

**Question Bank**  
**Subject: Botany**  
**Class: M.Sc. I Semester: II**

**Paper V:**

**Long Questions:**

1. Describe mechanism of photosynthetic electron transport in chloroplast.
2. Describe C<sub>3</sub> photosynthetic pathway and compare it with C<sub>4</sub> pathway.
3. Describe CAM pathway and compare it with C<sub>4</sub> pathway.
4. Explain glycolysis.
5. Explain Citric acid cycle in respiration.
6. Write in detail oxidative pentose phosphate pathway
7. Write in detail Plant mitochondrial electron transport mechanism and phenomenon of oxidative phosphorylation
8. Describe physiological effect and mechanism of action of Auxin
9. Describe physiological effect and mechanism of action of Cytokinin
10. Describe physiological effect and mechanism of action of Gibberellin
11. Discuss Structure, Function and Mechanism of Phytochromes
12. Give a brief account of Properties of Enzymes
13. Discuss Michaelis-Menten equation for enzymes. Add a note on its significance.
14. Give a detail account of factors affecting Enzyme activity
15. Explain uptake and transport of water through xylem
16. Mechanism of Phloem loading and unloading of photo assimilates
17. Describe the uptake, transport and translocations of ions in plants
18. Discuss Active and Passive transport of ions and solutes in plants
19. Describe classification, structure and function of carbohydrates.
20. Explain starch synthesis
21. Explain fatty acid biosynthesis in plants
22. Explain amino acid biosynthesis in plants.
23. Write in detail on which characters a plant can be identified for pharmacognosy purpose.
24. Describe in detail the method of preparation of Herbaria
25. Write down any three methods of herbal extraction

26. Write in detail the procedure of making Churna and Asava /Asava and Arishta/ Arishta and Churna
27. Describe in detail pharmacognostic uses and products of Aloe,Amla,&Adhatoda
28. Describe in detail pharmacognostic uses and products of Neem, Rose, Turmeric
29. Describe in detail pharmacognostic uses and products of Neem,Ginger, Turmeric

**Short Questions: Write short notes on**

1. Apical Dominance
2. Phytochromes
3. Photoperiodism and Biological Clock
4. Nomenclature of enzymes
5. Classification of enzymes
6. The Enzyme substrate complex
7. Holoenzyme
8. Isozymes
9. Photorespiration
10. Chemosmotic coupling hypothesis
11. ATP synthesis
12. Photoprotective mechanism
13. Symplastic Pathway
14. Apoplastic pathway
15. Plasmodesmata
16. Pumps
17. Carriers
18. Channels
19. Active transport of ions
20. Passive transport
21. Function of carbohydrates
22. Lipid composition
23. Unsaturated lipids
24. Membrane Lipids
25. Storage Lipids

26. Tertiary structure of proteins
27. Ramchandran Plot
28. Function of Proteins
29. Polypeptide linkage
30. Zwitter ion

## **Paper-VI**

### **Long Questions:**

1. Write in detailed plant growth kinetics and the different stages pattern of growth
2. Describe organisation of shoot apical meristem.
3. Explain cytological and molecular analysis of SAM.
4. What is plant hormones? Describe in detail classification, chemical nature and their role in plant development
5. Explain root apical meristem, with vascular tissue differentiation system and root hair formation.
6. Describe classification of phytohormones and their role in plant development.
7. Describe concept of florigen with reference to flowering and photoperiodism.
8. Describe ABC model of flower development
9. Explain the role of homeotic mutants of *Arabidopsis* and *Antirrhinum* in flower development.
10. Explain microsporogenesis
11. Explain megasporogenesis
12. Describe organisation of embryo sac and their types.
13. Describe embryogenesis
14. Describe types of dormancy and factors overcoming seed dormancy
15. Describe programmed cell death and their role in senescence.
16. Explain metabolic changes associated with senescence and its regulation.
17. Write in detail active constituent of *Catharanthus roseus* used for Cardiac disease and method of testing.
18. Give an illustrated account on active constituent of *Withania somnifera* used for curing nervous disorders and method of testing.
19. Describe in detail active constituent of *Clerodendron phlomoides* used as anti rheumatic and method of testing.

20. Write in detail active constituent of *Centella asiatica* used as memory booster and method of testing.

**Short Questions: Write short notes on**

1. Tissue differentiation in shoot
2. Phyllotaxy in plant
3. Opposite decussate phyllotaxy in plants
4. Differentiation of tissues in the plants with special reference to stomata
5. Vascular tissue differentiation
6. Tropism
7. Photomorphogenesis of seedling
8. Hormonal control of seedling growth
9. Regulation of cell fate in meristem
10. Florigen concept
11. Role of gibberellin in development of plant
12. Role of Cytokinin in development of plants
13. Role of Ethylene in development of plants
14. Structure of anther
15. Male sterility
16. Stages of pollen germination
17. Structure of ovule
18. Organisation of embryo sac
19. Structure of polygonum embryo sac cell
20. In vitro fertilisation
21. Endosperm development
22. Bud dormancy
23. Active principles of *Catharanthus roseus*/ *Withania somnifera*/  
*Clerodendron phlomoides* / *Centella asiatica*
24. Phytochemical testing methods of active principles of *Catharanthus roseus*/ *Withania somnifera*/ *Clerodendron phlomoides* / *Centella asiatica*

## **Paper VII**

### **Long Questions:**

1. Describe structure and function of plant cell wall.
2. Describe fluid mosaic model of plasma membrane
3. Describe aquaporins and their functions in plants.
4. Describe structure of plasmodesmata
5. Describe structure of cytoskeleton
6. Explain organisation and role of microfilament in plant cytoskeleton
7. Describe ultrastructure of nuclear pore complex and their functions.
8. Describe prokaryotic DNA replication
9. Describe active and passive mechanisms of plant defence.
10. Describe early and late response of plant defence.
11. Describe PR proteins and R genes.
12. Describe morphological, physiological and molecular changes in salt stress on plants.
13. Describe morphological, physiological and molecular changes in drought stress on plants.
14. Describe morphological, physiological and molecular changes in light stress on plants.
15. Describe morphological, physiological and molecular changes in temperature stress on plants.
16. Give an illustrated account on different types of Tables and Graphs
17. Describe in detail a good laboratory record
18. Give detail account on imaging tissue specimens
19. Write in detail do's and don'ts and procedure of field photography

### **Short Questions: Write short notes on**

1. Biogenesis of cell wall
2. Ion carriers
3. Ion channels
4. Pumps
5. Gap junction
6. Motor movements
7. Flagellar movements
8. Structure of A form of DNA

9. Structure of B form of DNA
10. Structure of Z form of DNA
11. DNA replication proteins
12. Hypersensitive response
13. Systemic acquired response
14. R genes
15. PR proteins
16. Reactive oxygen species
17. Errors in presenting numerical data
18. Tabulating and graphing numerical data
19. Formal laboratory record
20. Types of Table
21. Presenting data in Pie and Bar chart
22. Histogram

## **Paper VIII**

### **Long Questions:**

1. Write in detail merits and demerits of major classification system of Bentham and Hooker and Takhtajan system.
2. Describe in detail taxonomic character system with examples
3. Write in detail biochemical and molecular techniques used in taxonomy
4. Describe in detail morphological differentiation of root
5. Give an account on morphology of stem
6. Write in detail different inflorescence types
7. Explain evolution of stamen and carpel
8. Describe evolution of placentation with their types
9. Explain adaptation of flowers with respect to different pollinators
10. Explain merits and demerits of major systems of angiosperm classifications.
11. Describe species concept in Plant systems.
12. Describe analytic and synthetic characters used in plant classifications
13. Describe qualitative and quantitative characters used in plant classifications
14. Explain botanic gardens and their role in taxonomy.
15. Describe herbarium and their role in plant taxonomy
16. Describe population concept phenotypic plasticity.
17. Describe numerical taxonomy
18. Describe cladistics in taxonomy
19. Describe salient features of ICBN.
20. Write in detail different methods used in biosystematics studies
21. Describe sacred groves and their role in conservation
22. Describe in detail on scientific writing
23. Describe in detail presentation through powerpoint
24. Describe in detail Good & bad poster presentation
25. Write in detail reference writing style and different sources with example

### **Short Questions: Write short notes on**

1. Merits and demerits of Cronquist system of classification

2. Merits and demerits of Takhtajan system of classification
3. Concept of taxonomic hierarchy
4. Concept of genus, species and family in taxonomy
5. Floral symmetry
6. Difference between monocot and Dicot flower with example
7. Diversity of stamen
8. Diversity of carpel
9. Types of placentation
10. Characters of entomophilous flowers
11. Characters of ornithophilous flowers
12. Characters of cheiropterophilous flowers
13. Concept of Genus
14. Concept of family
15. Heterostaminy
16. Floras
17. Use of computer and GIS in taxonomy
18. Use of molecular techniques in taxonomy
19. Polarity of characters
20. Homology
21. Homoplasy
22. Monophyly
23. Polyphyly
24. Scope of Ethnobotany
25. Significance of Ethnobotany
26. Difference between APA, MLA, Vancouver, Chicago reference style
27. Do's & Don'ts of good poster
28. Ethics maintained in scientific writing
29. Plagiarism