

## D-6643

M.Sc. (IV<sup>th</sup> Semester) Examination, 2020

### BOTANY

(Molecular Interactions of Plant with Symbionts  
Pathogens and Pests)

*Time Allowed : Three Hours*

*Maximum Marks : 70*

#### SECTION - A

**Note :** Attempt any ten questions. Each question carries  
one mark. **1×10=10**

**Q. 1.** Objective type :

- (i) Mycorrhiza represents \_\_\_\_\_ association  
between a fungus and roots of higher plants.
- (ii) Plant-parasitic nematodes have a \_\_\_\_\_.

- (iii) Enzyme used for making cDNA is \_\_\_\_\_.
- (iv) Root knot, soybean cyst and pine wilt are  
examples of \_\_\_\_\_ diseases.
- (v) GMOs stands for \_\_\_\_\_.
- (vi) Restriction endonucleases are used in genetic  
engineering and they :
- (a) Cut DNA at various sites
- (b) Join DNA segments
- (c) Cut RNA at specific sites
- (d) Cut DNA at specific sites
- (vii) When both partners are affected negatively the  
nature of interaction is called :

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- (a) Commensalism
  - (b) Competition
  - (c) Predation
  - (d) Amensalism
- (viii) Powdery mildew is caused by :
- (a) Erysiphe
  - (b) Albugo
  - (c) Plasmodiophora
  - (d) Ustilago
- (ix) Mycorrhiza represents :
- (a) Symbiotic association between a fungus and roots of higher plants
  - (b) Symbiotic association between a fungus and an algae

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- (c) Symbiotic association between a fungus and liverworts
  - (d) All above
- (x) For most biotic plant diseases to develop, there must be \_\_\_\_\_ present :
- (a) A pathogen
  - (b) A susceptible host
  - (c) A favorable environment
  - (d) All the above
- (xi) Downy mildew is caused by :
- (a) Puccinia
  - (b) Albugo
  - (c) Plasmodiophora
  - (d) Ustilago

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(xii) Which is related to genetic engineering :

- (a) Plastid
- (b) Plasmid
- (c) Heterosis
- (d) Mutation

**SECTION - B**

**Note :** Attempt any five questions. Each question carries

2 marks.

**5×2=10**

**Q. 2.** Very Short Answer Type (25-30 words) :

- (i) Define arbuscule.
- (ii) What is presymbiotic phase ?
- (iii) What is extraradical mycelium ?
- (iv) Define antagonism.

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(v) Define transgenes.

(vi) Define root knot nematode.

(vii) What is Bt gene ?

**SECTION - C**

**Note :** Attempt any five questions. Each question carries

4 marks.

**5×4=20**

**Q. 3.** Short Answer Type (250 words) :

- (i) Explain symbiotic association.
- (ii) Write names of enzymes involved in plant pathogenesis.
- (iii) Write four benefits of parasitic interaction between plants.

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- (iv) Illustrate root colonization structures of ectomycorrhizal fungi in plant.
- (v) Write name of four toxins produced during pathogenesis by fungal pathogens.
- (vi) Explain types of parasitism in detail.
- (vii) Illustrate mutualism with suitable example.

**SECTION - D**

**Note :** Attempt any three questions. Each question carries 10 marks. **3×10=30**

**Q. 4.** Essay Type (more than 500 words) :

- (i) Write a note on mechanism of plant pathogen interaction.
- (ii) Explain method of genetic engineering for production of disease resistance plants in detail.

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- (iii) Explain any plant nematode life cycle in detail.
  - (iv) Explain commensalism and mutualism in detail.
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