



বিদ্যাসাগর বিশ্ববিদ্যালয়  
**VIDYASAGAR UNIVERSITY**

**Question Paper**

**B.Sc. Honours Examinations 2020**

(Under CBCS Pattern)

**Semester - V**

**Subject: BOTANY**

**Paper : DSE 2-T & DSE 2-P**

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

**Time : 3 Hours**

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

*The figures in the margin indicate full marks.*

**DSE 2-T**

**Plant Breeding [Theory]**

Answer *any two* of the following:

2x20=40

1. a. What is hybridization?
- b. Define polyploidy with example.
- c. State the differences between monogenic and polygenic inheritance.
- d. Explain genetic basis of inbreeding depression and heterosis. 3+3+7+7
2. a. What is acclimatization?
- b. Mention two importance of plant breeding.

- c. State the role of mutations in crop improvement.
- d. Describe selection methods with example. 3+3+7+7
3. a. What is heterosis?
- b. What is cross pollination?
- c. What are the important achievements of plant breeding? Mention some demerits of plant breeding.
- d. Write the role of mutations in crop breeding. 3+3+7+7
4. a. Explain quantitative inheritance with example.
- b. What is self pollination?
- c. What are the advantages and limitations of crop breeding?
- d. Define distant hybridization. Explain the role of biotechnology in crop improvement. 3+3+6+8

**DSE 2-P**  
**Plant Breeding [Practical]**

Answer any one of the following:

1x20=20

1. a) How fertile and sterile pollens can be identified with carmine stain and TTC test.
- b) How chi-square value is calculated.
- c) Mention any two processes for emasculation. 10+5+10
2. a) How identification of offspring can be done having parental and recombinant genotypes.
- b) Discuss complimentary gene expression with suitable example. 10+10
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**DSE 2-T**  
**Stress Biology [Theory]**

Answer *any two* of the following:

2x20=40

1. a. What is biotic stress? Cite an example.  
b. Define stress avoidance.  
c. What are reactive oxygen species? Mention their functions.  
d. Mention the response of hypersensitivity reaction in physiology and biochemistry of plants.  

3+3+7+7
2. a. What is acclimation?  
b. What is the role of jasmonic acid and salicylic acid in stress tolerance?  
c. How plant respond to salt stress using calcium signaling mechanism?  
d. Discuss the phospholipid signaling pathway in plants in response to abiotic stress.  

3+4+6+7
3. a. What is SAR signaling?  
b. What is the role of aerenchyma in hydrophytes?  
c. Write the molecular mechanism of production and scavenging of reactive oxygen species by photo system-II.  
d. What are the different incidents occur in plant due to high temperature injury?  

3+3+7+7
4. a. What is osmotic adjustment?  
b. Define stress tolerance.  
c. What are the changes observed in plants under water stress?

d. Describe the effects of low intensity light, high intensity light and UV radiation on plants.

e. Mention the effects of salt stress in plants.

3+2+4+6+5

### [Practical]

Answer any one of the following:

1x20=20

1. (a) Write down the procedure of quantitative estimation of peroxidase activity in seedling in absence and presence of salt stress.

(b) Write down the estimation procedure of superoxide radical.

10+10

2. (a) Mention how zymograph analysis of peroxidase can be done.

(b) Discuss how salt stress can alter superoxide activity seedlings.

10+10

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