2016

(6th Semester)

BOTANY

NINTH PAPER

(Pteridophyta, Gymnosperm, Paleobotany and Palynology)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

The figures in the margin indicate full marks for the questions

1. Give accounts on the following : 3½+3½=7

(a) Seed habit in pteridophyte

(b) Concept of the telome theory by Zimmerman

Or

What is stele? Explain the stelar evolution in pteridophyte. 7

2. Discuss the characteristics and distribution of Lepidodendron. 7

Or

Write a note on the morphology and reproduction of *Adiantum*. 7

3. Describe the structure of male and female strobili of *Taxus*. 7

Or

Write a note on the reproduction of *Ginkgo*. 7

4. Give an account on the distribution of living gymnosperms in India. 7

Or

Write short notes on the following : 3½+3½=7

(a) General account of archegonia

(b) Structure of ovule in gymnosperm

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

(a) Formation and types of fossils

(b) Pollen allergy

(c) Features of *Lyginopteris*

★★★

Subject Code : BOT/VI/09

Booklet No. A

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To be filled in by the Candidate

DEGREE 6th Semester
(Arts / Science / Commerce / .....) Exam., **2016**

Subject .....

Paper .....

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Booklet No. B .....

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(6th Semester)

BOTANY

NINTH PAPER

(Pteridophyta, Gymnosperm, Paleobotany and Palynology)

(PART : A—OBJECTIVE)

(*Marks* : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(*Marks* : 5)

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

(a) The simplest and most primitive type of protostele is

(i) haplostele ( )

(ii) actinostele ( )

(iii) plectostele ( )

(iv) mixed protostele ( )

(b) *Ophioglossum* belongs to class

(i) Pteropsida ( )

(ii) Lycopsida ( )

(iii) Sphenopsida ( )

(iv) Psilopsida ( )

(c) Which one of the following is called maiden hair tree?

(i) *Ginkgo* ( )

(ii) *Taxus* ( )

(iii) *Ephedra* ( )

(iv) None of the above ( )

(d) All the members of gymnosperms are

(i) heterosporous ( )

(ii) homosporous ( )

(iii) Both (*i*) and (*ii*) ( )

(iv) None of the above ( )

(e) The age of angiosperm is

(i) Mesozoic Era ( )

(ii) Cenozoic Era ( )

(iii) Palaeozoic Era ( )

(iv) Proterozoic Era ( )

SECTION—B

(*Marks* : 15)

2. Write notes on the following : 3×5=15

(a) Distribution of *Rhynia*

(b) Characteristics of *Calamites*

(c) Morphology of *Ephedra*

(d) Differentiation between eusporangiate and leptosporangiate

(e) Economic importance of gymnosperm

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2016

(6th Semester)

BOTANY

TENTH PAPER

(Angiosperm Taxonomy)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

The figures in the margin indicate full marks for the questions

1. Give brief accounts of numerical taxonomy and chemotaxonomy. 3½+3½=7

Or

Give an outline of the system of classification proposed by Engler and Prantl. Mention its merits and demerits. 4+3=7

2. What do you mean by herbarium? Describe briefly the method of preparation and management of herbarium. 2+5=7

Or

What is ICBN? Describe in brief the following important and major rules of plant nomenclature : 2+5=7

(a) Rank of taxa

(b) Typification

(c) Principles of priority

(d) Effective and valid publication

(e) Author citation

3. Describe the distinguishing characters of any *one* of the following families. Mention its floral formula and floral diagram : 5+2=7

(a) Magnoliaceae

(b) Euphorbiaceae

Or

Describe the floral characters of any *one* of the following families. Mention its economic importance : 5+2=7

(a) Orchidaceae

(b) Zingiberaceae

4. What do you mean by anomalous secondary growth? Describe with neat labelled diagram any type of anomalous secondary growth in stem studied by you in dicotyledonous plants. 2+5=7

Or

What do you mean by root-stem transition? Explain its different types with the help of diagrams. 2+5=7

5. Describe the development of nuclear and cellular endosperm. Add a note on the function of endosperm. 5+2=7

Or

Describe about the following in brief : 3½+3½=7

(a) Polyembryony

(b) Zoophily

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Subject Code : BOT/VI/10

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(6th Semester)

BOTANY

TENTH PAPER

(Angiosperm Taxonomy)

(PART : A—OBJECTIVE)

(*Marks* : 20)

The figures in the margin indicate full marks for the questions

Answer **all** questions

SECTION—A

(*Marks* : 5)

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

1. Which of the following families is considered by John Hutchinson as the most advanced family among Dicotyledons?

(a) Verbenaceae ( )

(b) Lamiaceae ( )

(c) Convolvulaceae ( )

(d) Euphorbiaceae ( )

2. In arboretum botanical garden only the species of plant grown is

(a) trees ( )

(b) bamboos ( )

(c) orchids ( )

(d) All of the above ( )

3. Diadelphous condition of stamen is found in the family

(a) Fabaceae ( )

(b) Convolvulaceae ( )

(c) Rutaceae ( )

(d) Polygonaceae ( )

4. The meristematic tissue that developed between vascular bundles during secondary growth is called

(a) fascicular cambium ( )

(b) inter-fascicular cambium ( )

(c) primary cambium ( )

(d) None of the above ( )

5. In angiosperms, the embryo sac represents

(a) male gametophyte ( )

(b) female gametophyte ( )

(c) young sporophyte ( )

(d) future fruit ( )

SECTION—B

(*Marks* : 15)

Write brief notes on the following : 3×5=15

1. Merits of Bentham and Hooker's system of classificaton

2. Isotype

3. Economic importance of the family Convolvulaceae

4. Anatomical adaptations of hydrophytes

5. Bisporic type of embryo sac

★★★

2016

(6th Semester)

BOTANY

ELEVENTH PAPER

(Plant Metabolism, Biochemistry, etc)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

The figures in the margin indicate full marks for the questions

1. Write an account on biological nitrogen fixation. 7

Or

Write notes on the following : 3½+3½=7

(a) Synthesis of cellulose

(b) Biosynthesis of purine

2. What are enzymes? Briefly describe the mechanism of enzyme action. 2+5=7

Or

Write accounts on the following : 3½+3½=7

(a) Enzyme kinetics

(b) Allosteric enzymes

3. Write notes on the biosynthesis of the following : 3½+3½=7

(a) Auxins

(b) Cytokinins

Or

Write notes on the mode of action of the following : 3½+3½=7

(a) Gibberellins

(b) Abscisic acid

4. Describe an illustrated mechanism of C_2 cycle. 7

Or

Give brief accounts of the following : 3½+3½=7

(a) Cyclic electron transport

(b) ATPase chemoosmotic theory of ATP-synthesis

5. What is thermodynamics? Describe the laws of thermodynamics. 1+6=7

Or

Write notes on the following : 3½+3½=7

(a) Concept of free energy

(b) Enthalpy and entropy change

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Subject Code : BOT/VI/11

Booklet No. A

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2016

(6th Semester)

BOTANY

ELEVENTH PAPER

(Plant Metabolism, Biochemistry, etc)

(PART : A—OBJECTIVE)

(*Marks* : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(*Marks* : 5)

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

(a) The replication of lagging strand generates small polynucleotide fragments called as

(i) origin ( )

(ii) Okazaki fragments ( )

(iii) leading strand ( )

(iv) replication fork ( )

(b) The genetic information in the DNA is transfered to a complementary sequence of RNA and the process is called

(i) transcription ( )

(ii) translation ( )

(iii) replication ( )

(iv) termination ( )

(c) Internally the chloroplast is filled with hydrophilic matrix called as

(i) thylakoid ( )

(ii) granum ( )

(iii) cytosol ( )

(iv) stroma ( )

(d) The measurement of the disorder of the system is called

(i) enthalpy ( )

(ii) entropy ( )

(iii) free energy ( )

(iv) internal energy ( )

(e) Multiple forms of enzyme with the same catalytic activity but different structures are

(i) allosteric enzymes ( )

(ii) coenzymes ( )

(iii) isozymes ( )

(iv) lysozymes ( )

SECTION—B

(*Marks* : 15)

2. Write notes on the following : 3×5=15

(a) Nitrogen metabolism

(b) Secondary structure of proteins

(c) Mode of action of ethylene

(d) Photosynthetic apparatus

(e) Concept of internal energy

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2016

(6th Semester)

BOTANY

TWELFTH PAPER

(Plant Biotechnology and Experimental Embryology)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

The figures in the margin indicate full marks for the questions

1. What are cloning vectors? Give an account of important cloning vectors used in genetic engineering. 2+5=7

Or

Write notes on the following : 3½+3½=7

(a) Ligases

(b) Polymerase chain reaction

2. Briefly describe the concept of gene gun. 7

Or

Write notes on the following : 3½+3½=7

(a) Transgenic plants

(b) Transformation through *Agrobacterium*

3. What is nutrient media? Describe the major components of a nutrient media. 2+5=7

Or

Write notes on the following : 3½+3½=7

(a) Totipotency

(b) Sterilization methods

4. Give an account of transgenic cotton with special emphasis on Bt cotton. 7

Or

Write notes on the following : 3½+3½=7

(a) Genetically modified tomato

(b) Golden rice

5. Describe the procedure of protoplast fusion. 7

Or

Write notes on the following : 3½+3½=7

(a) Somatic embryogenesis

(b) Embryo culture

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Subject Code : BOT/VI/12

Booklet No. A

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2016

(6th Semester)

BOTANY

TWELFTH PAPER

(Plant Biotechnology and Experimental Embryology)

(PART : A—OBJECTIVE)

(*Marks* : 20)

The figures in the margin indicate full marks for the questions

Answer **all** questions

SECTION—A

(*Marks* : 5)

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

(a) Recombinant DNA technology is used to produce

(i) haploid plants ( )

(ii) explants ( )

(iii) transgenic plants ( )

(iv) homozygous plants ( )

(b) The only genetically modified crop grown commercially in India is

(i) Bt cotton ( )

(ii) Bt brinjal ( )

(iii) Flavr Savr ( )

(iv) Golden rice ( )

(c) The temperature of liquid nitrogen used for cryopreservation is

(i) – 100 °C ( )

(ii) – 150 °C ( )

(iii) – 169 °C ( )

(iv) – 196 °C ( )

(d) The undifferentiated mass of cells in tissue culture is known as

(i) explant ( )

(ii) callus ( )

(iii) somatic embryo ( )

(iv) artificial seed ( )

(e) Cybrids have

(i) nucleus from one parent, cytoplasm from both parents ( )

(ii) nucleus from both parents, cytoplasm from one parent ( )

(iii) no nucleus, cytoplasm from one parent ( )

(iv) no nucleus, cytoplasm from both parents ( )

SECTION—B

(*Marks* : 15)

2. Write notes on the following : 3×5=15

(a) Restriction enzymes

(b) Reporter genes

(c) Synthetic seed

(d) Plantibodies

(e) Micropropagation

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