



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

**B.Sc. in Applied Sciences
First Year – Semester I Examination – May 2022**

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]

(08 x 25 = 200 marks)

- a) Members of Zygnematales
 - i. are always filamentous.
 - ii. maybe considered as the link between the aquatic and terrestrial algae.
 - iii. always contain two chloroplasts per vegetative cell.
 - iv. are heterotrophic.
- b) Classification of algae is **not** based on their
 - i. life cycles.
 - ii. pigments.
 - iii. habitat.
 - iv. cell wall components.
- c) Which of the following combination is **not correct**?
 - i. Bacillariophyta – presence of epitheca and hypotheca.
 - ii. Phaeophyta – chloroplast with double membrane.
 - iii. Charophyta – presence of terrestrial members.
 - iv. Rhodophyta – absence of flagellated reproductive cells.
- d) A student observing a heap of decaying plant matter saw three organisms with the following features: the first was one with a bright orange, cup shaped fruit body; the second was a mushroom and the third was a colony like structure made up of white, finely divided thread like structures. Select the answer which accurately identifies the three organisms in the above given order.
 - i. Ascomycete fungus, *Agaricus* and a lichen
 - ii. Ascomycete fungus, a club fungus and a slime mold
 - iii. Basidiomycete fungus, *Agaricus* and *Mucor*
 - iv. Scarlet cup fungus, *Morchella* and a slime mold

- e) Which of the following statements are correct?
- A. Sexual reproduction is absent in *Penicillium*.
 - B. Water molds are not true fungi.
 - C. Zygomycota fungi possess septate mycelia.
 - D. *Plasmodiophora brassicae* is a plant pathogen.
- i. A, B, C and D
 - ii. A, C and D
 - iii. A, B and D
 - iv. C and D
- f) Which of the following statements are correct?
- A. Some Deuteromycota fungi cause diseases in humans.
 - B. *Mucor* and *Rhizopus* are known as bread molds.
 - C. Potato plantations were destroyed in 19th century by *Phytophthora infestans*.
 - 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 above
- g) Select the correct statement.
- i. *Bazzania* has a succubus "leaf" arrangement.
 - ii. Sporophyte of *Sphagnum* bear peristomal teeth.
 - iii. All bryophytes produce gemmae.
 - iv. *Pallavicinia* is a thalloid liverwort.
- h) Select the character common to both *Pinus* and *Cupressus* (Christmas tree)
- i. Sporophyte is a well branched tree.
 - ii. Needle like leaves.
 - iii. Number of ovules per sporophyll is always two.
 - iv. Ovuliferous scale and bract scale are fused.
- j) Which one of the following statements is correct?
- i. Soredia is the dispersal unit in lichens.
 - ii. *Stemonitis* is a true fungus.
 - iii. *Chara* is strictly aquatic.
 - iv. Chytridiomycota fungi have true hyphae.
- k) Which of the following bear synangia?
- A. *Psilotum*
 - B. *Salvinia*
 - C. *Angiopteris*
 - D. *Marattia*
- i. A, B and C
 - ii. B, C and D
 - iii. A and D
 - iv. B and C

- l) Select the correct statements.
- A. Chytridiomycota fungi are primitive.
 - B. Glomeromycota fungi form a symbiotic association with algae.
 - C. Basidiocarps are produced by Club fungi.
 - D. Some Zygomycotans spoil stored fruits.
 - E. Some Basidiomycetes are edible.
- i. A, B, C and D
 - ii. B, D and E
 - iii. A, B, D and E
 - iv. All of the above
- m) Select the correct statements.
- A. All gymnosperms have male and female cones.
 - B. Secondary growth is absent in gymnosperms.
 - C. A collar region is present in ovule of *Ginkgo*.
 - D. Xylem vessels and companion cells are present in *Gnetum*.
 - E. *Sequoiadendron* is a giant gymnosperm.
- i. A, C, and D
 - ii. B, C, D and E
 - iii. C, D and E
 - iv. All of the above
- n) Which of the following pairs are correct?
- A. *Coleochaete* – terrestrial algae.
 - B. *Jania* – calcified plant body.
 - C. *Ulva*- microscopic.
 - D. *Ectocarpus* – a red algae.
 - E. *Laminaria* – a source of human food.
- i. A and E
 - ii. A, B and E
 - iii. A, B, D and E
 - iv. A, B, C and D
- o) Select the correct statement.
- i. Sporocarps are present in *Azolla*.
 - ii. A fertile spike is present in *Osmunda*.
 - iii. Leaves are arranged as two lateral rows in sporophyte of *Huperzia*.
 - iv. *Equisetum* is heterosporous.
- p) Which of the following combination is correct?
- i. *Welwitschia* – tall, branched tree
 - ii. *Asplenium* – naked sorus
 - iii. Water-molds – always free living
 - iv. *Gnetum*– leaves with reticulate venation
- q) Select the character common to both *Marchantia* and *Pogonatum*.
- i. Presence of leptome and hydrome
 - ii. Presence of peristomal teeth in the sporophyte
 - iii. Presence of haploid gametophyte
 - iv. Presence of protonema

- r) Prothallus, spores and indusium of a common fern respectively are
- diploid, haploid and diploid.
 - haploid, diploid and haploid.
 - haploid, diploid and diploid.
 - haploid, haploid and diploid.
- s) Both xerophytic and hydrophytic characters are prominent in
- Equisetum*.
 - Isoetes*.
 - Psilotum*.
 - Ceratopteris*.
- t) Select the **false** statement with respect to bryophytes.
- They lack lignified mechanical tissues.
 - Photosynthetic filaments may be present in the gametophyte.
 - Foot, seta and capsule are present in the sporophyte of bryophytes.
 - Sporophyte is free living.
- u) Which of the following is **not correct**?
- Encephalartos* is dioecious.
 - Leaves of gymnosperms bear xerophytic characters.
 - Coniferophyta contains oldest trees on earth.
 - Megasporophyll of *Ginkgo* bears 2-6 ovules.
- v) *Cycas* is a gymnosperm
- that could be considered as an ancestor of pro-angiosperms.
 - possessing coralloid roots.
 - having soft wood.
 - which provides edible parts for our diet.
 - with a palm like habit.
- Which of the above statements are correct?
- B, C, D and E
 - A, B, C and D
 - A, B and D
 - All of the above
- w) Which of the following algae are commonly found in Sri Lanka?
- | | | |
|---------------------|------------------------|---------------------|
| A. <i>Sargassum</i> | B. <i>Acanthophora</i> | C. <i>Laminaria</i> |
| D. <i>Jania</i> | E. <i>Ulva</i> | |
- A, B, D and E
 - B, C, D and E
 - A, B and E
 - All of above
- x) The resemblance between fungi and water molds is due to
- parallel evolution.
 - convergent evolution.
 - congruent evolution.
 - divergent evolution.

- y) Select the correct statements.
- A. In *Lunularia*, gemma cups are crescent shaped.
 - B. *Frullania* is a leafy liverwort.
 - C. Special pores are present in the "leaf" of *Sphagnum*.
 - D. Gametophyte of *Anthoceros* has a median furrow.
 - E. Operculum is present in *Marchantia* sporophyte.
- i. A, B, C and E
 - ii. A, B and C
 - iii. B, C and E
 - iv. All of above
- z) Examples for having apical, transverse and longitudinal arrangement of stomium and annulus respectively are
- i. *Drynaria*, *Marattia* and *Nephrolepis*
 - ii. *Nephrolepis*, *Anemia* and *Dicranopteris*
 - iii. *Anemia*, *Dicranopteris*, and *Polypodium*
 - iv. *Osmunda*, *Drynaria* and *Polypodium*

SECTION B

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

2. a) "*Gnetum* is considered as the ancestor of pro-angiosperms." Justify the above statement. (70 marks)
- b) Describe briefly the biological significance of fungi. (30 marks)
3. a) Differentiate the male strobilus of *Ginkgo* from strobilus of *Selaginella*. (80 marks)
- b) Describe briefly the diversity found in the habit of members in order Chlorococcales. (20 marks)
4. a) Compare the structure of the thallus of *Marchantia* with that of *Pallavicinia*. (80 marks)
- b) "Kelp could save our oceans." Comment on the above statement. (20 marks)

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