

Rayat Shikshan Sanstha's

Yashavantrao Chavan Institute of Science, Satara (Autonomous)

DEPARTMENT OF BOTANY

Cell and Molecular Biology (MBT 201)

Question bank

Q.1) Answer the following questions (2 marks for each question)

1. Define apoptosis
2. Define gene
3. Define proteolysis
4. Define transcription
5. Define translation
6. Describe composition of plant cell wall.
7. Enlist any four chemical mutagens
8. Enlist any four important enzymes for DNA replication in prokaryotes
9. Enlist any four physical mutagens
10. Enlist any two functions of nucleus.
11. Enlist DNA repair systems
12. Enlist phases of cell cycle
13. Enlist phases of mitosis
14. Any two Functions of Chloroplast
15. Any two Functions of ER
16. Any two Functions of Golgi Complex
17. Any two Functions of Mitochondria.
18. Any two Functions of nucleus
19. Any two Functions of Ribosomes
20. Give any two functions of RER.
21. How many histones come together to form one nucleosome?
22. How many protofilaments come together to form one microtubule?
23. What are gap junctions?

24. What are plasmodesmata
25. What is plastome?
26. What is polyadenylation?
27. Which molecular motor runs on microfilament?
28. Which molecular motor runs on microtubules?

Que. 2, Que. 3 and Que. 4) Answer the following (6 marks for each question)

1. Describe different check points of cell cycle.
2. Describe in detail structure of microfilaments.
3. Describe in detail structure of microtubules.
4. Describe in detail transcription process in eukaryotes.
5. Describe in detail transcription process in prokaryotes.
6. Describe in detail translation process in prokaryotes.
7. Describe the process of DNA replication in eukaryotes.
8. Describe the process of DNA replication in prokaryotes
9. Describe ultrastructure of chloroplast
10. Describe ultrastructure of mitochondria
11. Describe ultrastructure of nucleus
12. Describe ultrastructure of plant cell.
13. Describe ultrastructure of plasma membrane.
14. Explain in detail Lac-Operon model.
15. Explain in detail structure of gene.
16. Write a note on cell cycle.
17. Write a note on DNA damage caused by chemical mutagens.
18. Write a note on DNA damage caused by physical mutagens.
19. Write a note on extrinsic pathway of apoptosis.
20. Write a note on intrinsic pathway of apoptosis.
21. Write a note on organization of chloroplast genome.
22. Write a note on organization of mitochondrial genome.
23. Write a note on requirements for transcription.
24. Write a note on requirements for translation.

Que. 5, que. 6 and Que. 7) Short notes (4 marks for each question)

1. Base Excision DNA repair
2. Direct DNA repair
3. Extrinsic pathway of apoptosis.
4. Fluid mosaic model of Plasma Membrane
5. Functions of chloroplast
6. Functions of microfilaments.
7. Functions of microtubules
8. Functions of mitochondria
9. Functions of nucleus
10. Functions of plasma membrane
11. Gap junctions
12. Mechanism of eukaryotic flagellar movement
13. NER
14. BER
15. Mismatch repair
16. Overlapping genes
17. Plasmodesmata
18. Polyadenylation
19. Proteolysis
20. Reverse transcription
21. RNA splicing.
22. Significance of meiosis.
23. Significance of mitosis
24. Split genes
25. Structure of microfilaments
26. Structure of microtubules
27. Transcription unit
28. Types of intermediate filaments.

M.Sc. I (Semester II)

BOTANY

Taxonomy of Angiosperms (MBT 202)

Question Bank

Q.1) Answer the following questions

[2 marks]

- 1) Define Taxonomy.
- 2) What are the main principles of taxonomy?
- 3) Name the approaches to accomplish aims of taxonomy.
- 4) Name any two phylogenetic systems of Angiosperms classification.
- 5) Name the two classification systems which are followers of Randalian School of Primitive flower concept.
- 6) According to Durian theory of angiosperm origin which angiosperm is regarded as primitive or sister to all angiosperms?
- 7) During which period the Angiosperms were originated?
- 8) Define herbarium.
- 9) Define Flora.
- 10) What is monograph?
- 11) What is Holotype?
- 12) Define Isotype?
- 13) What are syntypes?
- 14) Define taxonomic keys?
- 15) Write in one to two lines, what is indented keys?
- 16) In author citation when '*et*' is used?
- 17) In author citation, what is meaning of author within parenthesis?
- 18) Define Palynology.
- 19) Define Chemotaxonomy?
- 20) What is Embryology?
- 21) Which families are components of Mangoliids clade?
- 22) Which is the largest herbarium in India?
- 23) The scientific names are considered as written in which language?

- 24) What is ICBN?
- 25) Define empirical approach to accomplish the aims of taxonomy.
- 26) Define numerical taxonomy.
- 27) What type of APG classification is?
- 28) Who coined the term taxonomy?
- 29) First IBC was held in which year?
- 30) What is the full form of ICN?

Q.2) Answer the following questions

(6 marks)

- 1) Write and explain Cronquist's system of classification.
- 2) Explain the aims of taxonomy.
- 3) Write the history of botanical nomenclature.
- 4) Explain in brief any two phylogenetic classification systems.
- 5) Write about concept and principles of Angiosperm Phylogeny Classification.
- 6) Importance of botanical gardens and herbarium.
- 7) Write principles of ICBN and explain type method.
- 8) Write a note on any two taxonomic literatures.
- 9) Explain the type method in detail.
- 10) Explain in detail author citation in taxonomy.

Q.3) Answer the following questions

(6 marks)

- 1) Write a note on Botanical gardens in India and their roles.
- 2) Write a note on modern trends in taxonomy.
- 3) Explain in detail Palynology as a modern trend in taxonomy.
- 4) Write in detail herbarium technique and its importance.
- 5) Write a note on Numerical taxonomy and molecular systematics.
- 6) Give a brief account on Embryology in relation to taxonomy.
- 7) Write a critical note on any two modern trends in angiosperm classification.
- 8) Give an account on herbarium technique and its importance.
- 9) Give an account on botanical gardens.
- 10) Explain author citation and valid publication.

Q.4) Answer the following questions

(6 marks)

- 1) Explain with outline Wettstein's system of classification.
- 2) Describe in detail herbarium technique.
- 3) Give an account on family Magnoliaceae.
- 4) Explain Ranunculaceae with emphasis on diagnostic characters, floral formula and floral diagram.
- 5) Write an account on any two families of Eudicots.
- 6) Write a note on any two families of Monocots.
- 7) Write an account on family Malvaceae.
- 8) Explain family Caryophyllaceae with emphasis on diagnostic characters, floral formula and floral diagram.
- 9) Explain family Myrtaceae with emphasis on diagnostic characters, floral formula and floral diagram.
- 10) Explain family Rosaceae with emphasis on diagnostic characters, floral formula and floral diagram.

Q.5) Answer the following questions

(4 marks)

- 1) Write in brief about principles of taxonomy.
- 2) What are the different types of classification systems?
- 3) Explain in short history of classification.
- 4) Write in brief Gnetalian theory of angiosperm origin.
- 5) Explain in brief Cradle of angiosperms.
- 6) Write in short Dahlgren's system of classification.
- 7) Write in short Wettstein's system of classification.
- 8) Give a short treatise on principles of APG IV.
- 9) Give a short account on Cronquist system of classification.
- 10) Give a short account on Coniferales-Amentiferae theory.
- 11) Write a note on importance of embryology with in relation to taxonomy.
- 12) Write in brief about function of taxonomy.
- 13) Explain in short Durian theory.
- 14) Write a note on Thorne's classification.
- 15) Write a note on origin of Angiosperms.

Q.6) Answer the following questions

(4 marks)

- 1) Explain the concept and types of taxonomic keys.

- 2) Write in brief history of ICBN.
- 3) Write a note on importance of nomenclature.
- 4) Describe in short author citation.
- 5) Describe in short type method.
- 6) Write short note on Flora as taxonomic literature.
- 7) Short note on effective publication.
- 8) Short note on valid publication.
- 9) Write in brief major codes of nomenclature.
- 10) Give a short note on literature in taxonomy.
- 11) Describe in brief taxonomic keys.
- 12) Write in detail indented keys.
- 13) Write in detail bracketed keys.
- 14) Malvaceae (Diagnostic characters, floral formula and examples).
- 15) Explain the concept conservation of names.

Q.7) Answer the following questions

(4 marks)

- 1) Write in brief about modern trends in taxonomy.
- 2) Write a short note on embryology.
- 3) Write a short note on palynology in relation to taxonomy.
- 4) Give short note on numerical taxonomy.
- 5) Magnoliaceae- explain diagnostic characters.
- 6) Annonaceae- explain diagnostic characters.
- 7) Liliaceae- give diagnostic characters.
- 8) Write a short note on herbarium technique.
- 9) Write in short importance of herbarium.
- 10) Write in short importance of botanical garden.
- 11) Give a short note on numerical taxonomy.
- 12) Give a short note on embryology.
- 13) Give a short note on palynology.
- 14) Principles of APG IV (Angiosperm Phylogeny Group) classification.
- 15) Thorne's system of classification.

Botany

Theory Paper VII Plant Pathology (MBT 203)

Answer following questions.

- 1) Define plant pathology.
- 2) Causal organism name of tikka disease.
- 3) Which enzyme is produced in plant pathogenesis process?
- 4) Mode of dispersal of plant pathogens.
- 5) Define plant disease clinic.
- 6) Causal organism of late blight of potato.
- 7) Define plant disease.
- 8) Causal organism name of powdery mildew of grapes disease.
- 9) Define autonomous dispersal of plant pathogen.
- 10) Enlist two fungal diseases with name of causal organism.
- 11) Write any two symptoms of grain smut disease of jowar.
- 12) Causal organism of leaf spot disease of turmeric.
- 13) Define plant pathogenesis.
- 14) Write environmental factors for disease development.
- 15) Enlist Indian plant pathologist.
- 16) What is infection?
- 17) Define necrosis.
- 18) Causal organism of wheat rust.
- 19) Define penetration.
- 20) Define infestation.
- 21) Define inoculum.
- 22) What is pathogen?
- 23) Enlist any four fungal diseases.
- 24) Enlist any four bacterial diseases.
- 25) Enlist any four viral diseases.
- 26) Stages of disease cycle.

- 27) How many stages of disease cycle.
- 28) Hypertrophic disease.
- 29) Causal organism of bunchy top of banana.
- 30) Causal organism of fruit rot of chilli.

Answer following questions.

- 1) Describe role of fungi, bacteria, viruses and nematodes as plant pathogens.
- 2) Describe different stages in pathogenesis .
- 3) Describe animate and inanimate causes in plant diseases.
- 4) Describe plant disease clinic.
- 5) Describe different stages in development of disease cycle.
- 6) Describe effect of environmental factors on disease development .
- 7) Define plant pathology and describe importance and scope of plant pathology.
- 8) Describe contribution of K. C. Meheta in plant pathology.
- 9) Define necrosis and explain classification of plant diseases.
- 10) Describe loose smut of wheat with respect of causal organism, symptoms, disease cycle and control measures.

Answer following questions.

- 1) Give role of fungi and bacteria as plant pathogens.
- 2) Give causal organism, symptoms and control measures of rust of wheat .
- 3) Describe role of fungi, bacteria, viruses and nematodes as plant pathogens.
- 4) Describe different stages in pathogenesis .
- 5) Describe morphological defense mechanism in plants
- 6) Give causal organism, symptoms and control measures of downy mildew of grapes .
- 7) Describe enzymes and toxins in plant diseases in pectic and macerating enzymes.

- 8) Describe enzymes and toxins in plant diseases in cellulolytic and ligninolytic enzymes.
- 9) Describe effect of environmental factors and nutrition on disease development.
- 10) Give causal organism, symptoms and control measures of grassy shoot of sugar cane and root knot of vegetable .

Answer following questions.

- 1) Give symptoms of plant diseases.
- 2) Describe inoculation, penetration and infection of pathogen in development of disease cycle.
- 3) Explain biochemical defense mechanisms in plant.
- 4) Describe passive methods of plant pathogen.
- 5) Describe effect of temperature and soil pH on disease development.
- 6) Describe autonomous dispersal methods of plant pathogen.
- 7) Describe necrotic, hypertrophic and hypoplastic symptoms of plant diseases.
- 8) Describe discovery of Bordeaux mixture, confirmation of Prevost's work, Koch's postulates.
- 9) Describe detoxification of pathotoxins.
- 10) Give causal organism, symptoms and control measures of whip smut of sugarcane and viral disease of papaya .

Answer following questions.

- 1) Inanimate cause of plant diseases.
- 2) Classification of toxins.
- 3) Loose smut of wheat.
- 4) Animate cause of plant diseases.
- 5) Cellulolytic enzymes.
- 6) Alteration in plant physiological functions like photosynthesis due to disease.

- 7) Angular leaf spot of cotton.
- 8) Importance and scope of plant pathology
- 9) Classification of plant diseases.
- 10) Describe role of fungi and bacteria as plant pathogens.
- 11) Describe effect of temperature and soil pH on disease development.
- 12) Yellow vein mosaic of bhendi
- 13) Alteration in physiological function due to disease.
- 14) Alteration in physiological function like photosynthesis due to disease.
- 15) Koch's postulates.

Answer following questions.

- 1) Proteolytic enzymes.
- 2) Root knot of vegetables.
- 3) Effect of temperature and humidity on diseases development.
- 4) Loose smut of wheat.
- 5) Koch's postulates.
- 6) Grassy shoot of sugarcane.
- 7) Alteration in plant physiological functions like photosynthesis due to disease.
- 8) Red rot of sugarcane.
- 9) Pectic enzymes.
- 10) Biochemical defense mechanisms in plant.
- 11) Give causal organism symptoms and control measure of rust of jowar.
- 12) Give causal organism symptoms and control measure of white rust of crucifers.
- 13) Describe symptoms of plant disease.
- 14) Describe enzyme produced in plant pathogenesis process.
- 15) Wilt of cotton

Answer following questions.

- 1) Red rot of sugarcane.

- 2) Scope of plant pathology.
- 3) Alteration in nitrogen metabolism due to disease.
- 4) Disease epidemiology.
- 5) Classification of plant diseases.
- 6) Proteolytic enzymes.
- 7) Infection process by plant pathogens.
- 8) Role of MLO's as plant pathogenesis.
- 9) Disease epidemiology.
- 10) Describe toxin produced in plant pathogenesis process.
- 11) Describe causes of plant diseases.
- 12) Socio economic importance of plant pathology.
- 13) Penetration process in plant pathogenesis.
- 14) Describe the effect of environmental factors and nutrition on disease development.
- 15) Describe morphological and structural defense mechanism of plant.