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

**B.Sc. (General) Degree in Applied Sciences  
First Year Semester I Examination – June/July 2018**

**BOT 1201 – PLANT DIVERSITY**

**Time: Two (02) hours**

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**Answer THREE (03) questions including the compulsory question.**

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**Compulsory question: [Approximate time allocation is one (01) hour].**

1. Answer ALL questions. Underline the most suitable option using a pen. No marks will be given for multiple responses. (200 marks)
- a) Members of Charophyta
    - i. are microscopic.
    - ii. are considered as the link between ancestral aquatic and terrestrial plants.
    - iii. contain floridian starch as stored food.
    - iv. are strictly aquatic.
  - b) Plants are known as embryophytes because
    - i. they produce an embryo.
    - ii. the embryo is surrounded by the endosperm.
    - iii. the developing embryo retains in the gametophyte.
    - iv. gametes are produced within gametangia.
  - c) The six kingdom classification of living organisms was put forward by
    - i. Robert Whittaker.
    - ii. Ernst Haeckel.
    - iii. Carolus Linnaeus.
    - iv. Carl Woes.
  - d) A student examining a fresh water sample observed three organisms with following features: the first one is a unicell, divided into two half cells and the second is an unbranched filament with cap cells and the third is a star like coenobium. These three organisms could be
    - i. *Pinnularia* sp., *Spirogyra* sp. and *Volvox* sp.
    - ii. *Closterium* sp., *Oedogonium* sp. and *Scenedesmus* sp.
    - iii. *Cosmarium* sp., *Zygnema* sp and *Pediastrum* sp.
    - iv. *Closterium* sp, *Oedogonium* sp. and *Pediastrum* sp. respectively.

- e) Which of the following statements are correct?
- A. Fungi are eukaryotes.      B. Water molds are true fungi.  
 C. Yeast is an ascomycete fungus.      D. Slime molds belong to Kingdom Protista
- i. A, B, C and D  
 ii. A, C and D  
 iii. A, B and D  
 iv. B, C and D
- f) *Pythium* is a "fungi like" organism
- i. having uninucleate hyphae.  
 ii. that causes damping off in seedlings.  
 iii. which is an obligate parasite.  
 iv. capable of producing conidia.
- g) Which of the following statements are correct regarding *Gnetum* sp.
- A. Leaves are broad and with reticulate venation.      B. Perianth is present.  
 C. Xylem has vessels      D. Deciduous      E. Archegonia are present
- i. A, C and D  
 ii. A, B and C  
 iii. A, B, C and E  
 iv. All of above
- h) Select the correct statement.
- i. *Asplenium* sp. bear a naked sorus.  
 ii. *Osmunda* sp. has a fertile spike.  
 iii. Stomium and annulus in *Anemia* sp. is apical.  
 iv. *Isoetes* is homosporous.
- j) A lichen is a symbiotic association between a fungus and a
- i. cyanobacterium / algae.  
 ii. plant.  
 iii. bryophyte.  
 iv. coralloid root of *Cycas* sp.
- k) Which of the following bear synangia?
- A. *Angiopteris* sp.      B. *Blechnum* sp.      C. *Psilotum* sp.      D. *Marattia* sp.
- i. A and C  
 ii. C and D  
 iii. A and D  
 iv. B and C
- l) Select the correct statements.
- A. Glomeromycotan fungi form mycorrhizae with plants.  
 B. Ascomycetes fungi produce ascospores and conidia.  
 C. Basidiocarps are produced by Zygomycota fungi.  
 D. Many Chytridiomycota are aquatic.  
 E. Some Basidiomycetes are edible.

- i. A, B, C and D
  - ii. B, C, D and E
  - iii. A, B, D and E
  - iv. All of above
- m) Which of the following has/have taken place during plant evolution?
- A. Transition from land to water.
  - B. Development of a jacket layer surrounding gametangia.
  - C. Transition from homosporous to heterosporous.
  - D. Origin of the seed.
  - E. The emergence of flowering plants.
- i. A, C, D and E
  - ii. B, C, D and E
  - iii. A, B, C and D
  - iv. All of above
- n) Which of the following pairs are correct?
- A. Pterophyta – presence of true vascular tissue.
  - B. *Cycas* sp. – megasporophylls arranged in a strobilus.
  - C. *Azolla* sp – homosporous.
  - D. Basidiomycetes – bread mold.
  - E. *Gnetum* sp. - a dicotyledonous embryo.
- i. A, C, D and E
  - ii. A, C and D
  - iii. A and E
  - iv. A, B, C and D
- o) Select the correct statement.
- i. Sporophyte of *Ephedra* sp. is a tall, evergreen tree.
  - ii. Sporocarps are present in *Ceratopteris* sp.
  - iii. Plectostele is advanced when compared with Siphonostele.
  - iv. *Trentepohlia* sp. is a terrestrial algae.
- p) Which of the following combination is correct?
- i. Chlorophyta – absence of calcified members.
  - ii. Oomycota – absence of flagella.
  - iii. "Slime-molds" – grex (slug) formation.
  - iv. Rhodophyta – presence of flagellated reproductive structures.
- q) Which of the following **does not** represent a gametophyte?
- i. *Chlamydomonas* sp. vegetative cell.
  - ii. *Selaginella* sp. plant.
  - iii. *Nephrolepis* sp. prothallus.
  - iv. *Dumortiera* sp. thallus.

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- r) Select the character common to both *Encephalartos* sp. and *Pinus* sp.
- Leaf scars on the stem.
  - Albuminous cells in the phloem.
  - Compound leaves.
  - Division of integument into layers.
- s) Elaters of *Marchantia* sp., foot of *Anthoceros* sp. and hydrome of *Pogonatum* sp. are
- diploid, haploid and diploid.
  - haploid, diploid and haploid.
  - diploid, diploid and haploid.
  - haploid, haploid and diploid, respectively.
- t) Both xerophytic and hydrophytic characters are prominent in
- Sphagnum* sp.
  - Equisetum* sp.
  - Lycopodium* sp.
  - Rhodobryum* sp.
- u) Select the **false** statement.
- Megasporophyll of *Agathis* sp. bears only two ovules.
  - A long micropyle is present in the ovule of *Gnetum* sp.
  - Podocarps* sp. is dioecious.
  - Adult sporophyte of *Welwitschia* sp. is a densely branched tree.
- v) Which of the following is **not correct**?
- Sexual reproduction is absent in *Aspergillus* sp.
  - Some Zygomycetes cause diseases in man.
  - Extensive heterokaryotic stage is prominent in Ascomycetes fungi.
  - Basidiomycota fungi are commonly known as "cup fungi".
- w) Which of the following helped the first land plants to get established in the terrestrial habitat?
- Less competition for resources.
  - Presence of herbivores in large numbers.
  - Plenty of available oxygen.
  - Harsh terrestrial conditions.
  - Well adapted plant body.
- A and C
  - A, C and E
  - B, D and E
  - All above
- x) Which of the following algae are commonly found in Sri Lanka?
- |  |                         |                          |
|--|-------------------------|--------------------------|
| A. <i>Sargassum</i> spp.                                       | B. <i>Halimeda</i> spp. | C. <i>Laminaria</i> spp. |
| <input checked="" type="checkbox"/> D. <i>Gracillaria</i> spp. | E. <i>Ulva</i> spp.     |                          |
- A, B, D and E
  - B, C, D and E
  - A, B, and E
  - All of above

- y) Select the correct statements.
- A. Operculum is present in the sporophyte of *Marchantia* sp.
  - B. *Bazzania* sp. is a leafy liverwort.
  - C. Hyaline cells are present in *Sphagnum* sp.
  - D. Gametophyte of *Riccia* sp. has a median furrow.
  - E. *Fissidens* sp. is a true moss.
    - i. A, C, D and E
    - ii. A, B, C and D
    - iii. B, C, D and E
    - iv. All of above
- z) Examples for a simple thalloid, complex thalloid and leafy liverworts are
- i. *Frullania* sp., *Marchantia* sp. and *Pallavicinia* sp.
  - ii. *Pallavicinia* sp., *Riccia* sp. and *Frullania* sp.
  - iii. *Pallavicinia* sp., *Marchantia* sp. and *Frullania* sp.
  - iv. *Marchantia* sp., *Riccia* sp. and *Frullania* sp. respectively.

**Optional questions:** [Approximate time allocation is **half (½) an hour each**. Answer only **TWO (02)** questions].

2. Describe briefly the vegetative diversity found in thalloid members of the Division Marchantiophyta (Hepatophyta). (100 marks)
  
3. Differentiate between the following pairs.
  - a) Strobilus of *Equisetum* sp. and the male strobilus of *Ginkgo* sp. (70 marks)
  - b) Thallus of *Ulva* sp. and that of *Sargassum* sp. (30 marks)
  
4. a) Fungi have both positive and negative impacts on food and agriculture. Write an account on this statement. (60 marks)
  
- b) Compare the following pairs. In each pair, mention which is more advanced in evolution. Give **one (01)** example for each.
  - i. coenocytic mycelium and uninucleate mycelium
  - ii. sporangiospore and conidium (20 x2 marks)

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