

2 0 1 7

(5th Semester)

BOTANY

FIFTH PAPER

(**Fungi, Plant Pathology and Biostatistics**)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

*The figures in the margin indicate full marks
for the questions*

1. Define fungi. Describe the general features of fungi. 2+5=7

Or

Write accounts on any *two* of the following : 3½×2=7

- (a) Zygomycotina
- (b) Active mechanism of spore liberation
- (c) Zoospores

2. What are obligate parasites? Write down the various modes of nutrition in fungi. 2+5=7

Or

Write short notes on any *two* of the following : 3½×2=7

- (a) Role of fungi in medicine
- (b) Parasexuality
- (c) Fungi as plant pathogens

3. What is an appressorium? Describe the different modes of infection. 2+5=7

Or

Write brief accounts on any *two* of the following : 3½×2=7

- (a) Histological barriers of plants for defense mechanism
- (b) Passive dissemination of pathogens
- (c) History of plant pathology

4. Write an account on the symptoms, disease cycle and control measures of powdery mildews of crucifers. 7

Or

Describe in brief the symptoms of any *two* of the following : 3½×2=7

- (a) Red rot of sugarcane
- (b) Late blight of potato
- (c) Wheat rust

(3)

5. What is Student's *t*-test? Heights of teak (*Tectona grandis*) seedlings treated with growth hormone are 25 cm, 28 cm, 31 cm, 32 cm, 34 cm, 35 cm, 36 cm, 37 cm, 39 cm and 43 cm; whereas untreated seedlings measure 13 cm, 14 cm, 14 cm, 15 cm, 16 cm, 19 cm, 19 cm, 20 cm, 20 cm and 20 cm. Apply *t*-test to find out whether the growth hormone has effect on the height of teak seedlings or not [table value of *t* 2 10 at 0.05 and d.f. = 18]. 2+5=7

Or

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

$$3\frac{1}{2} \times 2 = 7$$

- (a) Arithmetic mean
- (b) Coefficient of variation
- (c) Standard deviation

Subject Code : BOT/V/05

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BOT/V/05

2 0 1 7
(5th Semester)

BOTANY

FIFTH PAPER

(Fungi, Plant Pathology and Biostatistics)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—I

(Marks : 5)

Put a Tick (✓) mark against the correct answer in the
brackets provided : 1×5=5

1. Sexual spores are absent in

(a) Deuteromycotina ()

(b) Basidiomycotina ()

(c) Ascomycotina ()

(d) Zygomycotina ()

(2)

2. Ascomycota-Basidiomycota split occurs

(a) 300 mya ()

(b) 400 mya ()

(c) 500 mya ()

(d) 600 mya ()

3. Phenolics, which are produced upon stimulation of plant by a pathogen, are called

(a) recognition factors ()

(b) inhibitors ()

(c) suppressors ()

(d) phytoalexins ()

4. Loose smut of wheat is due to

(a) *Puccinia graminis tritici* ()

(b) *Colletotrichum falcatum* ()

(c) *Ustilago nuda tritici* ()

(d) *Phytophthora infestans* ()

(3)

5. Which of the following is correct for σ^2 calculation?

(a) $\frac{(O - E)^2}{E}$ ()

(b) $\frac{(E - O)^2}{E}$ ()

(c) $\frac{(O - E)^2}{O}$ ()

(d) $\frac{(E - O)^2}{O}$ ()

(4)

SECTION—II

(Marks : 15)

Write short notes on the following :

3×5=15

1. Myxomycota

(5)

2. Heterothallism in fungi

(6)

3. Fungal antagonists

(7)

4. Symptoms of early blight of potato

(8)

5. Standard error

2 0 1 7

(5th Semester)

BOTANY

SIXTH PAPER

(**Algae, Lichens, Bryophytes**)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

*The figures in the margin indicate full marks
for the questions*

1. Write a brief account of the general characteristics of major classes of algae. 7

Or

Write notes on any *two* of the following :
3½×2=7

- (a) Spores and resting phases in algae
(b) Flagellation in algae
(c) Algal pigmentation

2. Describe the mode of reproduction found in Chlorophyceae. 7

Or

Discuss the phenomenon of alternation of generation in the members of Phaeophyceae giving example. 7

3. Give an account of the structure and reproduction of lichens. 7

Or

Describe briefly the economic importance of lichens. 7

4. Describe the characters of bryophytes and give an outline of their classification. 7

Or

Write a comparative account on the structure of sex organs in *Riccia* and *Sphagnum*. 7

5. Write an account of the evolution of sporophytes in bryophytes. 7

Or

Write short notes on any *two* of the following :
3½×2=7

- (a) Archegoniophore
(b) Origin of bryophytes from algae
(c) Antheridia of bryophytes

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BOTANY

SIXTH PAPER

(Algae, Lichens, Bryophytes)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(Marks : 5)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×5=5

1. Floridian starch is the reserved food products of

(a) Myxophyceae ()

(b) Phaeophyceae ()

(c) Rhodophyceae ()

(d) Xanthophyceae ()

(2)

2. Agar-agar is derived from

- (a) fungi ()
- (b) algae ()
- (c) bryophytes ()
- (d) lichens ()

3. Lichens growing on rock are called

- (a) saxicoles ()
- (b) corticoles ()
- (c) terricoles ()
- (d) None of the above ()

4. Epiphragm is seen in

- (a) archegonium ()
- (b) antheridium ()
- (c) gametophyte ()
- (d) sporophyte ()

(3)

5. The advanced sporophyte is seen in

(a) *Porella* ()

(b) *Riccia* ()

(c) *Sphagnum* ()

(d) None of the above ()

(4)

SECTION—B

(Marks : 15)

Write notes on the following :

3×5=15

1. Tetraspores

(5)

2. Diatomaceous earth

(6)

3. Cyphella

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(7)

4. Vegetative reproduction in bryophytes

(8)

5. Peristome

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(5th Semester)

BOTANY

SEVENTH PAPER

(**Cytogenetics, Plant Breeding and Bioinformatics**)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

*The figures in the margin indicate full marks
for the questions*

1. Write short notes on any *two* of the following :
3½×2=7

- (a) Cytoskeleton
- (b) Chemical constituent of chromosome
- (c) Duplication

Or

Give an account of the different types of
deletion and its consequences. 7

2. Briefly describe any *two* of the following :
3½×2=7

- (a) The main sources of chromosomal anomalies
- (b) Aneuploidy
- (c) Autopolyploidy

Or

Define polyploidy. State the significance of
polyploidy. 1+6=7

3. Write short notes on any *two* of the following :
3½×2=7

- (a) Cytoplasmic male sterility
- (b) Multiple allelism
- (c) Enhancer gene

Or

What are kappa particles? Explain the
inheritance of such particles in *Paramecium*. 7

4. Briefly describe any *two* of the following :
3½×2=7

- (a) Mutagenic mechanism of ionizing radiation
- (b) Chemical mutagens
- (c) Heterosis

(3)

Or

What is hybridization? Describe the techniques involved in hybridization. 2+5=7

5. Write short notes on any *two* of the following :
3½×2=7

(a) Protein database

(b) DNA database

(c) Search tools

Or

Give an account of the various search tools used in bioinformatics. 7

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(5th Semester)

BOTANY

SEVENTH PAPER

(Cytogenetics, Plant Breeding and Bioinformatics)

(PART : A—OBJECTIVE)

(Marks : 20)

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SECTION—A

(Marks : 5)

Put a Tick (✓) mark against the correct answer in the
brackets provided : 1×5=5

1. The chromosomes with the centromere in the middle
resulting in two equal arms are known as

(a) acrocentric chromosomes ()

(b) telocentric chromosomes ()

(c) metacentric chromosomes ()

(d) sub-metacentric chromosomes ()

(2)

2. The genomic formula $2n - 2$ represents a
- (a) monosomic chromosome ()
 - (b) nullisomic chromosome ()
 - (c) trisomic chromosome ()
 - (d) tetrasomic chromosome ()
3. The visual characteristics that identify a particular chromosome set of a species is
- (a) genetic maps ()
 - (b) genotype ()
 - (c) phenotype ()
 - (d) karyotype ()
4. The substitution of a purine with a pyrimidine and vice-versa is a
- (a) transition mutation ()
 - (b) transversion mutation ()
 - (c) frameshift mutation ()
 - (d) None of the above ()

(3)

5. The search tool that compares a DNA query against a DNA database is

(a) BLASTN ()

(b) TBLASTN ()

(c) BLASTX ()

(d) BLASTP ()

(4)

SECTION—B

(Marks : 15)

Write notes on the following :

3×5=15

1. Inversion

(5)

2. Trisomic plants

(6)

3. Genetic map

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(7)

4. Mass selection

(8)

5. Significance of bioinformatics

2 0 1 7

(5th Semester)

BOTANY

EIGHTH PAPER

(**Environmental Biology and Ethnobotany**)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

*The figures in the margin indicate full marks
for the questions*

1. What is environment? Elucidate the interactions among various environmental factors. 1+6=7

Or

Write accounts on any *two* of the following : 3½×2=7

- (a) Biological diversity
(b) Natural resources
(c) Negative interactions between organisms

2. What is acid rain? Describe the causes and consequences of acid rain. 2+5=7

Or

Write short notes on any *two* of the following : 3½×2=7

- (a) Photochemical smog
(b) Effect of ozone-layer depletion
(c) Biomagnification

3. What do you mean by biodiversity loss? Describe in brief the *ex-situ* and *in-situ* conservations. 2+5=7

Or

Give brief accounts on any *two* of the following : 3½×2=7

- (a) Conservation of soil resources
(b) Environmental laws
(c) Patent

4. What is phytogeography? Elucidate the various floristic regions of India. 2+5=7

Or

Describe different vegetation types of India. 7

(3)

5. What is ethnobotany? Describe its scope and significance. 2+5=7

Or

Give brief accounts on any *two* of the following : 3½×2=7

- (a) Two medicinal plants with scientific names, families and uses
- (b) Two food-yielding (cereal) plants with scientific names, families and uses
- (c) Two fibre-yielding plants with scientific names, families and uses

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Subject Code : BOT/V/08

Booklet No. **A**

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(5th Semester)

BOTANY

EIGHTH PAPER

(Environmental Biology and Ethnobotany)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(Marks : 5)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×5=5

1. Complete or partial inhibition of one organism by another through production of some substances is known as

(a) predation ()

(b) parasitism ()

(c) cannibalism ()

(d) antibiosis ()

(2)

2. Ozone layer is found in

- (a) troposphere ()
- (b) stratosphere ()
- (c) mesosphere ()
- (d) thermosphere ()

3. The Water (Prevention and Control of Pollution) Act was formulated in the year

- (a) 1974 ()
- (b) 1972 ()
- (c) 1986 ()
- (d) 1969 ()

4. Among endemics, some species showed restricted distribution but cover large areas in course of time and are called

- (a) local endemics ()
- (b) pseudoendemics ()
- (c) progressive endemics ()
- (d) retrogressive endemics ()

(3)

5. Anti-malarial drug is obtained from which plant?

(a) *Digitalis* ()

(b) *Cinchona* ()

(c) Isabgol ()

(d) Henbane ()

(4)

SECTION—B

(Marks : 15)

Describe briefly the following :

3×5=15

1. Biosphere

(5)

2. Non-Biodegradable pollutants

(6)

3. Intellectual Property Rights (IPR)

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(7)

4. Hot spots

(8)

5. Endemism
