

FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2021

(CCSS)

Applied Plant Science

BOT 1C 07—ANATOMY OF ANGIOSPERMS AND MICROTECHNIQUE

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part AI. Answer any *two* questions in not more than 500 words :

- 1 With the help of suitable diagram explain principle of transmission electron microscope. How it is differ from scanning electron microscope ?
- 2 Discuss with examples, major features of anomalous stem structure. Add labelled sketches.
- 3 Prepare a flowchart for processing procedure for micro preparation of plant tissues.

(2 × 10 = 20 marks)

Part BII. Answer any *eight* questions in not more than 250 words :

- 4 What are microtomes ? Describe specific use and working of any two microtomes you have been studied.
- 5 Define killing and fixing. Describe composition and features of any three fixing fluids.
- 6 Describe principle and procedure of dehydration. Name any two commonly used dehydrating agent.
- 7 Explain origin and function of cork cambium.
- 8 Explain secondary wall formation. Add suitable diagram.
- 9 Write source of carmine. Add a note on preparation of acetocarmine.
- 10 Explain principle of phase contrast microscope. Draw diagram.
- 11 Describe principle and procedure of dehydration. Name any two commonly used dehydrating agent.
- 12 Explain histochemical localization of insoluble polysaccharides and protein.
- 13 Explain anatomical response to water stress.

(8 × 5 = 40 marks)

Turn over

Part C

III. Answer any *ten* questions in not more than five sentences :

- 14 Explain anatomical features of C4 plants.
- 15 Explain the concept of promeristem.
- 16 What is meant by resolving power of a microscope ? How it is calculated ?
- 17 What is T division ?
- 18 Compare albuminous cell and companion cell.
- 19 Which instrument is used in micrometric measurement ? How it is used ?
- 20 Explain composition and use of Haupt's adhesive.
- 21 Define vital stain. Give an example.
- 22 Distinguish between periderm and polyderm.
- 23 What are major uses of camera lucida ?
- 24 Write composition of FAA.
- 25 What are tyloses ?

(10 × 2 = 20 marks)

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BOT 1C 05—PTERIDOPHYTES AND GYMNOSPERMS

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part AI. Answer any *two* questions in not more than 500 words :

- 1 Discuss phylogeny and inter-relationships of different classes of gymnosperms.
- 2 Discuss heterospory and evolution of seed habit in pteridophytes.
- 3 Give an elaborate account on stelar evolution in pteridophytes.

(2 × 10 = 20 marks)

Part BII. Answer any *eight* questions not more than 250 words :

- 4 Give an account on recent system of classification of pteridophytes.
- 5 Explain significance of DNA barcoding in pteridophytes.
- 6 Discuss pattern of gametophyte development in homosporous pteridophytes.
- 7 Discuss sporangial development in Psilotales.
- 8 Describe morphological and anatomical features of Filicales.
- 9 Discuss polyploidy in pteridophytes.
- 10 Describe development of female gametophyte in coniferales.
- 11 Explain morphological and anatomical features of *Trigonocarpus*.
- 12 Discuss about the development of male and female gametophyte in *Gnetum*.
- 13 Explain morphology of *Welwitschia*.

(8 × 5 = 40 marks)

Part CIII. Answer any *ten* questions in not more than *five sentences* :

- 14 Morphology of *Sphenopteris*.
- 15 Explain gametophytes in Lycopodiales.

Turn over

- 16 What is Bars of Sanio ?
- 17 Explain telome theory.
- 18 Explain morphological features of sporangium of *Ophioglossum*.
- 19 Explain structural features of ovule Cycadales.
- 20 What are the stages of development of male gametophyte in *Taxus* ?
- 21 Give an account on microspores of *Ginkgo*.
- 22 What are major ecological functions of Pteridophytes ?
- 23 Explain morphology of sporocarp of *Salvinia*.
- 24 What are major habitats of South Indian Pteridophytes ?
- 25 Give a brief account on fossil gymnosperms in India.

(10 × 2 = 20 marks)

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BOT1C03—FUNGI AND PLANT DISEASES

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Answer any *two* questions in not more than 500 words :

- 1 Give an account on cause, major symptoms and management of plant diseases.
- 2 Explain thallus organization, nutrition and economic importance.
- 3 Discuss life cycle pattern, reproduction, sexuality in fungi.

(2 × 10 = 20 marks)

II. Answer any *eight* questions not more than 250 words :

- 4 Explain classification of fungi.
- 5 Discuss life cycle pattern in basidiomycetes. Add suitable illustrations.
- 6 Explain formation of asexual propagules and sporulation in deuteromycetes.
- 7 Explain cell composition in fungi.
- 8 Enumerate distinct features of oomycetes.
9. Enlist any five fungal diseases having devastating effects. Name causative agents of these diseases.
- 10 Enlist characters of asexual fungi.
- 11 Describe current taxonomic concepts regarding protistan fungi.
- 12 Explain Koch's postulates.
- 13 Explain pathogenesis and parasitism.

(8 × 5 = 40 marks)

III. Answer any *ten* questions in not more than five sentences :

- 14 Differentiate sclerotia and stromata.
- 15 What are mycoplasmas ?
- 16 What are radiotrophic fungi ?
- 17 Define DNA barcoding. Explain its use in fungal classification.
- 18 Explain the process of clamp connection and crozier formation.
- 19 What is meant by teleomorph-anamorph connections ?
- 20 Define fungal organelles. Add a brief note.
- 21 What is meant by Mycoses ? What are three different groups of Mycoses ?
- 22 What is mycorrhizae ? Give an example.
- 23 What are major symptoms of nematode attack in plants ?
- 24 Compare rusts and smuts.
- 25 What is meant by epidemic ? Explain with suitable example.

(10 × 2 = 20 marks)

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Applied Plant Science

BOT 1C 01—VIRUSES, BACTERIA, ALGAE AND BRYOPHYTES

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Answer any *two* questions in not more than 500 words :

- 1 Give an account on ultra-structure and modes of genetic exchange of bacteria.
- 2 Discuss life cycle pattern of Algae. Add suitable illustrations.
- 3 With the help of suitable diagrams, explain anatomy and reproduction of *Anthoceros*. Add a note advanced features of *Anthoceros* sporophyte.

(2 × 10 = 20 marks)

II. Answer any *eight* questions in not more than 250 words :

- 4 Describe structural features of TMV.
- 5 Describe important applications of cyanobacteria.
- 6 What are major types of algal pigments ?
- 7 Outline cyanobacterial association with fungi and bryophytes.
- 8 Explain mechanism of nitrogen fixation by *Rhizobium*.
- 9 Describe applications of molecular phylogenetics and DNA barcoding in systematics of bryophytes.
- 10 Explain bacterial endospore formation.
- 11 Briefly explain inter relationships of blue green algae.
- 12 Describe evolution of sporophyte in bryophytes.
- 13 Discuss economic importance of bryophytes.

(8 × 5 = 40 marks)

Turn over

III. Answer any *ten* questions in not more than *five sentences* :

- 14 What are Mycoplasma ?
- 15 What the sources of agar and carrageenin.
- 16 Why *Agrobacterium* called as 'natural genetic engineer'.
- 17 What are Prions ?
- 18 What is raceway pond ?
- 19 What is meant pure culture ? How we can raise a pure culture ?
- 20 Enumerate major features of actinomycetes.
- 21 What are bioremediation and bioaugmentation.
- 22 What are distinct features of Xanthophyta.
- 23 Suggest methods to estimate microbial number and biomass.
- 24 Explain why bryophytes are considered as bioindicators of pollution.
- 25 What are Plasmids ? Write its importance.

(10 × 2 = 20 marks)