



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**Bachelor of Science in Applied Sciences
First Year - Semester I Examination – July/August 2023**

BOT 1201 – PLANT DIVERSITY

Time: Two (02) hours

Answer ALL questions in section A and TWO (02) questions from section B.

SECTION A

**1. Answer ALL questions. Underline the most suitable option using a pen. No marks will be given for multiple responses. [Approximate time allocation is ONE (01) hour]
(200 marks)**

- a) Members of Gnetophyta
 - i. are always woody trees.
 - ii. maybe considered as the link between the pro-angiosperms and gymnosperms.
 - iii. always have broad leaves.
 - iv. are confined to tropics.

- b) Members of Sub Kingdom Heterokonta (Stramenophila)
 - i. are polyphyletic.
 - ii. contain flagella with tiny hairs.
 - iii. are always autotrophic.
 - iv. have chloroplasts surrounded by two membranes.

- c) Which of the following is **correct** with respect to Kingdom Plantae?
 - i. Transition from seeds to spores had taken place in the evolution.
 - ii. Pollen grain represents the male gametophyte.
 - iii. Gametangia are not protected with a sterile jacket.
 - iv. Xylem and phloem are the vascular tissues in all members.

- d) A student examining a mixture of algal sample observed three organisms with the following features: the first one is a thallus with concentric rings and the second is with calcified, reniform segments and the third is plant-like bearing expanded lamina, stipe, airbladders and the holdfast. Select the answer which accurately identifies the three organisms in the above given order.
 - i. *Ulva*, *Halimeda* and *Sargassum*
 - ii. *Padina*, *Caulerpa* and *Sargassum*
 - iii. *Padina*, *Halimeda* and *Sargassum*
 - iv. *Padina*, *Halimeda* and *Chara*

- e) Which of the following statements are **correct**?
- A. Sexual reproduction is present in *Eurotium*.
 - B. Slime molds belong to the Kingdom Protista.
 - C. Zygomycota fungi possess coenocytic mycelia.
 - D. *Phytophthora* is a water mold.
- i. A, B, C and D
 - ii. A, C and D
 - iii. A, B and D
 - iv. All of the above
- f) Which of the following statements are **correct**?
- A. Some Basidiomycota fungi cause diseases in plants.
 - B. Chytridiomycota fungi are known as bread molds.
 - C. A *Penicilium* species is used in manufacturing blue cheese.
 - D. Fungi help in keeping the environment clean
- i. A, C and D
 - ii. A, B and C
 - iii. A, B and D
 - iv. All of the above
- g) Select the **correct** statement.
- i. *Frullania* has an incubus leaf arrangement.
 - ii. Spore dispersal occurs as batches in *Marchantia*.
 - iii. All bryophytes produce protonema.
 - iv. *Pallavicinia* is a leafy liverwort.
- h) Presence of ventral leaves is a characteristic feature of
- i. *Bazzania*
 - ii. *Sphagnum*
 - iii. *Fissidens*
 - iv. *Rhodobryum*
- j) Lichen is a symbiotic association between a fungus and a
- i. cyanobacterium / algae.
 - ii. fern.
 - iii. bryophyte.
 - iv. coralloid root of *Cycas*.
- k) Which of the following bear separate fertile leaves?
- A. *Ceratopteris*
 - B. *Hemionitis*
 - C. *Tectaria*
 - D. *Anemia*
- i. A, B and C
 - ii. B, C and D
 - iii. A and D
 - iv. B and D

l) Select the **correct** statements.

- A. Some Chytridiomycota fungi are animal parasites.
- B. Ascomycota fungi form symbiotic association with roots of higher plants.
- C. Basidiocarps are produced by club fungi.
- D. Some Zygomycota fungi grow on stored fruits.
- E. Some *Aspergillus* spp. are poisonous.

- i. A, B, C and D
- ii. B, D and E
- iii. A, C, D and E
- iv. All of the above

m) Select the **correct** statements.

- A. Megasporophyll of *Agathis* bear a single ovule.
- B. Secondary growth is present in some gymnosperms.
- C. A mucilage cavity is present in microsporophylls of *Gnetum*.
- D. Perianth is present in Ginkgo.
- E. *Sequoiadendron* is a giant tree.

- i. A, C, D and E
- ii. B, C, D and E
- iii. A, B and E
- iv. All of the above

n) Which of the following pairs are **correct**?

- A. *Batrachospermum* – fresh water algae.
- B. *Fucus* – calcified plant body.
- C. *Nitella* – macroscopic.
- D. *Caulerpa* – a green algae.
- E. *Pinnularia* – a source of food.

- i. A and E
- ii. A, C and D
- iii. A, C, D and E
- iv. A, B, C and D

o) Select the **correct** statement.

- i. Stomium and annulus are longitudinally arranged in *Anemia*.
- ii. A ligule is present in *Selaginella*.
- iii. Genus *Isoetes* is homosporous.
- iv. In *Polypodium*, sporangia are protected with a pseudo indusium.

p) Which of the following combination is **correct**?

- i. *Encephalartos* – megasporophylls loosely arranged.
- ii. Deuteromycota – absence of sexual reproduction.
- iii. Bacillariophyta – ameboid nature of members.
- iv. *Psilotum* – dominant gametophyte.

- q) Select the character common to both *Zygnema* and *Closterium*
- Filamentous plant body
 - Presence of two chloroplasts per cell
 - Presence of many nuclei per cell
 - Presence of stellate chloroplasts
- r) Seed of *Cycas*, thallus of *Ulva* and calyptra of *Marchantia* are
- diploid, haploid and diploid.
 - haploid, diploid and haploid.
 - diploid, haploid and haploid.
 - diploid, diploid and diploid, respectively.
- s) Both xerophytic and hydrophytic characters are prominent in
- Selaginella*
 - Equisetum*
 - Isoetes*
 - Psilotum*
- t) Select the **correct** statement.
- Anthoceros* gametophyte is dichotomously branched.
 - Riccia* thallus is irregular.
 - "Leaves" in *Pogonatum* gametophyte are spirally arranged.
 - Vaginant lamina is present in *Calymperes*.
- u) Which of the following is **not correct**?
- Encephalartos* is dioecious.
 - Xylem vessels are absent in *Ginkgo*.
 - Coralloid roots are present in *Zamia*.
 - Megasporophyll of *Cycas* may bear 2 – 6 ovules.
- v) Which of the following statements are **correct**?
- Mycorrhizae is a symbiotic association between Glomeromycota fungi and plants.
 - Zygosporangia are dikaryotic.
 - Rust and smut are diseases caused by cup fungi.
 - Deuteromycota fungi are widely used in industries.
 - Majority in Chytridiomycota are aquatic.
- B, C and D
 - A, D and E
 - A, C, D and E
 - All of the above
- w) Which of the following algae are widely used in industries?
- | | | |
|----------------------|------------------|--------------------|
| A. <i>Pinnularia</i> | B. <i>Padina</i> | C. <i>Caulerpa</i> |
| D. <i>Gracilaria</i> | E. <i>Ulva</i> | |
- A, D and E
 - A and D
 - D only
 - All of the above

- x) Select the **correct** statements.
- A. Sporophyll of *Equisetum* bear 5-8 sporangia.
 - B. *Pteris* has a true indusium.
 - C. *Helminthostachys* has a fertile spike.
 - D. *Salvinia* is homosporous.
 - E. Stipules are present in *Ophioglossales*.
- i. A, B, C and E
 - ii. A, C and E
 - iii B, C, D and E
 - iv. All of the above
- y) Examples for bearing fertile finger-like projections, synangia and scale leaves are respectively
- i. *Drynaria*, *Marattia* and *Equisetum*
 - ii *Lygodium*, *Anemia* and *Equisetum*
 - iii *Lygodium*, *Psilotum* and *Equisetum*
 - iv *Psilotum*, *Helminthostachys* and *Equisetum*
- z) Select the **correct** pair.
- i. *Riccia*. - cacti like assimilatory filaments.
 - ii. *Huperzia phlegmaria* – presence of ligule.
 - iii. *Podocarpus* – simple leaves with midrib.
 - iv. *Ephidra* - giant tree.

SECTION B

[Answer any **TWO (02)** questions. Approximate time allocation is **HALF (½) an hour per question**].

2. Describe the vegetative diversity observed in the order *Marchantiales*. (100 marks)
3. a) Differentiate the ovule of *Ginkgo* from that of *Gnetum* (60 marks)
 b) Compare the habit of *Sargassum* with that of *Jania*. (40 marks)
4. a) "Diversity with respect to the location of sori in Filicales is high."
 Justify the above statement. (60 marks)
 b) Describe the sexual reproduction and life cycle of Ascomycota fungi. (40 marks)

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