B

- B. Answer any **two** questions from the followings : 2×2=4
1. What is quantitative inheritance?
 2. What is genetic drift?
 3. What is emasculation?
 4. What is backcross?

[Practical]

Group - A

- A. Answer any **one** question from the following : 15×1=15
1. Write the steps of experiment for determining viability of the pollen grain by using TTC test and mention its principle. 10+5
 2. How to determine the genetic inheritance of character by chi-square test of a given seed lot? Explain the goodness of fit for an inheritance of four contrasting characters. 10+5
 3. How to identify the recombinant genotype and parental genotype from the number of progeny observed in a dihybrid cross? State the principle of it. 10+5

Group - B

- B. Answer any **one** question from the following : 5×1=5
1. Illustrate the procedure of emasculation by applying higher temperature.
 2. Demonstrate the method of discriminating fertile and sterile pollens with carmine stain.

3. Mention the steps for using chi-square table of Fisher and Yates for determining goodness of fit of a genetic ratio of inheritance.

Or;

(a) Laboratory note book 2

(b) Viva-voce 3

Vidyasagar University

Or
Stress Biology

[Theory]

Group - A

- A. Answer any **three** questions from the followings : 12×3=36
1. What is biotic stress? Describe SAR in plants. What are phytoalexins and mention their functions? 2+6+2+2
 2. Briefly describe the role of jasmonate in stress biology. Write brief notes on : (i) PR proteins, (ii) Phytochelatins. What is ROS in plants? 5+(3+3)+1
 3. How does heat stress cause injury in higher plants? Write a short note on heat shock protein. Distinguish between stress avoidance and stress resistance. 5+4+3
 4. Give an explanatory note on drought resistance in mesophytes. Write the role of ABA in plant stress management. 7+5
 5. What is the role of aerenchyma in hydrophytes? Discuss the phospholipid signaling pathway in abiotic stress management in plants. Define acclimation. 4+6+2
 6. What are stress sensing mechanisms in plants? Write the role of calcium in the stress sensing mechanism. Give a brief account of the scavenging mechanism of reactive oxygen species. 3+5+4

Group - B

- B. Answer any **two** questions from the followings : 2×2=4
1. What are the physiological adaptations of the hydrophytic plants?
 2. What is meant by hypersensitive reaction?
 3. What is oxidative burst?
 4. What do you mean by facultative CAM?

[Practical]

Group - A

- A. Answer any **one** question from the following : 15×1=15
1. Write down the procedure of estimation of peroxidise activity in rice seedling. What is the basic principle for the method of estimation? 10+5
 2. Describe the procedure of estimation of superoxide dismutase activity in presence and absence of salt stress. Mention the requirements for this method. 10+5
 3. Briefly mention the chemicals required for the quantitative estimation of catalase. Write down the procedure for zymographic analysis of catalase. 5+10

Group - B

- B. Answer any **one** question from the following : 5×1=5
1. How will you calculate Superoxide dismutase activity in plant?
 2. Write down the basic principle for the estimation of catalase activity in plant.
 3. Write the requisitions for the preparation of standard curve of glutathione reductase (GSH).

Or;

- (a) Laboratory note book 2
- (b) Viva-voce 3
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