Index No.: .....

RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Sciences
First Year Semester I Examination – September / October 2019

BOT 1201 – PLANT DIVERSITY

Time: Two (02) hours

Answer THREE (03) questions including the compulsory question.

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

1. **Answer ALL questions.** Underline the **most suitable option** using a pen. **(200 marks)**

   a) The classification of algae is not based on their
      i. cell wall components.
      ii. pigments.
      iii. reproductive structures and life cycles.
      iv. habit.

   b) Select the incorrect statement regarding Anthophyta.
      i. The gametophytic generation is microscopic.
      ii. The embryo is always surrounded by the endosperm.
      iii. The developing embryo retains in the gametophyte.
      iv. Pollan grain produces male gametophyte.

   c) Select the correct statement
      i. *Azolla* sp. forms a symbiotic association with bryophytes.
      ii. Sporophyte of *Pogonatum* sp. could be divided into foot, seta and capsule.
      iii. Internal differentiation in *Dumorteira* gametophyte is greater than that of Riccia.
      iv. Genus *Marchantia* is moneoicious.

   d) A student found three types of bryophytes with following features, growing on a rock in Kadugannawa: the first one was a heart shaped thallus with a median furrow while the second was an irregular thallus bearing hornlike sporophytes and the third was with a whorl of leaf like structures at the apex. These three bryophytes could be
      i. *Marchantia* sp., *Anthoceros* sp. and *Pogonatum* sp.
      ii. *Riccia* sp., *Anthoceros* sp. and *Pogonatum* sp.
      iii. *Riccia* sp., *Anthoceros* sp. and *Rhodobryum* sp.
      iv. *Dumorteira* sp., *Lunularia* and *Rhodobryum* sp

e) Which of the following statements are correct?
A. *Ganoderma* is a bracket fungus. B. Bread molds are true fungi.
C. Yeast is an unicellular fungus. D. Soreda is the dispersal unit in lichens

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

f) *Phythopthora* is a "fungi like" organism
i. having coenocytic hyphae.
ii. that causes damping off in potato.
iii. which is an opportunistic pathogen.
iv. capable of producing conidia.

g) Which of the following statements are correct regarding *Anthoceros* sp.?
A. Stomata are present in the sporophyte B. Gametophyte is an irregular thallus.
C. Photosynthetic filaments are present D. Sporophyte looks like a horn
E. Involucre protects the young gametophyte

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

h) Select the correct statement.
i. *Asplenium* sp. bears a pseudo indusium.
ii. *Ophioglossum* sp. has a fertile spike.
iii. Stomium and annulus in *Pteris* sp. is transverse.
iv. *Azolla* sp. is homosporous.

j) A mycorrhizae is a symbiotic association between a
i. fungus and a cyanobacterium /algae.
ii. fungus and a plant root.
iii. cyanobacterium and a bryophyte.
iv. cyanobacterium and coralloid roots of *Cycas* sp.

k) Which of the following bear naked sori?
A. *Asplenium* sp. B. *Pyrrosia* sp. C. *Hemionitis* sp. D. *Dicranopteris* sp.

i. A, C and D
ii. B, C and D
iii. C and D only
iv. B and C only

l) Select the correct statements.
A. Kingdom Protista is a monophyletic group.
B. Plant body in *Amphiroa* sp., *Halimeda* sp. and *Gracillaria* sp. is calcified.
C. *Padina* sp. has a fan shaped thallus.
D. Diatoms are used in paint industry.
E. Some algae are edible.

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

m) Which of the following has / have taken place during plant evolution?
A. Transition from water to land.
B. Development of vascular tissues.
C. Differentiation of the plant body into organs.
D. Origin of the flower.
E. The emergence of fruits and seeds.

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. Zygomycota – presence of insect parasites.
B. Deuteromycota – production of ascospores.
C. Plasmodiophoromycota – causative organisms of club root of crucifers.
D. Basidiomycota – produces edible mushrooms.
E. Chytridiomycota – members have true hyphae

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 *Zamia* sp. is a tall, evergreen tree.
ii. Sporocarps are present in *Angiopteris* sp.
iii. All members in Lycophyta are homosporous.
iv. Some Charophytes occupy terrestrial habitats.

p) Which of the following combination is **not correct**?
i. *Selaginella* sp.– presence of ligule.
ii. *Glosspteris* sp. – fossil fern
iii. *Ginkgo* sp. – microsporophylls in the strobilus are tightly packed
iv. Phaeophyta – presence of flagellated reproductive structures.

q) Which of the following **does not** represent a gametophyte?
   i. *Ulva* sp. thallus.
   ii. *Podocarpus* sp. plant.
   iii. *Pteris* sp. prothallus.
   iv. *Plagiochasma* sp. thallus.

r) Select the character common to both *Agathis* sp. and *Pinus* sp.
   i. Leaf scares on the stem.
   ii. Absence of xylem vessels.
   iii. Compound leaves.
   iv. Division of integument into layers.

s) Elaters of *Anthoceros* sp., foot of *Marchantia* sp. and leptome of *Pogonatum* sp. are
   i. diploid, haploid and diploid.
   ii. haploid, diploid and haploid.
   iii. diploid, diploid and haploid.
   iv. haploid, haploid and diploid, respectively.

t) Both xerophytic and hydrophytic characters are prominent in
   i. *Sphagnum* sp.
   ii. *Equisetum* sp.
   iii. *Lycopodium* sp.
   iv. *Rhodobryum* sp.

u) Select the **false** statement.
   i. Megasporophyll of *Zamia* sp. bears only two ovules.
   ii. A long micropyle is present in the ovule of *Cycas* sp.
   iii. *Encephalartos* sp.is dioecious.
   iv. Adult sporophyte of *Ginkgo* sp. is a densely branched tree.

v) Which of the following is **not correct**?
   i. Some *Penecillium* sp. are used in dairy industry.
   ii. Zygomycota fungi cause rust and smut in plants.
   iii. Extensive heterokaryotic stage is prominent in Basidiomycota fungi.
   iv. Some Ascomycota fungi are commonly known as "cup fungi".

w) Which of the following helped the first land plants to get established in the terrestrial habitat?
   A. Less competition for resources.
   B. Presence of herbivores in large numbers.
   C. Plenty of available carbon dioxide.
   D. Harsh terrestrial conditions.
   E. Well adapted plant body.

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

x) Which of the following algal genera are commonly found in Sri Lanka?
A. *Caulerpa* B. *Turbinaria* C. *Laminaria*
D. *Gelidium* E. *Pinnularia*

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

y) Select the correct statements.
A. Operculum is present in the sporophyte of *Anthoceros* sp.
B. *Frullania* sp.is a leafy liverwort.
C. Hyaline cells are present in *Sphagnum* sp.
D. Gametophyte of *Lunularia* sp. bears crescent shaped gemma cups.
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 respectively are
i *Frullania* sp., *Marchantia* sp. and *Pallavicinia* sp.
ii *Riccia* sp., *Pallavicinia* sp. and *Plagiochila* sp.
iii *Pallavicinia* sp., *Marchantia* sp. and *Bazzania* sp.
iv *Marchantia* sp., *Riccia* sp. and *Frullania* sp.

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

2. Describe the reproductive diversity found in members of the Order Filicales. **(100 marks)**

3. Differentiate between the following pairs.
a) Thallus of *Marchantia* and that of *Riccia* **(70 marks)**
b) Habit (plant body) of *Laminaria* and that of *Fucus* **(30 marks)**

4. Discuss the following statements.
a) "Fungi are friend or foe of man". **(80 marks)**
b) "Algae, as a nutrient supplement in the future". **(20 marks)**

- END -