FD-623

M.Sc. 3rd Semester
Examination, Dec.-Jan., 2021-22

BOTANY

Paper - I

Plant Development and
Plant Resources

Time : Three Hours] [*Maximum Marks* : 80
[*Minimum Pass Marks* : 16

Note : Answer **all** questions. All questions carry equal marks.

Unit-I

1. Describe the organization of root apical meristem and different theories regarding root apical meristem.

OR

Write notes on any **two** of the following :

(*a*) Bud dormancy

(*b*) Mobilization of food resources

(*c*) Lateral roots

Unit-II

2. Write an account on vascular cambium.

OR

Write notes on any **two** of the following :

(*a*) Phloem

(*b*) Types of vascular bundles

(*c*) Laticifers

Unit-III

3. Explain phyllotaxy with suitable examples and diagrams.

OR

Write notes on any **two** of the following :

(*a*) Types of stomata

(*b*) Homeotic mutant in arabidopsis

(*c*) Leaf senescence

Unit-IV

4. Give an account of medicinal plants and their uses.

OR

Write notes on any **two** of the following :

(*a*) Rattans

(*b*) Origin, cultivation and uses of cotton

(*c*) Origin, cultivation and uses of sugarcane

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BOTANY

Paper - II

Plant Ecology - I
(Ecosystem and Vegetation Ecology)

Time : Three Hours] [*Maximum Marks* : 80
[*Minimum Pass Marks* : 16

Note : Answer **all** questions. All questions carry equal marks.

Unit-I

1. Describe the global pattern of primary production ? Also mention the methods of measuring production.

OR

Write short notes on any **two** of the following :

(*a*) Y-shaped model of energy flow

(*b*) Global biogeochemical cycle of nitrogen

(*c*) Ecological efficiency

Unit-II

2. Give a detailed account on the concept of sustainable development and sustainability indicators.

OR

Write short notes on any **two** of the following :

(*a*) Natural perturbations and its effect on plant and ecosystem

(*b*) Concept of resistance and resilience

(*c*) Ecology of plant invasion

Unit-III

3. Describe in detail the various factors used to study (analyse) a community.

OR

Write short notes on any **two** of the following :

(*a*) Interspecific associations

(*b*) Ecological niche

(*c*) Community coefficients

Unit-IV

4. Describe about the concept of temporal changes (cyclic and non-cyclic) in vegetation development.

OR

Write short notes on any **two** of the following :

(*a*) Xerosere

(*b*) Various models explaining mechanism of succession

(*c*) Concept of climax community

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Paper - III

Biotechnology - I
(Genetic Engg. of Plant and Microbes)

Time : Three Hours] [*Maximum Marks* : 80
[*Minimum Pass Marks* : 16

Note : Answer **all** questions. All questions carry equal marks.

Unit-I

1. Describe the procedure for construction and screening of recombinants in genomic library.

OR

Write notes on the following :

(*a*) Enzymes involved in recombinant DNA technology

(*b*) Bacteriophage as cloning vectors

Unit-II

2. Give an account of T-DNA mediated gene transfer in higher plants.

OR

Describe the various approaches for the production of insect resistance transgenic plants.

Unit-III

3. What is Polymerase Chain Reaction (PCR) ? Give a detailed account of working mechanism of PCR.

OR

Write notes on the following :

(*a*) Sanger and Coulson method of DNA sequencing

(*b*) DNA finger printing

Unit-IV

4. Define molecular marker. Discuss in detail different types of molecular marker used in genome mapping.

OR

(3)

Write notes on the following :

(*a*) Microarray

(*b*) Human genome project

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Paper - IV

Elective-I

Molecular Plant Pathology - I

Time : Three Hours] [*Maximum Marks* : 80
[*Minimum Pass Marks* : 16

Note : Answer **all** questions. All questions carry equal marks.

Unit-I

1. Classify the types of plant diseases on different criteria.

OR

Write short notes on the following :

(*a*) Heterotrophic behaviour of fungi

(*b*) General characters of nematodes

Unit-II

2. Give an account on general symptoms of plant diseases.

OR

Write short notes on the following :

(*a*) Mode of infection

(*b*) Significance of phylosphere and rhizosphere studies

Unit-III

3. Write an essay on host-parasite relationship in plant pathology.

OR

Write short notes on the following :

(*a*) Disease initiation

(*b*) Physiological specialization of rusts

Unit-IV

4. Discuss the methods of studying plant diseases.

OR

(3)

Write short notes on the following :

(*a*) Parasitism of obligate parasites

(*b*) Recurrence of rust disease in India