00697

The Open University of Sri Lanka
Faculty of Natural Sciences
B.Sc/ B. Ed Degree Programme

Department	: Botany
Level	: 03
Name of the Examination	: Final Examination
Course Title and - Code	: Diversity of Plants BYU3500/ BOU1200/ BYE3500
Academic Year	: 2019/20
Date	: 03.02.2021
Time	: 9.30-12.30
Duration	: 03 Hrs

General Instructions

Index No : ----------

1. Read all instructions carefully before answering the questions.

2. This question paper consists of 12 questions in Part A and 6 questions in part B in **(Number)** pages.

3. Answer **all questions in Part I and only 04 questions from Part II**. All questions in Part II carry equal marks.

4. Answer for each question should commence from a new page.

5. Draw fully labelled diagrams where necessary

6. Involvement in any activity that is considered as an exam offense will lead to punishment

7. Use blue or black ink to answer the questions.

8. Clearly state your index number in your answer script

Part I

Structured Essay

All questions in part I are compulsory. Answer part I in the space provided. Use approximately one (01) hour for Part I. Part I carries a maximum of 200 marks.

1. a. Using the space below, draw a fully labelled diagram of a longitudinal section of the sporophyte of *Pogonatum* sp.

b. State **03** features seen in the sporophyte of *Pogonatum* and briefly explain how they help it function more efficiently, when compared with sporophytes of *Riccia.*

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c. The mature gametophyte of *Sphagnum* lacks conducting strands and rhizoids, however, it has high water holding capacity. How is this possible? Draw a diagram to explain your answer

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d. Although the gametophyte of Hornworts superficially resembles those of thalloid liverworts, the sporophyte is more advanced. Briefly State three (03) advanced features seen in the sporophyte of *Anthoceros* as an example for hornworts.

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e. State the specific functions of the following structures in *Marchantia*

i. Chimney pore : .....

ii. Rhizoids : .....

iii. Gemmae: .....

iv. Assimilatory filaments : .....

v. Involucre :.....

2. a. State how the male gametophyte of *Pinus* differs from that of *Cycas* in form or function

Pinus	*Cycas*

b. Draw a fully labelled diagram of a longitudinal section of the mature ovule of *Cycas*

c. State two (**02**) characteristic anatomical features seen in a cross section of a *Pinus* leaf that help in its identification

i. .....

ii. .....

d. State two (02) xerophytic features seen in vegetative leaves of *Cycas* and *Pinus*

i. .....

ii. .....

e. Give one anatomical feature and one morphological feature of *Gnetum* that makes it resemble a dicotyledonous plant

Anatomical feature .....

Morphological feature .....

3. State how photosynthesis of photosynthetic bacteria differs from photosynthesis of higher plants

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4. State 5 economical importances of fungi citing examples.

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5. State 4 adaptations shown by algae to live successfully in its given habitat

i.....

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ii.....

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iii.....

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iv.....

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6. Give one characteristic feature that confirms the identification of the following ferns

Helminthostachys .....

Dicranopteris .....

Marsilea .....

Drynaria .....

Cyathea .....

7. Briefly describe the process of double fertilization in angiosperms

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8. State with examples the different types of fleshy fruits

i. .....

ii .....

iii .....

iv. .....

v. .....

9. Name and briefly describe the different stages in the lytic cycle of replication of viruses

10. Briefly state the ecological significance of Bryophytes

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11. State the characteristic feature of identification (in the chloroplast) of the following green algae

Zygnema .....

Mougeotia .....

Chlamydomonas .....

Spirogyra .....

Ulothrix .....

12. Complete the following table regarding the morphological diversity of cyanobacteria

Feature	Example (Generic name)
Loose aggregate of single cells	
Aggregate of cells 4 to 8	
Filament with no cell differentiation, sheath extends beyond trichome	
Filament with cell differentiation, often living symbiotically in aquatic ferns	
Tapering filament heterocyst at base	

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Part II- Essay type Questions. Two (02) hours

Answer only 4 out of 6 questions. Each question carries a maximum of 100 marks.

1. a) . Highlight the major differences between prokaryotic and eukaryotic organisms taking into consideration, cell structure, organelles, metabolic processes and reproduction. You may tabulate your response.
   b). Although small in size and primitive, prokaryotes have important effects on man and the environment. Discuss this statement.

2. a) Briefly state the salient features of the subdivision Zygomycotina paying attention to the mycelium, cell wall, mode of nutrition and reproductive structures.

b) The asexual reproductive structures of the Class Zygomycetes can be used to differentiate between some of its genera. Discuss this statement with named examples and suitable illustrations.

3. a) State the characteristic features of brown algae (Phaeophyceae).

   b)The brown algae show a great diversity in their morphology, ranging from simple microscopic to complex macroscopic. Discuss giving examples

4. a) Name the main types of Sori found in higher ferns and briefly describe how their development has been used in the classification of ferns.

   b) Briefly state how ferns are better adapted to a terrestrial habitat than bryophytes.

   c) State the factors responsible for the dominance of vascular plants in today's flora.

5. a) Name and briefly describe the two main types of inflorescences found in angiosperms
   b) Giving suitable examples and diagrams, indicate the key features of the different inflorescences types in each of the above.

6. Write short on any **03** of the following
   a) Economic importance of algae
   b) The epidermal tissue in angiosperms
   c) Dispersal of fruits and seeds
   d) Modifications and arrangements of the angiosperm leaf