THE OPEN UNIVERSITY OF SRI LANKA
B.Sc. / B.Ed. DEGREE PROGRAMME
LEVEL 04 – 2013/2014
BOU 2102 / BOE 4103 - SYSTEMATICS OF HIGHER PLANTS AND ANIMALS

NO BOOK TEST

DURATION – ONE (01) HOUR **Reg. No. .....**

Date: 10th April 2014 **Time: 10.30 a. m. – 11.30 a. m.**

Answer all questions using space provided in the question paper.
This paper consists of six (06) questions and six (06) pages.

01. a) What is meant by the terms Stenoplasticity and Euryplasticity?

Stenoplasticity

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Euryplasticity

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.....

b) Write down three (03) best possible sources of floral characters in identifying a plant family.

i. .....
ii. .....
iii. .....

c) State three (03) characters of a plant leaf that is highly influenced by environmental variations.

i) .....
ii) .....
iii) .....

d) List major concepts put forwarded for defining a species.

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02. a) State <u>two (02)</u> advantages and two disadvantages of use of plant proteins as source of taxonomic evidences.

Advantages

i.....

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ii.....

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Disadvantages

i.....

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ii.....

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03. Answer the question (a) based on the following phyletic diagrams (Fig. 1, Fig. 2, Fig. 3 and Fig 4).

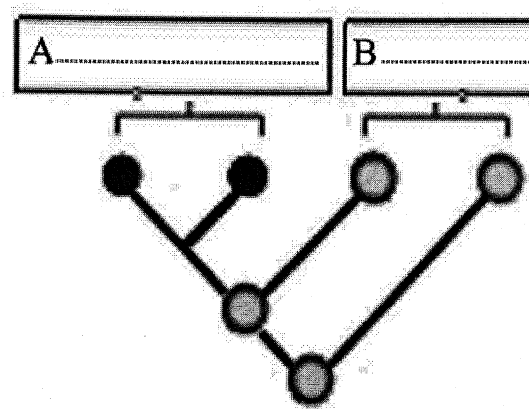


Fig. 1

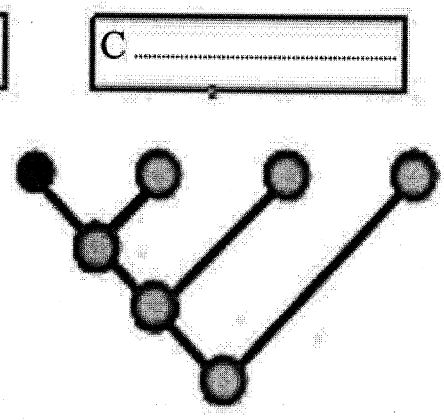


Fig. 2

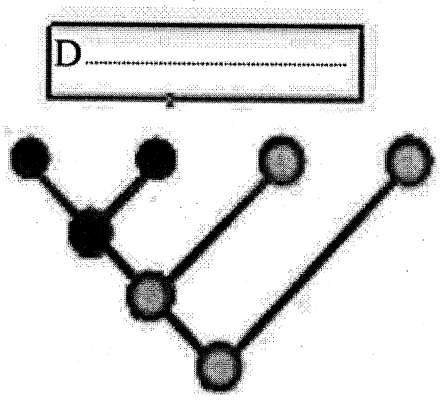


Fig. 3

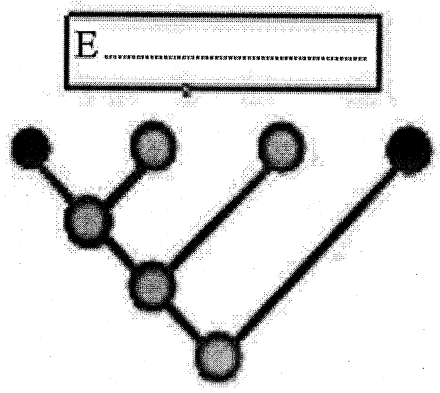


Fig. 4

Ancestral trait (○)
Derived trait (●)

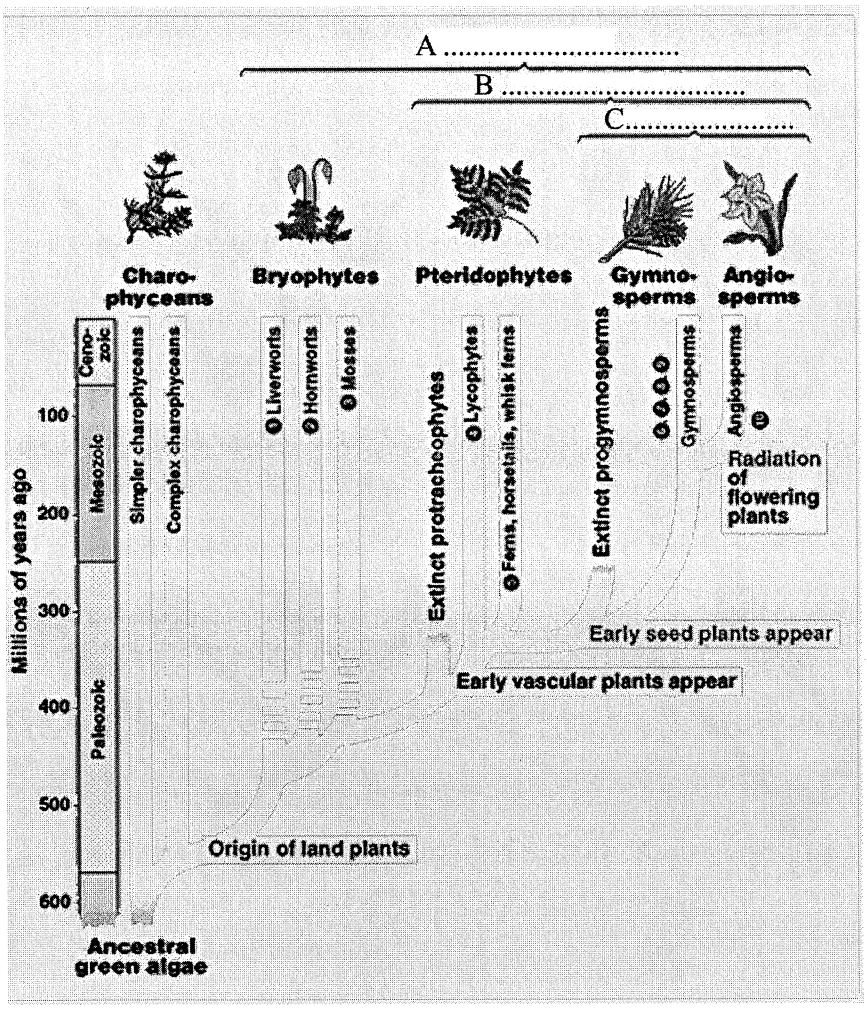
a). Considering the evolution process that taken place in each situation depicted in above diagrams, fill in the boxes named A, B, C, D and E.

b). Only with the help of phyletic diagrams show the Convergence and Parallelism process in evolution.

Convergence

Parallelism

04. Answer the following questions based on the diagram given below.



a) Fill in the blanks using suitable terms that describe the plant groups denoted by A, B and C in the diagram.

b). According to the diagram, which group has evolved first within the bryophytes?

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c). During which era does the progymnosperms became extinct?

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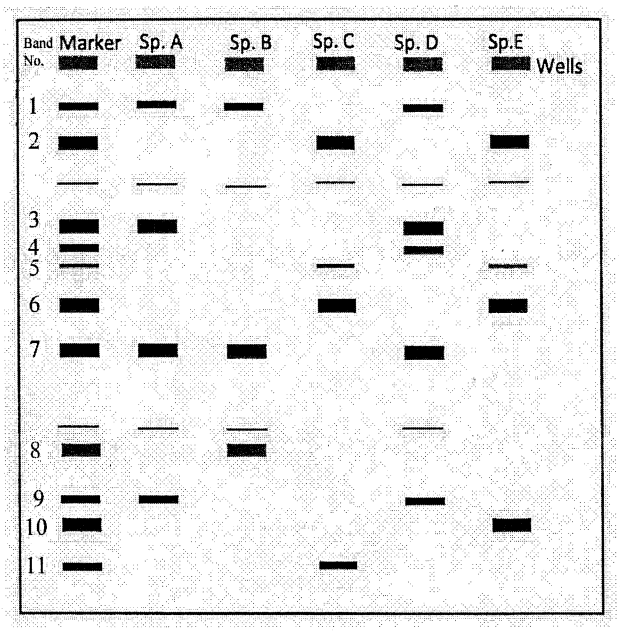
d). State the groups of plants whose existences have been established only by the fossil records. .....

05. Seed proteins of five different species were extracted and the extracted samples were analyzed using Poly Acrylamide Gel Electrophoresis (PAGE). The Gel developed from the study is given below.

Lane 1 – Marker (use this lane to identify different bands)
Lane 2 – Sp. A, Lane 3 – Sp. B, Lane 4 – Sp. C, Lane 5 – Sp. D,
Lane 6 – Sp. E



i. Using the banding pattern in the Gel, develop a dichotomous key to classify the 5 species.

ii. The researcher has identified that out of the five species, 2 species belong to Family Bignoniaceae and the other 3 are of Family Rutaceae.

Examine carefully the gel picture and identify the species belong to Family Bignoniaceae.

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06. a). State one term/s that gives the idea in the following statements.

i. The process by which one or more new species arise from existing species.

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ii. A taxon which derived from more than one common ancestor.

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iii. A diagram constructed on the basis of numerical analysis of phenetic similarities.

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iv. Selection of characters after construction of groups.

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v. Different molecular forms of enzymes that catalyze a specific biochemical reaction.

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b) List the logical steps involved in Numerical Taxonomy

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