

**S.S. Jain Subodh P.G. College, Jaipur**

**M.Sc. Botany Semester I**

**Assignment October 2024**

**PAPER-I**

**Cell Biology and Evolution**

**Attempt any two questions**

**Max. Marks -30**

**UNIT-I**

Q.1 Explain the mechanism of protein sorting in peroxisome, Endoplasmic reticulum and chloroplast.

15

**OR**

Write short notes on:

7.5x7.5=15

- a. Protein localization in mitochondria.
- b. Protein targeting in nucleus.

**UNIT – II**

Q.2 Write a brief note on regulation of the cell cycle, emphasizing the roles of cyclin and Cyclin-dependent kinases (CDKs)

**OR**

What are the general principles of cell communication? Discuss cell adhesion and roles of different adhesion molecules.

**UNIT- III**

Q. 3 Write short notes on:

- i) Apoptosis
- ii) Oncogenes

**OR**

Write short notes on any two:

- i) Darwinism
- ii) Concept of Oparin and Haldane
- iii) origin of Eukaryotic cells

#### **UNIT-IV**

Q.4 What is Hardy-Weinberg law? Explain its concept s and rate of change in gene frequency with suitable examples.

15

**OR**

Write short notes on:

7.5x7.5=15

1. Migration and random genetic drift.
2. Evolutionary time scale.

### **M.Sc. Botany Semester I**

#### **Assignment**

#### **Paper II Morphology and Diversity of Non-Vascular Plants**

**Attempt any two questions**

**Unit I**

**Max. Marks -30**

**Q1. Write a detail note on range of thallus in Algae with the help of suitable examples and diagrams.**

**Or**

**Q2. Write a short note on any two:**

- a) **Reproduction in Algae**
- b) **Life cycle patterns in Algae**
- c) **Economic importance of Algae**

**Unit II**

**Q3. Discuss the methods of reproduction in fungi with suitable examples.**

**Or**

**Q4. Write short note on (any two)**

- a) Hyphal growth in fungi
- b) Parasexuality in fungi
- c) Phylogenetic relationship among fungal groups.

**Unit III**

**Q5. Give general characteristics of Basidiomycotina.**

**Or**

**Q6. Write short note on (any two)**

- a) Mycorrhizae
- b) Fungi as biocontrol agents
- c) Neurospora

**Unit IV**

**Q7. Describe the general structure and classification of Bryophytes.**

**Or**

**Q8. Write short note on (any two)**

- a) Funariales
- b) Polytricum sporogonium
- c) Sterilization of sporogenous tissues in Bryophytes.

**M.Sc. Botany Semester I**

**Assignment**

**Paper III - Biology and Diversity of Microbes**

**Attempt any two questions**

**Max. Marks -30**

**Unit-I**

**Q1. Write detailed note on the Bergey's manual of systematic bacteriology.**

**Or**

**Q2. Write note on- (any two)**

- a. Mycoplasma
- b. Nutritional classification of microbes
- c. New trends of classification of bacteria

**Unit- II**

Q 3. Describe morphology and ultrastructure of bacterial with special reference to cell wall and endospores.

Or

Q4. Write note on- (any two)

- a. Archaeobacteria
- b. Life cycle and Pathogenesis of retero virus
- c. Life cycle of any DNA viruses

**Unit-III**

Q5. Write note on-

- a. Antibody structure and function
- b. Humoral and Cell mediated immune responses

Or

Q6. Write note on- (any two)

- a. Vaccination
- b. Activation and differentiation of B- cell
- c. antigen- antibody interaction

**Unit-IV**

Q7. Explain microbial fermentation with upstream and downstream processing techniques. Explain production of alcohol with help of flowchart.

Or

Q8. Write note on- (any two)

- a. Biofertilizers
- b. Microbial spoilage of foods production
- c. Biofilms
- d. Sewage treatment methods

**M.Sc. Botany Semester I**

**Assignment**

**Paper- IV - Plant Ecology and Environment**

**Max Marks: 30**

**Attempt any two questions**

**Unit -I**

Q1. What are biological interactions. Describe the various interspecific and intraspecific positive interactions with suitable examples.

Or

Q2. Write Short note on any two

1. Characterization of population

2. Scramble and contest competition mode
3. Population growth curve

### **Unit -II**

Q.3 Write short note on any two.

- i. Concepts of community and continuum
- ii. Species diversity
- iii. Ecological niche

Or

Q. 4 Write short notes on -

- i. Succession models
- ii. Mechanism of succession
- iii. Concept of climax

### **UNIT -III**

Q 5. Write about Solar energetics. Give detail account on various energy flow models with suitable diagrams.

Or

Q 6. Write short notes on –

- a. Productivity of various ecosystems
- b. Ecosystem services
- c. Nitrogen cycle

### **UNIT -IV**

Q 7. Give detail account on Biodiversity assessment , loss of Biodiversity and conservation.

Or

Q 8. write short notes on-

- a. Major biomes of the world
- b. Natural resource management in changing environment



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**Assignment October 2024**

**M.Sc.S emester III Botany**

**Paper I Molecular Biology**

**Session 2024-25**

**MM= 30**

**Answer any two questions :**

**Unit I**

**Q.1 Explain the chemical, physical , spectroscopic and thermal properties of DNA in detail. (15)**

**Or**

**Q. 2 Write short notes on: (Any two) (7.5 x 2 =15)**

- a. DNA replication in Prokaryotes**
- b. DNA damage and recombination repair mechanism**
- c. Pre- replication complex in Eukaryotes**

**Unit II**

**Q. 3. Explain the RNA splicing and RNA processing mechanism in detail.**

**(15)**

**Or**

**Q.4. Write short notes on: (7.5 x 2 =15)**

- a. RNA editing**
- b. Accessory factors involved in eukaryotic transcription.**

**Unit III**

**Q. 5. Write a descriptive note on prokaryotic translation citing initiation, elongation and termination. (15)**

**Or**

**Q.6. Write short notes on:**

**(7.5 x 2 =15)**

- a Lac and Trp Operon**
- b. Histone modification and DNA Methylation.**

**Unit IV**

**Q. 7. Explain different tools and techniques used in DNA cloning. (15)**

**Or**

**Q. 8 Write notes on (Any two): (7.5 x 2 =15)**

- a. DNA Hybridization**
- b. DNA Sequencing methods**
- c. DNA footprinting and Fingerprinting**
- d. Polymerase Chain Reaction**

**M.Sc. Sem.III Botany Assignment**

**Paper- II -Taxonomy of the Angiosperms**

Attempt any two questions (Each question is of 15 marks)

**Max Marks:30**

**Unit –I**

**Q 1. Write about the concept of species and describe evolution and various models of speciation with the types and mechanism of speciation.**

**Or**

**Q 2. Write short notes on- any Two**

- a. Principle of priority**
- b. Population Concept**
- c. Taxonomic hierarchy**

**Unit-2**

**Q 3. Write short notes on-**

- a. Serology**
- b. Flora and Monograph**

**Or**

**Q 4. Write a detail account on the procedure of collection, preparation, preservation and utility of Herbarium with the names of Indian and international herbaria.**

**Unit-3**

**Q 5. Write about Photochemistry and embryology as taxonomic evidence in relation to Taxonomy with examples.**



Or

**Q 6. Give detailed account on Classification system of Thorne with merit and demerits.**

**Unit-4**

**Q 7. Compare the following families –**

- a. Apocynaceae and Asclepiaceae
- b. Subfamilies of fabaceae

Or

**Q 8. Describe various theories proposed for origin of Angiosperms or details of Primitive angiosperms.**

**M.SC (BOTANY)-III semester**

**Assignment October, 2024**

**Paper III MBOT: 303 Morphology and Developmental Anatomy of Angiosperm**

**Max Marks**

**UNIT - I**

Q. 1 Write short notes on:

- a) Basic concepts of development.
- b) Mobilization of carbohydrates and proteins during seed germination

OR

Q.2 How are the mutants important in understanding seedling development? Discuss different genes expressed during seedling development in detail.

**UNIT – II**

Q. 3 What do you mean by SAM? With the help of suitable diagrams discuss the various theories related to SAM in detail.

OR

Q.4 Write explanatory notes on (any two):

- i) Secretory ducts
- ii) Laticifers
- iii) primary and secondary tissue differentiation in stem

**UNIT – III**

Q. 5 Write short notes on the following:

- i) Differentiation of epidermis in stomata and trichomes
- ii) Leaf trace and Leaf gap

OR

Q. 6 What is a floral meristem? Discuss the genetics of floral organ differentiation and homeotic mutants in *Arabidopsis* and *Antirrhinum*.

**UNIT – IV**

Q. 7 Write short notes on:

- a) Organization and development of root apical meristem (RAM) and associated theories.
- b) Development of lateral roots.

OR

Q. 8 Write a detailed note on the internal and external morphology of monocot and dicot seeds. Draw suitable diagrams also.

**M.SC (BOTANY)-III semester**

**Paper- IV Elective (A)- Advanced Plant Pathology-1**

**Max Marks:30**

Attempt any two questions (Each question is of 15 marks)

Unit-I

Q1. Describe the effect of environment factors on plant disease development.

Or

Q2. What is toxin? Describe the role of various toxin in plant disease establishment.

Unit-II

Q.3 Describe the symptoms, causal organism, disease cycle and control measures of early blight of potato.

Or

Q4. Write a complete detail on symptoms, causal organism, disease cycle and control measures of Crown Gall of Stone fruits.

Unit-III

Q5. Write a detail account on gall development, host parasitic interaction and physiology of insect induced gall of Prosopis.

Or

Q.6 Define phytoplasmic disease. Describe symptoms, causing organism, disease cycle and control measurement of Sesame Phyllody.

Unit-IV

Q7. Describe various symptoms produced by nematode and their inter relationship with other plant pathogens.

Or

Q8. Describe the symptoms, causal organism, disease cycle and control measures of Soyabean cyst nematode.

**M.Sc. Botany Semester III**

**Assignment October 2024**

**PAPER-IV (B)**

**SEED SCIENCE AND TECHNOLOGY -I**

**UNIT-I**

Q.1 Write a detail note on various methods of physical and genetic purity analysis of seed.

15

**OR**

Write short notes on:

7.5X7.5=15

- a. Sampling of Seeds.
- b. Importance of seed testing in agriculture.

**UNIT-II**

Q.2 Write a detailed note on identification parameters and structure of gram pea.

15

**OR**

Write short notes on:

7.5X7.5=15

- a. Foundation and Certified seeds.
- b. Synthetic seeds.

**UNIT-III**

Q. 3 Discuss the physiology of seed germination in detail.

15

**OR**

Write short notes on the following:

7.5X7.5=15

- a) Seed dormancy and longevity.
- b) Seed Deterioration.

**UNIT-IV**

Q.4 Write a detail note on Seed certification standards and quarantine regulations. 15

**OR**

Write short notes:

7.5X7.5=15

- a. Sanitary and phytosanitary (SPS) agreement of WTO.
- b. (I.S.T.A.)- rules and recommendations.