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H-6643

M.Sc. (IV-Semester) Examination, 2022

BOTANY

(Molecular Interactions of Plants with Symbionts Pathogens and Pests)

Time Allowed : Three Hours

Maximum Marks : 70

Minimum Passing Marks : 25

Note : Question paper is divided into four sections. Attempt each section as per given direction. Distribution of marks in given in each section.

SECTION-A

(Objective Type Questions)

Note : Attempt **any ten** questions. Each question carries **1** mark. [1x10=10]

1. (i) Symbiosis is :

(a) an association of two organisms where one is benefitted and other is neither harmed nor benefitted

(b) an association of two organisms where one is benefitted and other is harmed

(c) an association of two organisms where both are benefitted

(d) None of the above

(ii) Mycorrhiza is a symbiotic association betwen :[1]

(a) Fungi and roots of higher plants

(b) Fungi and leaves of higher plants

(c) Algae and fungi

(d) Algae and bryophytes

(iii) Which of the following is a vector, used in genetic engineering?

(a) pBR322

(b) pUC

(c) Cosmid

(d) All of the above

(iv) Red rust of tea is caused by :

(a) an algal pathogen

(b) a fungal pathogen

(c) a bacterial pathogen

(d) none of the above

(v) Early blight of potato is caused by :

(a) *Alternaria solani*

(b) *Phytophthora infestans*

(c) *Xanthomonas sp.*

(d) *Puccinia sp*.

(vi) The association between two organisms where both are affected negatively is termed as :

(a) Parasitism

(b) Commensalism

(c) Protocooperation

(d) Predation

(vii) Restriction enzymes cut DNA at :

(a) random sites

(b) desired sites

(c) specific nucleotide sequences

(d) all of the above

(viii) Soybean cyst disease is caused by :

(a) a nematode

(b) a fungus

(c) a bacterium

(d) all of the above

(ix) Etiology refers to :

(a) scientific study of causes of disease

(b) disease outbreak

(c) study of pathogen

(d) all of the above

(x) Allelochemicals are the chemicals :

(a) secreted by roots of certain plants which inhibit growth of other plants

(b) sprayed on the crop fields to check diseases

(c) which are mutagenic

(d) all of the above

(xi) A parasitic organisms is one which :

(a) derives its nourishment from its host and is harmful to its host

(b) derives its nourishment from the host and is beneficial to its host

(c) is self-sufficient and need not to depend for its nourishment on other plant

(d) none of the above

(xii) Powdery mildew of pea is caused by :

(a) *Erysiphe polygoni*

(b) Albugo candida

(c) *Plasmodiophora brassicae*

(d) *Ustilago nuda*

SECTION-B

(Very Short Answer Type Questions)

Note: Attempt **any five** questions. Each question carries **02** marks. Write your answer in **25-30** words. [5x2=10]

2. (i) Define synthetic plasmid.

(ii) What do you mean by Ammensalism?

(iii) What is Pathogenesis?

(iv) What is pUC?

(v) Define vector is Pathology.

(vi) What is Chimeric DNA?

(vii) Define Antagonism.

SECTION-C

(Short Answer Type Questions)

Note: Attempt **any five** questions. Each question carries **04** marks. Write your answer in **250** words. [5x4=20]

3. (i) What is Symbiotic Association? Explain with suitable example.

(ii) Define pathogenesis and elaborate the steps involved in pathogenesis.

(iii) Enumerate benefits of plant-parasite interaction.

(iv) What is Genetic Engineering? Write steps involved in gene cloning.

(v) Write benefits of mycorrhizal association to the plants.

(vi) Enumerate enzymes involved in plant pathogenesis.

(vii) Write name of four toxins produced during pathogenesis by fungal pathogens.

SECTION-D

(Essay Type Questions)

Note: Attempt **any three** questions. Each question carries **10** marks. Write your answer in more than **500** words.

[3x10=30]

4. (i) Write a descriptive note (with suitable diagrams) on plant- parasite interaction upto disease establishment.

(ii) Explain methods of production of disease resistant plants with the help of genetic engineering.

(iii) Explain plant-nematode interaction with a suitable example.

(iv) Explain ammensalism and parasitism in detail.

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