Exam Code: 225101 **Paper Code: 1229**

Programme: Master of Science (Botany) Semester-I

Course Title: Computer Applications and Bio-Informatics

Course Code: MBTL-1046

Time: 3 Hours **Max. Marks:70**

Note: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 14 marks.

SECTION-A

1 a. How do you create, save, and open a new file in MS Word? 7
b. What are page breaks and how to insert it? 7

2 a. How can you insert and format images or graphics in MS Word? 7
b. How can you apply and customize font styles and sizes? 7

SECTION-B

3 How to create charts using different wizards related to graph and charts in M. S. Excel. 14

4 Write a note on the following:
a) Use of different formulae in excels. 7
b) Absolute and relative addressing in MS Excel. 7

SECTION-C

5 Explain different types of views available in Power Point. 14

6 Write a short note on
a) Formatting and enhancing text. 7
b) Add music in your slide show in MS PowerPoint Presentation. 7

SECTION-D

7 Give a detailed explanation of the different databases used for species identification and classification. 14

8 Discuss the following. 5+5+4
a) DDBJ b) GenBank c) UNIPORT

Exam Code: 225101 **Paper Code: 1224**

Program: Master of Science (Botany) Semester – I

Course Title: Fungi and Plant Pathology

Course Code: MBTL-1071

Time: 3Hours **Max. Marks: 70**

Note: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 14 marks.

Section A

Q1 Explain in details the differences between Gymnomycota and Mastigomycota.

Q2 Explain the methods of reproduction and life cycle of Zygomycotina.

Section B

Q3 What are the structural differences between Amastigomycota and Basidiomycotina.

Q4 Draw the well labelled diagram of life cycle of Sporobolomyces and Cryptococcus.

Section C

Q5 Explain life cycle of early blight of potato and brown rot of potato.

Q6 i) Short note on leaf curl of tomato.
ii) Short note on loose smut of wheat.

Section D

Q7 i) Write a brief note on heterothallism.
ii) Short note on mycoherbicides.

Q8 i) What is the role of mycorrhizae in agriculture.
ii) Write a note on the important contributors in the plant pathology.

Exam Code: 225101 **Paper Code: 1225**

Programme: Master of Science (Botany) Semester: I

Course Title: Phycology

Course Code: MBTL-1072

Time Allowed: 3 Hours **Max Marks: 70**

Note: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any Section. Each question carries 14 marks. Draw labelled diagrams wherever necessary.

Section-A

1. What are the salient features of Lee's system of classification? How it is different from the earlier classification of Fritsch? (14)
2. Discuss the following: (3.5 X 4 = 14)
   i. Multicellular habit ii. Habitat of algae
   iii. Algal Flagella iv. Food reserves in algae

Section-B

3. Write notes on any two of the following: (7 X 2 = 14)
   i) Types of net and their formation in *Hydrodictyon*
   ii) Structure of sex organs in *Chara*
   iii) Sexual reproduction in *Zygnema*
4. Discuss the following: (7 X 2 = 14)
   i) Cap cell formation in *Oedogonium*
   ii) Reproduction in *Cladophora*

Section-C

5. Discuss the asexual reproduction in *Ectocarpus*. Give salient features of the genera. (14)
6. Describe in detail the asexual reproduction in *Batrachospermum*. And also discuss how post fertilization changes in *Batrachospermum* differ from *Porphyra*. (7+7)

Section-D

7. What is bioluminescence? Discuss the phenomenon of rhythms and bioluminescence among algae. (14)
8. What are algal blooms? Give economic importance of algae in detail. (14)

Exam Code: 225101 **Paper Code: 1226 – R**

Programme: Master of Science (Botany) Semester: I

Course Title: Bryology

Course Code: MBTL-1073

Time Allowed: 3 Hours **Max. Marks: 70**

Note: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 14 marks. Draw well labelled diagrams wherever necessary.

Section A

1. Write notes on the following:-
   i. Why Bryophytes are called the amphibians of plant kingdom?
   ii. The plant body of Bryophyte is a gametophyte or sporophyte Explain.
2. Write a detailed note on economic uses of Bryophytes.

Section B

3. Elucidate the plant body and life cycle of Porella with a special reference to structure of sporogonium and spore dispersal.
4. Explain following:
   i. Give structure of sporogonium of Anthoceros.
   ii. Describe gametophyte of Targionia.

Section C

5. Give a brief account of origin of land habit in Bryophytes.
6. Compare the gametophyte structure in liverworts (Marchantiales) and mosses (Sphagnales).

Section D

7. How do different environmental factors affect spore dispersal in bryophytes?
8. Write note on following:
   i. Function of peristomal teeth in regulating spore release
   ii. Palynology of Bryophytes

Exam Code: 225101 **Paper Code: 1226**

Programme: Master of Science (Botany) Semester: I

Course Title: Bryology

Course Code: MBTL-1073

Time Allowed: 3 Hours **Max Marks: 70**

Note: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 14 marks. Draw well labelled diagrams wherever necessary.

Section A

1. Describe habit, habitat and distribution of Bryophytes. 14
2. i. Compare primitive and advance features of Bryophytes. 7
   ii. With reference to fossil record discuss the origin of Bryophytes. 7

Section B

3. Elucidate the plant body and life cycle of Sphagnum with a special reference to structure of sporogonium and spore dispersal. 14
4. Explain following: 2*7=14
   i. Give life-cycle of Marchantia with diagrams.
   ii. Describe Sporophyte of Funaria.

Section C

5. How bryophytes developed the land habit? Justify it with suitable examples. 14
6. Explain evolution of sporogonium in Mosses with examples. 14

Section D

7. Describe various methods to Conserve Bryophytes at the National Level. 14
8. Give a detailed overview of the morphogenetic changes that occur in moss protonema? 14

Exam Code: 225101 **Paper Code: 1227**

Programme: Master of Science (Botany) Semester – I

Course Title: Plant Physiology

Course Code: MBTL-1074

Time Allowed: 3 Hours **Max Marks: 70**

Note: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 14 marks.

Section-I

Ques.1 a. Describe the nature and examples of energy-rich bonds? 7

b. Explain the types and importance of weak molecular interactions in biological systems. 7

Ques. 2 Explain the fundamental concept of coupled reaction and the mechanism of Oxidative phosphorylation? 14

Section-II

Ques. 3 Explain the G- protein coupled receptor and describe phospholipid signaling mechanisms? 14

Ques. 4 Explain the mechanism and role of the photosynthesis mechanism? 14

Section-III

Ques. 5 Describe in detail: 7+7

a) Discuss the process of nitrogen fixation, the enzymes involved, and their mechanisms of action?

b) Interaction between nitrate assimilation and carbon metabolism.

Ques. 6 Describe the mechanisms involved in nitrate absorption by plants and outline the biochemical steps of nitrate reduction to ammonia? 14

Section-IV

Ques. 7 Write short notes on:

a) Describe the various chemical forms of sulphur present in organisms and explain their essential roles in metabolism and physiological processes. 7

b) Explain the structure, functions, and biological significance of glutathione and its related compounds. 7

Ques. 8 Discuss the physiological roles of sulphur, the mechanisms by which it is absorbed from the soil, and the processes involved in its transport and distribution within plant tissues. 14

Exam Code: 225101 Paper Code: 1228

Programme: Master of Science (Botany) Semester – I

Course Title: Genetics and Evolution

Course Code: MBTL-1075

Time Allowed: 3 Hours Max Marks: 70

Note: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 14 marks.

Section- A

1. a) Briefly discuss the classical and molecular concept of gene. 7
   b) Distinguish between codominance and incomplete dominance with examples. 7
2. Write short note on:
   a) Rolling circle model of DNA replication. 5
   b) Watson-Crick model of DNA. 5
   c) Initiation and primer problem in DNA replication. 4

Section- B

3. What are oncogenes? Discuss the biochemistry and molecular biology of cancer. 14
4. a) Briefly discuss the DNA repair mechanisms. 7
   b) What are induced mutations? Discuss the physical and chemical mutagenesis. 7

Section- C

5. Write short notes on:
   a) Transposable elements in eukaryotes. 10
   b) Somatic cell hybridization. 4
6. Comment on:
   a) Repressible operon b) Mechanism of attenuation 7+7

Section- D

7. Write brief notes on:
   a) Inheritance pattern in autopolyploids 7
   b) Evolutionary time scale 7
8. a) Discuss the Hardy-Weinberg Law in detail. 7
   b) What is speciation? Discuss different modes of speciation. 7