

R4566

Sub. Code

25MBO2C1

M.Sc. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Botany

PLANT SYSTEMATICS

(CBCS – 2025 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. Which principle of taxonomy deals with priority in naming plants? (CO1, K1)
 - (a) Typification
 - (b) Priority
 - (c) Valid publication
 - (d) Effective publication
2. In first comprehensive flora of British India was prepared by _____. (CO1, K2)
 - (a) J.D. Hooker
 - (b) Roxburgh
 - (c) Bentham
 - (d) Linnaeus

3. In Bentham and Hooker's system, angiosperms are divided into _____. (CO2, K2)
- (a) Dicotyledons and Monocotyledons
 - (b) Gymnosperms and Angiosperms
 - (c) Polypetalae, Gamopetalae and Monochlamydeae
 - (d) Thalamiflorae, Disciflorae and Calyciflorae
4. APG IV classification is mainly based on _____. (CO2, K2)
- (a) Morphology
 - (b) Anatomomy
 - (c) Fossil records
 - (d) Molecular phylogenetic data
5. Plant nomenclature is governed by _____. (CO3, K3)
- (a) International Code of Botanical Nomenclature (ICBN)
 - (b) International Code of Nomenclature for algae, fungi and plants (ICN)
 - (c) International Plant Naming Code
 - (d) Biological Code of Nomenclature
6. When a species is transferred to another genus, the original author's name is _____. (CO3, K1)
- (a) Italicized
 - (b) Omitted
 - (c) Retained in brackets
 - (d) Replaced completely

7. Annonaceae is systematically placed under ———. (CO4, K1)
- (a) Rosales
 - (b) Ranales
 - (c) Sapindales
 - (d) Malvales
8. Rutaceae is distinguished by ———. (CO4, K1)
- (a) Milky latex
 - (b) Tendrils
 - (c) Aromatic oil gland in leaves
 - (d) Compound ovary
9. A characteristic feature of Rubiaceae is ———. (CO5, K1)
- (a) Alternate leaves without stipules
 - (b) Whorled leaves
 - (c) Presence of tendrils
 - (d) Opposite leaves with interpetiolar stipules
10. A medicinally important plant of Apocynaceae is ——— (CO5, K1)
- (a) *Ocimum sanctum*
 - (b) *Digitalis purpurea*
 - (c) *Atropa belladonna*
 - (d) *Rauwolfia serpentina*

Part B

(5 × 5 = 25)

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

11. (a) Explain the principle of plant taxonomy to describe the plants. (CO1, K4)

Or

- (b) Discuss the history of botanical exploration in India with special reference to Tamil Nadu (CO1, K2)

12. (a) Give an account of chemotaxonomy. (CO2, K2)

Or

- (b) Give an account of techniques of herbarium preparation. (CO2, K2)

13. (a) Write a note on limitations of the principle of priority. (CO3, K3)

Or

- (b) Describe the importance of floras and monographs in taxonomy. (CO3, K2)

14. (a) Illustrate the diagnostic characters of Fabaceae. (CO4, K2)

Or

- (b) List out the economic importance of Rutaceae. (CO4, K1)

15. (a) Describe the floral characters of *Datura* with floral diagram. (CO5, K5)

Or

- (b) Distinguish male flower from female flower of *Euphorbia* . (CO5, K5)

Part C

(5 × 8 = 40)

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

16. (a) Describe the phylogeny and origin of angiosperms with suitable theories. (CO1, K2)

Or

- (b) Discuss the concept, scope and objectives of plant taxonomy. (CO1, K2)

17. (a) Explain APG IV classification and compare it with classical system. (CO2, K4)

Or

- (b) Explain the functions of Botanical Survey of India. (CO2, K4)

18. (a) Describe taxonomic literature and taxonomic keys in detail. (CO3, K2)

Or

- (b) Explain typification and kinds of types recognized under ICN. (CO3, K4)

19. (a) Describe the family Fabaceae with systematic position, floral characters and economic importance. (CO4, K2)

Or

- (b) Describe the taxonomic characters of Sapindaceae from Vitaceae. (CO4, K4)

20. (a) Distinguish Euphorbiaceae from Acanthaceae. (CO5, K5)

Or

- (b) Enumerate the economic importance of *Datura*. (CO5, K5)

R4567

Sub. Code

25MBO2C2

M.Sc. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Botany

PLANT ANATOMY AND EMBRYOLOGY

(CBCS – 2025 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

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

1. The quiescent centre is located in the _____ (CO1, K1)
(a) Shoot apex (b) Root apex
(c) Leaf base (d) Periderm
2. Which meristem gives rise to primary tissues? (CO1, K2)
(a) Intercalary (b) Apical
(c) Lateral (d) Secondary
3. Monocot stems are characterized by _____ (CO2, K1)
(a) Ring vascular bundles
(b) Scattered vascular bundles
(c) Secondary growth
(d) Prominent cambium
4. Growth rings are produced due to variation in _____ (CO2, K1)
(a) Guard cell size (b) Water storage
(c) Cambial activity (d) Leaf abscission

5. Paraffin is mainly used in microtomy for _____ (CO3, K1)
(a) Cooling tissues (b) Embedding tissues
(c) Staining tissues (d) Clearing tissues
6. Sledge microtomes are best suited for _____ (CO3, K2)
(a) Thin sections
(b) Ultra-thin sections
(c) Thick or hard tissues
(d) Living cells
7. Microsporangia are found in the _____ (CO4, K1)
(a) Ovule (b) Anther
(c) Ovary (d) Stigma
8. Double fertilization is a feature seen only in _____ (CO4, K1)
(a) Gymnosperms (b) Pteridophytes
(c) Bryophytes (d) Angiosperms
9. Leaf abscission occurs in the _____ (CO5, K1)
(a) Epidermis (b) Abscission zone
(c) Mesophyll (d) Vascular bundle
10. Histochemical tests for lignin usually give a _____ reaction. (CO5, K1)
(a) Blue (b) Red
(c) Green (d) Brown

Part B

(5 × 5 = 25)

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

11. (a) Compare the apical meristem of root and shoot. (CO1, K5)

Or

- (b) Explain the structural diversity of xylem elements. (CO1, K4)

12. (a) Write notes on reaction wood and growth rings.
(CO2, K2)

Or

- (b) Explain the anatomy of dicot leaf with a labelled diagram.
(CO2, K4)

13. (a) Outline the steps involved in paraffin embedding technique.
(CO3, K5)

Or

- (b) Describe the role of fixatives in histochemical studies.
(CO3, K1)

14. (a) Discuss the structure and development of the ovule.
(CO4, K2)

Or

- (b) Write notes on homomorphic and heteromorphic incompatibility.
(CO4, K5)

15. (a) Discuss heartwood formation and its significance.
(CO1, K1)

Or

- (b) Describe stomatal types with examples. (CO5, K4)

Part C

(5 × 8 = 40)

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

16. (a) Describe xylem and phloem organization with diagrams and compare their functional significance.
(CO1, K2)

Or

- (b) Evaluate the mechanisms of wound healing, periderm formation and lenticel development.
(CO1, K5)

17. (a) Describe the process of secondary growth in dicot stems and explain sapwood, heartwood, reaction wood and growth rings. (CO2, K5)

Or

(b) Explain root—stem transition with labelled diagrams and discuss its developmental importance. (CO2, K4)

18. (a) Describe clearing and maceration techniques and explain how they help in anatomical and histochemical studies. (CO3, K4)

Or

(b) Discuss various fixatives used in histochemistry, their chemical properties and mode of action. (CO3, K2)

19. (a) Explain megasporogenesis and development of female gametophyte; add diagrams of embryo sac. (CO4, K4)

Or

(b) Explain double fertilization in detail and discuss its evolutionary significance in angiosperms. (CO4, K4)

20. (a) Explain anomalous secondary growth with suitable examples from dicots. (CO5, K2)

Or

(b) Discuss the formation of periderm and lenticels and explain their significance in gaseous exchange and protection. (CO5, K3)

R4568

Sub. Code

25MBO2C3

M.Sc. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Botany

PLANT PHYSIOLOGY

(CBCS – 2025 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. Cohesion–tension theory was proposed by _____
(CO1, K1)
(a) Sachs (b) Dixon and Jolly
(c) Priestley (d) Münch
2. The Casparian strip blocks which pathway? (CO1, K2)
(a) Symplast (b) Transmembrane
(c) Apoplast (d) Phloem pathway
3. Chlorosis is commonly caused by deficiency of _____
(CO2, K2)
(a) Calcium (b) Iron
(c) Boron (d) Zinc
4. Cation exchange capacity (CEC) of soil is mainly due to _____
(CO2, K2)
(a) Sand (b) Clay and humus
(c) Gravel (d) Soil air

5. Non-cyclic photophosphorylation produces _____
(CO3, K1)
- (a) ATP only (b) NADPH only
(c) ATP and NADPH (d) ATP, NADPH and O₂
6. The stable first product of Calvin cycle is _____
(CO3, K1)
- (a) PGA
(b) RuBP
(c) Glyceraldehyde-3-phosphate
(d) Oxaloacetate
7. The final electron acceptor in mitochondrial electron transport chain is _____
(CO4, K2)
- (a) CO₂ (b) NAD⁺
(c) Oxygen (d) Water
8. The glyoxylate cycle occurs in _____
(CO4, K4)
- (a) Chloroplast (b) Mitochondria
(c) Glyoxysome (d) Peroxisome
9. Nod factors are chemically _____
(CO5, K1)
- (a) Peptides
(b) Lipo-chitooligosaccharides
(c) Glycoproteins
(d) Steroids
10. Sulphur is absorbed by plants primarily in the form of _____
(CO5, K1)
- (a) SO₂ (b) Elemental sulphur
(c) Sulphate (d) Sulphide

Part B

(5 × 5 = 25)

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

11. (a) Describe the structure and properties of water. (CO1, K2)

Or

- (b) Write briefly on phloem loading and unloading. (CO1, K1)

12. (a) Write about transpiration and its significance. (CO2, K2)

Or

- (b) Write a short note on root pressure and guttation. (CO2, K2)

13. (a) Explain photo-oxidation of water. (CO3, K4)

Or

- (b) Explain the evolution of photosynthetic apparatus. (CO3, K4)

14. (a) Write a short note on glyoxylate cycle. (CO4, K2)

Or

- (b) Give an overview of lipid metabolism in plants. (CO4, K4)

15. (a) Describe the role of Nod factors in nodule initiation. (CO5, K2)

Or

- (b) Explain sulphur uptake and transport in plants. (CO5, K4)

Part C

(5 × 8 = 40)

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

16. (a) Describe the mechanism of stomatal movement with suitable diagrams. (CO1, K2)

Or

- (b) Briefly explain active and passive absorption of mineral ions. (CO1, K2)

17. (a) Discuss the role of root system in mineral nutrition. (CO2, K2)

Or

(b) Briefly explain active and passive absorption of mineral ions. (CO2, K4)

18. (a) Explain cyclic and non-cyclic photophosphorylation. (CO3, K4)

Or

(b) Describe the biochemical pathway, regulation, and physiological significance of lipids. (CO3, K3)

19. (a) Describe the structure and function of ATP synthase enzyme. (CO4, K2)

Or

(b) Write a short note on photorespiration in CAM plants. (CO4, K4)

20. (a) Explain the mechanism of light-induced signal transduction in plants. (CO5, K4)

Or

(b) Write an essay on the origin and discovery of plant growth regulators in plants. (CO5, K2)

R4569

Sub. Code

25MBO2C4

M.Sc. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Botany

PLANT BIOCHEMISTRY

(CBCS – 2025 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

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

1. Which statement about vander waals forces is accurate in biomolecules? (CO1, K2)
 - (a) They require full ionic charges
 - (b) They are strong only at long distances
 - (c) They arise from transient dipoles and close packing
 - (d) They are the same as hydrogen bonds
2. Which statement best describes a covalent bond between two atoms? (CO1, K2)
 - (a) A sharing of electron pairs between atoms
 - (b) A magnetic attraction between nuclei
 - (c) A full transfer of electrons forms ions that attract
 - (d) A repulsion that keeps atoms apart

3. Which property of water most directly stabilizes protein secondary structure in cells? (CO2, K2)
- (a) Low compressibility
 - (b) Hydrogen bonding as donor and acceptor
 - (c) High surface tension
 - (d) High heat capacity
4. Which best describes NAD and NADP in metabolism? (CO2, K2)
- (a) They are high-energy phosphate polymers like ATP
 - (b) Both primarily donate electrons in catabolic pathways
 - (c) Both act mainly as phosphoryl-group donors
 - (d) NAD usually accepts electrons in catabolism; NADPH donates in anabolism
5. Which feature best distinguishes monosaccharides from disaccharides and polysaccharides? (CO3, K3)
- (a) Inability to cyclize via hemiacetal or hemiketal formation
 - (b) Presence of a single polyhydroxy aldehyde or ketone unit
 - (c) Ability to form glycosidic bonds exclusively at the anomeric carbon
 - (d) Exclusive presence of pyranose ring forms in solution
6. Which cofactor supplies reducing power for fatty acid synthase reactions? (CO3, K3)
- (a) FAD
 - (b) NADH
 - (c) NADPH
 - (d) Coenzyme Q

7. Which classification best groups of amino acids like lysine, arginine, and histidine? (CO4, K2)
- (a) Negatively charged (acidic)
 - (b) Positively charged (basic)
 - (c) Nonpolar aliphatic
 - (d) Aromatic
8. Z-DNA is best described as which of the following? (CO4, K1)
- (a) Denatured single-stranded DNA lacking base pairing
 - (b) Right-handed helix with ~ 10 bp/turn
 - (c) Left-handed helix favoured by alternating CG sequences at high salt
 - (d) Right-handed, dehydrated form typical of RNA-DNA hybrids
9. The major lipid component of biological membranes is _____ (CO5, K1)
- (a) Cellulose
 - (b) Phospholipid
 - (c) Glycoprotein
 - (d) Steroid
10. Flavonoids are commonly associated with: (CO5, K1)
- (a) Nitrogen storage
 - (b) Protein synthesis
 - (c) Cell wall synthesis
 - (d) Pigmentation and UV protection

Part B

(5 × 5 = 25)

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

11. (a) What would you know the role of stabilising macromolecules in a hydrogen bond (CO1, K1)

Or

- (b) Explain the difference between pH and pKa with a simple example. (CO1, K2)

12. (a) Define entropy and state its role in the second law of thermodynamics. (CO2, K4)

Or

- (b) Define isozymes and state their significance. (CO2, K4)

13. (a) What is the primary function of Carbohydrate Structure Database? (CO3, K3)

Or

- (b) How do LIPID MAPS play a role in lipid research? (CO3, K3)

14. (a) Give a detailed account on general properties of amino acids. (CO4, K2)

Or

- (b) Define GS/GOGAT. Add a note on the pathway used for. (CO4, K2)

15. (a) Explain the structure of cellulose and its role in strength of plant cell wall. (CO5, K5)

Or

- (b) Describe the classification of secondary metabolites with suitable examples. (CO5, K5)

Part C (5 × 8 = 40)

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

16. (a) Discuss the roles of vander Waals forces and hydrogen bonds in stabilizing macromolecules, with examples. (CO1, K2)

Or

- (b) Discuss the importance of biochemistry in agriculture, disease prevention, and genetic modifications for crop yields. (CO1, K2)

17. (a) Discuss the general properties of enzymes, including specificity, cofactors coenzymes, and isozymes. (CO2, K2)

Or

- (b) Explain Gibbs free energy (ΔG) and its role in determining the spontaneity of biochemical reactions. (CO2, K4)

18. (a) Classify the lipids and write down the features of fatty acids. (CO3, K5)

Or

- (b) Compare beta-oxidation in mitochondria versus peroxisomes with energy yields. (CO3, K5)

19. (a) Give a detail account on classification of amino acids. (CO4, K4)

Or

- (b) Explain simple purine biosynthesis pathway with precursors. (CO4, K4)

20. (a) Discuss the role of secondary metabolites in plant defense, stress tolerance, and human use. (CO5, K5)

Or

- (b) Describe the structure, layers and biochemical composition of the plant cell wall. (CO5, K5)
-

R4570

Sub. Code

25MBO2E2

M.Sc. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Botany

Elective – ORGANIC FARMING

(CBCS – 2025 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

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

1. Organic farming emphasizes (CO1, K1)
 - (a) Chemical intensification
 - (b) Ecological balance
 - (c) Genetic manipulation
 - (d) Monocropping

2. Mixed farming involves integration of _____ (CO1, K1)
 - (a) Crops and forestry
 - (b) Crops and livestock
 - (c) Crops and fisheries
 - (d) Crops and biotechnology

3. Soil reclamation is mainly practiced to correct (CO2, K1)
- (a) Soil acidity and salinity
 - (b) Crop diseases
 - (c) Genetic erosion
 - (d) Pest outbreaks
4. Nutrient uptake in plants is largely influenced by _____ (CO2, K1)
- (a) Soil microorganisms
 - (b) Atmospheric pressure
 - (c) Light intensity
 - (d) Wind velocity
5. Excessive use of chemical fertilizers leads to _____ (CO3, K2)
- (a) Enhanced soil biodiversity
 - (b) Soil and water pollution
 - (c) Increased humus formation
 - (d) Improved soil structure
6. Vermicompost is biologically enriched due to the action of _____ (CO3, K1)
- (a) Bacteria
 - (b) Earthworms
 - (c) Actinomycetes
 - (d) Algae
7. Green manuring with legumes mainly increases soil _____ (CO4, K1)
- (a) Phosphorus
 - (b) Nitrogen
 - (c) Potassium
 - (d) Calcium

8. Cyanobacteria in organic farming are valued for
(CO4, K1)
- (a) Weed suppression
 - (b) Nitrogen fixation
 - (c) Pest control
 - (d) Decomposition
9. Rhizobium represents which category of bioinoculant?
(CO5, K1)
- (a) Phosphate solubilizer
 - (b) Nitrogen fixer
 - (c) Potassium mobilizer
 - (d) Decomposer
10. Conservation of traditional crop varieties is essential for
maintaining (CO5, K1)
- (a) Soil pH
 - (b) Genetic diversity
 - (c) Crop yield uniformity
 - (d) Market value

Part B

(5 × 5 = 25)

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

11. (a) Define organic farming and explain its objectives
and scope. (CO1, K2)

Or

- (b) Discuss the importance of integrated and mixed
farming systems in sustainable agriculture.
(CO1, K2)

12. (a) Explain the role of essential plant nutrients in crop growth and development. (CO2, K4)

Or

- (b) Analyze the advantages and disadvantages of chemical fertilizers. (CO2, K4)

13. (a) Describe different sources of organic manures used in organic farming. (CO3 K2)

Or

- (b) Explain the significance of green manures and crop rotation. (CO3, K4)

14. (a) Discuss the importance of bioinoculants in enhancing soil productivity. (CO4, K2)

Or

- (b) Explain the role of nitrogen-fixing microorganisms. (CO4, K4)

15. (a) Explain how organic farming helps conserve genetic diversity. (CO5, K4)

Or

- (b) Analyze the impact of organic farming on agro-ecosystem sustainability. (CO5, K4)

Part C

(5 × 8 = 40)

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

16. (a) Critically evaluate organic farming as an alternative to conventional farming. (CO1, K5)

Or

- (b) Assess the role of weed management and soil reclamation. (CO1, K4)

17. (a) Examine the role of soil microorganisms in nutrient uptake. (CO2, K3)

Or

- (b) Critically analyze the ecological impacts of pesticide residues. (CO2, K5)

18. (a) Evaluate the contribution of FYM, compost and vermicompost. (CO3, K5)

Or

- (b) Design an integrated organic nutrient management strategy. (CO3, K3)

19. (a) Compare symbiotic and asymbiotic nitrogen fixation. (CO4, K4)

Or

- (b) Assess the role of phosphate and potassium solubilizing microorganisms. (CO4, K4)

20. (a) Propose a framework for conserving genetic diversity through organic farming. (CO5, K5)

Or

- (b) Evaluate organic farming in reducing agricultural pollution. (CO5, K5)
-

R4571

Sub. Code

25MBO2S1

M.Sc. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Botany

HYDROPONICS

(CBCS – 2025 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** the following questions by
choosing the correct options.

1. Hydroponics refers to growing plants _____
(CO1, K1)
 - (a) In soil
 - (b) In sand
 - (c) Without soil using nutrient solution
 - (d) In compost
2. The technique combining fish culture and hydroponics is called _____
(CO1, K2)
 - (a) Aquaponics
 - (b) Aeroponics
 - (c) Permaculture
 - (d) Verticulture
3. Which system allows recirculation of nutrient solution?
(CO2, K2)
 - (a) Wick system
 - (b) Drip soil system
 - (c) Closed system
 - (d) Open system

4. The commonly used inert hydroponic substrate is _____ (CO2, K2)
(a) Vermicompost (b) Clay loam
(c) Garden soil (d) Coco peat
5. Electrical conductivity (EC) indicates _____ (CO3, K1)
(a) Oxygen level (b) Light intensity
(c) Salt concentration (d) Temperature
6. Ideal pH range for most hydroponic crops is (CO3, K1)
(a) 2.0-3.0 (b) 4.5-5.0
(c) 5.5-6.5 (d) 8.0-9.0
7. NFT stands for _____ (CO4, K1)
(a) Nutrient Film Technique
(b) Nutrient Flow Technique
(c) Nutrient Fertilizer Technology
(d) New Farming Technique
8. Hydroponically grown vegetables are preferred by consumers due to _____ (CO4, K1)
(a) Larger seeds (b) Delayed maturity
(c) Stronger aroma (d) Higher cleanliness
9. Which crop is widely grown under hydroponics? (CO5, K2)
(a) Rice (b) Wheat
(c) Lettuce (d) Sugarcane
10. Hydroponics is most suitable for _____ (CO5, K1)
(a) Rainfed agriculture
(b) Desert regions
(c) Waterlogged soils
(d) Flood plains

Part B

(5 × 5 = 25)

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

11. (a) Write a short note on the history of hydroponics.
(CO1, K1)

Or

- (b) Explain the advantages of hydroponics in plant cultivation.
(CO1, K4)

12. (a) Describe open and closed hydroponic systems.
(CO2, K2)

Or

- (b) Explain vertical and horizontal hydroponics systems.
(CO2, K4)

13. (a) Discuss organic and inorganic substrates used in hydroponics.
(CO3, K2)

Or

- (b) Write about nutrient solution composition.(CO3, K2)

14. (a) Explain the role of pH and EC in nutrient management.
(CO4, K4)

Or

- (b) Describe water quality and filtration methods.
(CO4, K4)

15. (a) Outline GAP practices in hydroponic cultivation.
(CO5, K5)

Or

- (b) Write short notes on IPM in hydroponics. (CO5, K5)

Part C

(5 × 8 = 40)

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

16. (a) Explain the strategy of hydroponic system and how could you cultivate the medicinal plants. (CO1, K4)

Or

- (b) Discuss IOT-based hydroponic cultivation. (CO1, K2)

17. (a) Describe infrastructure and setup requirements for hydroponics. (CO2, K2)

Or

- (b) Explain management of nutrient solutions.

(CO2, K4)

18. (a) Give a detailed account of hydroponics tomato cultivation. (CO3, K3)

Or

- (b) Explain what are the advantages of cultivating leafy vegetables in hydroponics method. (CO3, K4)

19. (a) Discuss harvesting, grading and storage of hydroponic technique. (CO4, K2)

Or

- (b) Explain in detail of global hydroponic market trends (CO4, K4)

20. (a) Give an account on entrepreneurship significance in hydroponics. (CO5, K5)

Or

- (b) Discuss how the government supports to become hydroponic entrepreneurs. (CO5, K5)