UNIVERSITY OF RUHUNA
BACHELOR OF SCIENCE (GENERAL) DEGREE LEVEL I
SEMESTER I EXAMINATION - December 2020

Subject : Botany

Course Unit: Plant Diversity, Unity and Evolution (BOT 1112)

Time : Two hours

Index No. : .....

Answer **Three (3)** questions including **question 1**

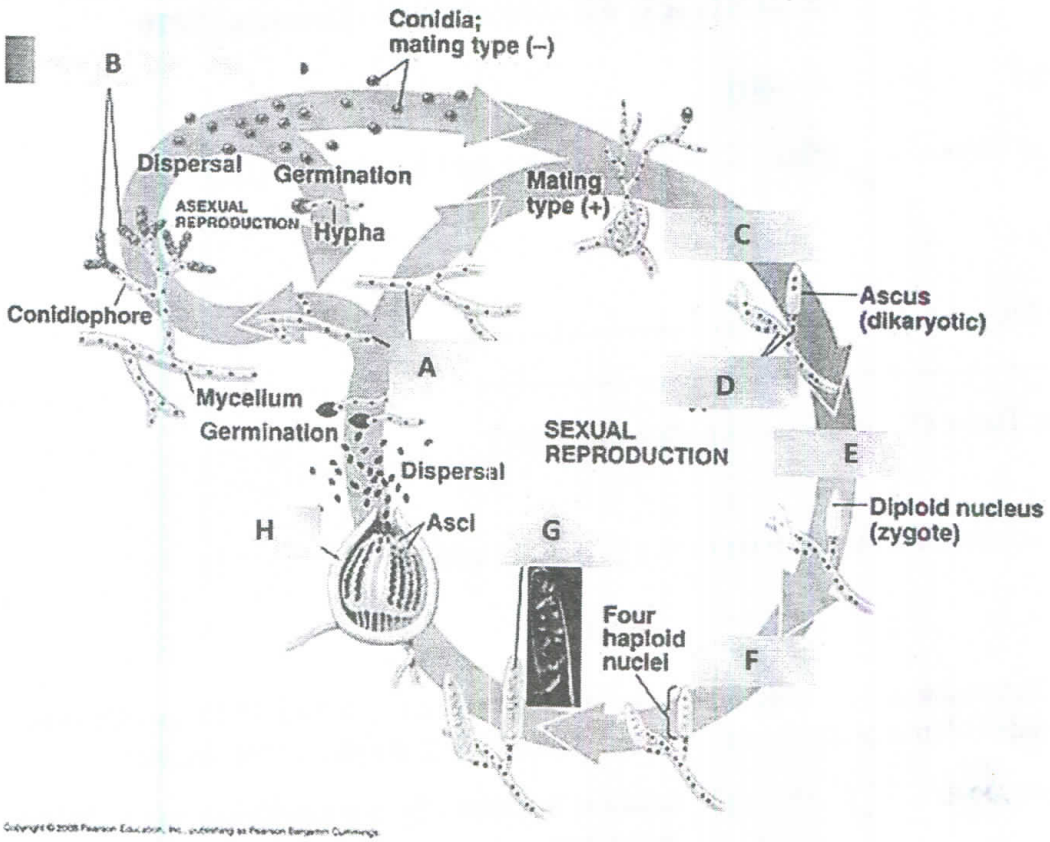
1) Answerer all the five sections **(A, B, C, D and E)**

Section A

(I) Select the correct statement from the right side column and fill in the blanks in the left side column using the relevant letter (a/b/c/d/e/f) for the correct answer.

(i) Ascomycota	(....)	a) cellulose in cell walls, coenocytic hyphae, biflagellate zoospores
(ii) Zygomycota	(....)	b) chitin in cell wall, zoospores with posterior whiplash flagellum
(iii) Oomycota	(....)	c) chitin in cell wall, coenocytic, no zoospores haploid through most of its life cycle
(iv) Basidiomycota	(....)	d) hyphae septate with simple septa, asexual spores are conidia, sexual spores contained in a sac-like structure
(v) Chytridiomycota	(....)	e) chitin cell wall, lack sexual stage in the life cycle
(vi) Deuteromycota	(....)	f) septate hyphae, sexual spores contained in a club-like structure

(II) Label different stages of life cycle (A-H) in the diagram below.



(i) A .....

(ii) B .....

(iii) C .....

(iv) D .....

(v) E .....

(vi) F .....

(vii) G .....

(viii) H .....

(20 Marks)

Section B

i) Following table is based on the several significant features found in different divisions of Algae. Fill in the blanks.

Character	Chlorophyta	Phaeophyta	Rhodophyta	Basillariophyta
Photosynthetic pigments				
Storage food				
Cell wall components				

(20 Marks)

Section C

i). Write the nature of the typical habitat of bryophytes.

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(03 Marks)

ii). What are the two distinct phases in the life cycle of a bryophyte?

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(03Marks)

iii). Give one adaptation/ feature of Bryophytes for each of the following;

a) Attachment to substrate

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b) Protection against desiccation

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c) Absorption of CO_2

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d) Protection of reproductive cells from drying and mechanical injury

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(10 Marks)

iv). Write the main difference in the sexual reproduction of algae and bryophytes?

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(04Marks)

Section D

i) Give two species of plants belonging to each of plant order given in the table below.

Order	Species
Filicales	
Ophioglossales	
Marattiales	

(6 Marks)

ii) List **FOUR** (4) major differences between Bryophytes and Pteridophytes.

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(8 Marks)

iii) Give two genera of Pteridophytes bearing following structures.

a. Synangium .....

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b. Sorus .....

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c. Sporocarp .....

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(6 Marks)

Section E

i) Mention TWO (2) major characteristics of Spermatophyta (04 Marks)

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ii) List TWO (2) resemblances and differences between Gymnosperm and Pteridophyta

Resemblances: (04 Marks)

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Differences: (04 Marks)

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iii) Following table is based on the several structures found in different plant orders of Gymnosperms.
Fill in the blanks. (8 Marks)

Structures	Coniferales	Cycadales	Ginkgoales	Gnetales
Leaves	Needle like			Broad leaves like angiosperms
Seed	Produced in corn		Completely exposed	
Xylem	Tracheid			Tracheid and vessel elements
Phloem	Sieve tube	Sieve tube		
Type of plant				Monoecious or Dioecious
Example (plant species)				

(2)

i) What aspects should be covered in a study conducted to give a full description on the plant diversity in an given area? (30 Marks)

ii) Give an outline of the morphological diversity of Cyanobacteria (70 Marks)

(3) Write short notes on followings

i) Colonial thallus in chlorophyte (40 Marks)

ii) Diatom frustule (30 Marks)

iii) Pit connections in red algae (30 Marks)

(4)

i). Name the different types of vegetative reproduction methods which are common to the members of phylum Marchantiophyta. (15 Marks)

ii). Briefly describe the common features of sporophytes of bryophytes. (25 Marks)

iii) Write an account on the morphological features of the thallus of *Marchantia* sp. (60 Marks)

(5)

i) Write a short account on 'Types of steles in Pteridophytes'. (30 Marks)

ii) By giving examples for each, differentiate between simple, gradate and mixed sori in ferns. (30 Marks)

iii) "Genus *Cyathea* has evolutionary advanced features compared to the genus *Psilotum*". Briefly discuss this statement (40 Marks)

(6)

i) Explain briefly the adaptations gained by Gymnosperms over their ancestors (Pteridophytes) for the success of the life on the terrestrial environment (30 Marks)

ii) List the characteristics features of order Coniferales (38 Marks)

iii List FIVE (05) families of order Coniferales and the three families of order Gnetales giving examples of a plant species for each family. (32 Mraks)