R1033

Sub. Code
525201

M.Sc. DEGREE EXAMINATION, APRIL – 2024

Second Semester

Botany

TAXONOMY OF ANGIOSPERMS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following questions by choosing the correct answer

1. Who is consider as father of Taxonomy. (CO1,K1)

   (a) Aristotle (b) Linnaeus

   (c) Earnst Haeckel (d) Whittaker

2. Who introduced the artificial system of classification? (CO1,K1)

   (a) Carl Linnaeus (b) Theophrastus

   (c) Jerame Bock (d) Benthum and Hooker

3. One of the best method for understanding general relationships of plant is. (CO2,K2)

   (a) Cytotoxonomy

   (b) Experimental Taxonomy

   (c) Numerical Taxonomy

   (d) Chemotaxonomy

4. The newly collected specimen which is used as a substitute when the original type material is missing in a herbarium is designated as. (CO2,K2)

(a) Lectotype (b) Holotype

(c) Neotype (d) Isotype

5. Binomial with identical genus name and specific epithet are called as. (CO3,K3)

(a) Homonym (b) Tautonym

(c) Basionym (d) Synonym

6. When two or more authors published a new species their name or linked using the epithet (CO3,K2)

(a) In (b) ex

(c) et (d) em end

7. Synandrous condition is common in the family (CO4,K4)

(a) Umbelliferae (b) Cucurbitaceae

(c) Menispermaceae (d) None of the above

8. Tinospora belongs to which family (CO4,K4)

(a) Menispermaceae

(b) Vitaceae

(c) Sapindaceae

(d) Myrtaceae

9. Cyathium inflorescence is seen in (CO5,K5)

(a) Euphorbia (b) Cythula

(c) Hevea (d) Tridax

10. Labellum in Orchidaceae comes to anterior side by the twisting of the ovary through the process is called. (CO5,K5)

(a) adnation (b) Articulata

(c) Resupination (d) Attenuation

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) What are the principles of Taxonomy (CO1,K2)

Or

(b) What is botanical exploration? What are the contributions of J.D. Hooker? (CO1,K2)

12. (a) Explain APG IV classification. (CO2,K2)

Or

(b) Summaries the functions of botanical survey of India. (CO2,K2)

13. (a) Compare monographs with Floras. (CO3,K2)

Or

(b) What are the types of taxonomic keys explain with an example. (CO3,K4)

14. (a) Outline the floral character of Apocyanaceae. (CO4,K4)

Or

(b) Evaluate the economic importance of Cucurbitaceae. (CO4,K4)

15. (a) Explain the floral character of Orchidaceae. (CO5,K5)

Or

(b) Enumerate the diagnostic character of Asteraceae. (CO5,K5)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Discuss the scope and objectives of Angiosperms. (CO1,K2)

Or

(b) Outline the origin of Angiosperms. (CO1,K2)

17. (a) Explain herbarium techniques. (CO2,K2)

Or

(b) What are the merits and demerits of Bentham and Hooker classification? (CO2,K2)

18. (a) What is International code of nomenclature what are the rules writing botanical nomenclature. (CO2,K2)

Or

(b) What are valid publications Compare valid publication with Effective publication. (CO3,K1)

19. (a) Bring out the salient features of Sapindaceae. (CO4,K4)

Or

(b) Summarize the economic importance of Vitaceae. (CO4,K4)

20. (a) Describe in detail the floral characters of Lamiaceae. (CO5,K5)

Or

(b) What are the diagnostic character of Poaceae. (CO5,K5)

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R1034

Sub. Code
525202

M.Sc. DEGREE EXAMINATION, APRIL – 2024

Second Semester

Botany

PLANT ANATOMY, EMBRYOLOGY AND MORPHOGENESIS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Korper-Kappe theory was given by (CO1, K1)

   (a) Nageli (b) Schuepp

   (c) Clowes (d) All of these

2. Xylem consists of ————————. (CO1, K1)

   (a) Tracheids, Fibers and parenchyma

   (b) Tracheids, vessels and companion cells

   (c) Tracheids, fibres, vessels and parenchyma

   (d) Tracheids, Companion cells, Sieve cells and vessels

3. Heart wood is also called ———————— . (CO2, K2)

   (a) Duramen (b) Sap wood

   (c) Porous wood (d) Non porous wood

4. Monocot that shows in anomalous thickening in (CO2, K2)

(a) Boeravia (b) Maize

(c) Wheat (d) Dracena

5. This is one of the most recent and valid explanations for stomatal movements (CO3, K3)

(a) Starch hydrolysis

(b) Transpiration

(c) Guard cell photosynthesis

(d) Potassium efflux and the influx

6. Which of the following contains the filiform apparatus? (CO3, K3)

(a) zygote (b) synergids

(c) generative cell (d) egg

7. Apomixis is a form of (CO4, K4)

(a) Vernalization (b) Parthenogenesis

(c) Parthenocarpy (d) None of the above

8. The process by which fruits are developed without fertilization is called ———————— . (CO4, K4)

(a) Apomixis (b) Parthenocarpy

(c) Parthenogenesis (d) Self-pollination

9. Which of the following processes lead to the formation of secondary xylem and phloem? (CO5, K5)

(a) Development (b) Redifferentiation

(c) Dedifferentiation (d) Differentiation

10. Morphactins are (CO5, K5)

(a) synthetic auxins

(b) synthetic gibberellins

(c) synthetic growth regulators

(d) none of these

Part B ($5 \times 5 = 25$)

Answer **all** the questions not more than 500 words each.

11. (a) Explain the structure and development of periderm. (CO1, K1)

Or

(b) Comment on the role of cambium in wound healing. (CO1, K1)

12. (a) Outline the primary structure of monocot stem. (CO2, K2)

Or

(b) Compare the unilacunar single-trace and multilacunar node in dicot stem. (CO2, K2)

13. (a) What is double fertilization? What are the end products of double fertilization? (CO3, K3)

Or

(b) Discuss about pollen and pistil interaction. (CO3, K3)

14. (a) Trace the development of embryo after syngamy in a dicot plant. (CO4, K4)

Or

(b) Explain the types of apomixis. (CO4, K4)

15. (a) Briefly explain the molecular and genetic basis of morphogenesis. (CO5, K5)

Or

(b) Is there any relationship between dedifferentiation and the higher degree of success achieved in plant tissue culture experiments? (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Illustrate the structure and function of xylem components. (CO1, K1)

Or

(b) Discuss the various categories of apical meristem theories. (CO1, K1)

17. (a) Give an account on the anomalous secondary thickening in monocot stem with an example. (CO2, K2)

Or

(b) Categories the various types of stomata with suitable diagram. (CO2, K2)

18. (a) What is self-incompatibility? Discuss the methods to overcome the self-incompatibility in plants. (CO3, K3)

Or

(b) Write an essay on the development of megasporogenesis. (CO3, K3)

19. (a) What is polyembryony? Categories the types of polyembryony. (CO4, K4)

Or

(b) What is parthenocarpy? How is parthenocarpy induced artificially? (CO4, K4)

20. (a) Give a detailed account on the type's differentiation. (CO5, K5)

Or

(b) List out the factors affecting morphogenesis. (CO5, K5)

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R1035	Sub. Code
	525203

M.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Botany

PLANT PHYSIOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct answer.

1. Guttation occurs through (CO1, K1)

   (a) hydathodes (b) stomata

   (c) lenticel (d) Cuticle

2. A plasmolysed cell or tissue can be deplasmolysed by putting it into (CO1, K1)

   (a) hypertonic solution

   (b) hypotonic solution

   (c) isotonic solution

   (d) none of the above

3. Which part of the root is involved in absorption of mineral salts in higher plants (CO2, K2)

   (a) Meristematic regions

   (b) Root cap

   (c) Zone of elongation

   (d) Root hair zone

4. Ascent of sap in higher plants take place through (CO2, K2)

(a) xylem (b) Phloem

(c) parenchyma (d) chlorenchyma

5. Which of the following acceptor of CO_2 is involved in dark reaction of photosynthesis? (CO3, K3)

(a) 3PGA (b) Ru5P

(c) RuBP (d) Xu5P

6. Which of the following is not a CAM plant (CO3, K2)

(a) Bryophyllum (b) Opuntia

(c) Crassula (d) Atriplex

7. Value of RQ is one when respiratory substrates are (CO4, K4)

(a) Carbohydrates (b) Organic acids

(c) Fats (d) Proteins

8. The enzyme pyruvate dehydrogenase involved in TCA cycle is (CO4, K4)

(a) Simple enzyme

(b) An Isozyme

(c) Multi enzyme complex

(d) None of the Above

9. 'Most important biological effect of kinetin in plant is to induce (CO5, K5)

(a) Cell enlargement

(b) Cell division

(c) Elongation of internodes

(d) Abscission of leaves

10. Dark Period is critical in (CO5, K5)

(a) Short day plants

(b) Long day plants

(c) day neutral plants

(d) None of the above

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) How do you differentiate root pressure and transpiration pull? (CO1, K2)

Or

(b) Differentiate exosmosis and endosmosis. (CO1, K2)

12. (a) What are trace elements? Explain their role in plant. (CO2, K2)

Or

(b) Discuss the concepts about translocation. (CO2, K2)

13. (a) Describe Blackman's principles of limiting factor. (CO3, K2)

Or

(b) List out the pigments involved in photosynthesis. (CO3, K2)

14. (a) Comment upon electron transport in ETC. (CO4, K4)

Or

(b) Explain photorespiration (CO4, K4)

15. (a) What is dormancy of seeds? List out the methods of breaking seed dormancy (CO5, K5)

Or

(b) Explain the importance of vernalization in plants. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Give an account of ascent of SAP. (CO1, K1)

Or

(b) Explain Water potential. (CO1, K1)

17. (a) Explain the deficiency symptoms of any four micro elements. (CO2, K2)

Or

(b) List out plant responses to biotic and abiotic stresses. (CO2, K2)

18. (a) Illustrate light reaction of photosynthesis (CO2, K2)

Or

(b) Comment on the factors affecting photosynthesis. (CO3, K1)

19. (a) Explain the Citric acid cycle. (CO4, K4)

Or

(b) Describe glyoxalate cycle (CO3, K4)

20. (a) List out the physiological effect of cytokinin in plants. (CO5, K5)

Or

(b) Summarize the chemical nature and the physiological role of ethylene in plants (CO5, K5)

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R1036

Sub. Code
525204

M.Sc. DEGREE EXAMINATION, APRIL – 2024

Second Semester

Botany

PLANT BIOCHEMISTRY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. _____ interaction is most important in stabilizing the 3D structure of a protein. (CO1, K2)

   (a) Hydrophobic interactions

   (b) Ionic bonds

   (c) Hydrogen bonds

   (d) Van der Waals interactions

2. A buffer solution is a mixture of _____. (CO1, K1)

   (a) Weak base, acid

   (b) Strong base, acid

   (c) Weak acid, base

   (d) Weak acid, acid

3. 'The energy available to do useful work' is a description of which of the following terms? (CO2, K1)

(a) Kinetic energy

(b) Free energy

(c) Enthalpy

(d) Entropy

4. Which of the following is true of enzymes? (CO2, K4)

(a) They lower activation energy by altering the binding of the substrate

(b) They lower activation energy by increasing the formation of products

(c) They raise activation energy to shift the equilibrium to favour the products

(d) They increase the rate of reaction by stabilizing the transition state

5. A polysaccharide formed by β1–> 4 glycosidic linkages is _____. (CO3, K3)

(a) Starch

(b) Dextrin

(c) Cellulose

(d) Glycogen

6. The major storage form of lipid is _____. (CO3, K1)

(a) Glycerophospholipid

(b) Triglycerides

(c) Esterified cholesterol

(d) Sphingolipid

7. A peptide bond is formed between amino acids by _____ process. (CO4, K1)

(a) Oxidation

(b) Reduction

(c) Hydrolysis

(d) Condensation

8. The first nucleotide that is fully formed in purine biosynthesis is ————————. (CO4, K4)

(a) AMP (b) IMP

(c) GMP (d) GTP

9. Which of the following span the phospholipids bilayer, usually a number of times? (CO5, K3)

(a) Transmembrane proteins

(b) Integral proteins

(c) Peripheral proteins

(d) Integrins

10. Which of the following statement is TRUE about pectin chemical composition? (CO5, K1)

(a) Homopolymer of D-xylose units

(b) Heteropolymer of xylose, mannose and arabinose

(c) Glucuronic acid and galacturonic acid

(d) N-acetyl glucosamine and N-acetyl muramic acid

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Distinguish the properties of strong and weak bonds. (CO1, K1)

Or

(b) Discuss the terms pH, buffers and pKa values. (CO1, K1)

12. (a) Justify why ATP is referred to as "universal energy currency of cell"? Discuss with structure and chemical reactions. (CO2, K5)

Or

(b) What are isozymes? Explain with suitable example. (CO2, K2)

13. (a) Write an account on (i) CSDB (ii) LIPID MAPS. (CO3, K3)

Or

(b) Discuss on the categories of lipids with suitable examples. (CO4, K1)

14. (a) Explain the key features of Ramachandran plot. (CO4, K2)

Or

(b) Discuss on different types of DNA. (CO4, K1)

15. (a) Outline the plant cell wall structure, chemical composition and functions. (CO5, K5)

Or

(b) Describe the synthesis of pectin in plants. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Illustrate the forces responsible for the stability of the DNA double helix. (CO1, K3)

Or

(b) Outline the scope and implications of biochemistry in agriculture. (CO1, K5)

17. (a) Explain the principle of thermodynamics and discuss on energy transfer biologicalsystem. (CO2, K6)

Or

(b) Summarize the properties of enzymes and their general mechanism of action. (CO2, K4)

18. (a) Give an account on (i) Polysaccharides (ii) Lipoproteins. (CO3, K2)

Or

(b) Elaborate the process of β-oxidation of fatty acids. (CO3, K1)

19. (a) How amino acids are classified? Discuss with suitable example. (CO4, K1)

Or

(b) Describe different type of RNAs and its structure. (CO4, K4)

20. (a) Explain various models of plasma membrane. (CO5, K2)

Or

(b) Write an essay on plant secondary metabolites - types and functions. (CO5, K4)

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R1037

Sub. Code
525503

M.Sc. DEGREE EXAMINATION, APRIL – 2024

Second Semester

Botany

Elective – HERBAL TECHNOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. What does AYUSH stand for? (CO1, K2)

   (a) Association for Yoga and Unani Systems of Healing

   (b) Ayurveda, Yoga, Unani, Siddha, and Homeopathy

   (c) Alternative Yield of Useful Herbal Substances

   (d) Ancient Yoga and Unconventional Siddha Healing

2. Which traditional Indian system of medicine emphasizes the balance of doshas (Vata, Pitta, Kapha)? (CO1, K2)

   (a) Yoga (b) Siddha

   (c) Ayurveda (d) Unani

3. What is the focus of herbal technology in context of medicinal plants? (CO2, K3)

(a) Genetic engineering of plants

(b) Sustainable cultivation of herbs

(c) Herbal cosmetics

(d) Herbal cuisine

4. Name an alkaloid present in solanaceae. (CO2, K3)

(a) Atropine (b) Piperine

(c) Vinblastin (d) Lycopene

5. How ex-situ conservation contribute to preservation of endangered plants? (CO3, K4)

(a) Cultivating plants in natural habitat

(b) Establish botanical gardens

(c) Promote illegal trade of plant

(d) By encouraging deforestation

6. Which legal framework aims to regulate access to genetic resources? (CO3, K4)

(a) Cartagena Protocol

(b) Nagoya Protocol

(c) Paris Agreement

(d) Kyoto Protocol

7. Why medicinal plants and drugs are adulterated? (CO4, K4)

(a) Enhance therapeutic properties

(b) Cost reduction and economic gain

(c) Acceleration of the healing process

(d) Improve taste and flavor

8. Which organization in India is responsible for regulating the quality of drugs and medicinal plants? (CO4, K4)

(a) AYUSH (b) FSSAI

(c) WHO (d) NMPB

9. Agrotechniques developed from medicinal plants primarily focus on: (CO5, K5)

(a) Increasing shelf life

(b) Enhancing aromatic properties

(c) Improving cultivation practices

(d) Genetic modification

10. A component of agrotechniques for medicinal plants (CO5, K5)

(a) Synthetic pesticides

(b) Sustainable harvesting

(c) High water consumption

(d) Genetic engineering

Part B (5 × 5 = 25)

Answer **all** questions note more than 500 words each.

11. (a) Highlight the benefits of Ayurveda in modern healthcare. (CO1, K2)

Or

(b) Compare the principles of Siddha and Unani medicine. (CO1, K2)

12. (a) Correlate the use of common medicinal plants inhuman health. (CO2, K4)

Or

(b) Integrate the medicinal uses of Zingiberaceae. (CO2, K4)

13. (a) Explain two common methods used to detect the adulteration of medicinal plants. (CO3, K4)

Or

(b) Illustrate the pharmaceutical importance of alkaloids. (CO3, K4)

14. (a) Define antidote plants and explain how it works as an antidote. (CO4, K4)

Or

(b) Relate the significance of drugs prepared from poisonous plants. (CO4, K4)

15. (a) Describe the aromatic plants commonly used in herbal technology. (CO5, K5)

Or

(b) Discuss the challenges and opportunities in cultivation of medicinal plants. (CO5, K5)

Part C ($5 \times 8 = 40$)

Answer **all** questions note more than 1000 words each.

16. (a) Explain the fundamental principles of Ayurveda medicine in treatment of diseases. (CO1, K2)

Or

(b) Justify the role of herbal medicine in well being. (CO1, K2)

17. (a) Summarize the medicinal uses of Apocyanaceae. (CO2, K3)

Or

(b) Outline the medicinal uses of Euphorbiaceae. (CO2, K3)

18. (a) Discuss the properties of drugs derived from medicinal plants. (CO3, K4)

Or

(b) How will you prepare raw drugs by extraction process? (CO3, K4)

19. (a) Suggest measures to prevent future instances of biopiracy. (CO4, K4)

Or

(b) Comment on the types and action of plant poisons. (CO4, K4)

20. (a) Examine the role of biotechnology in enhancing agrotechniques for medicinal plants. (CO5, K5)

Or

(b) Explain the role of organic farming in preserving the medicinal properties of plants. (CO5, K5)

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