THE OPEN UNIVERSITY OF SRI LANKA

B.Ed /B.Sc. DEGREE PROGRAMME

BOTANY – LEVEL 03

FINAL EXAMINATION - 2007/2008

BTU 1201/BTE 3201 - PLANT DIVERSITY

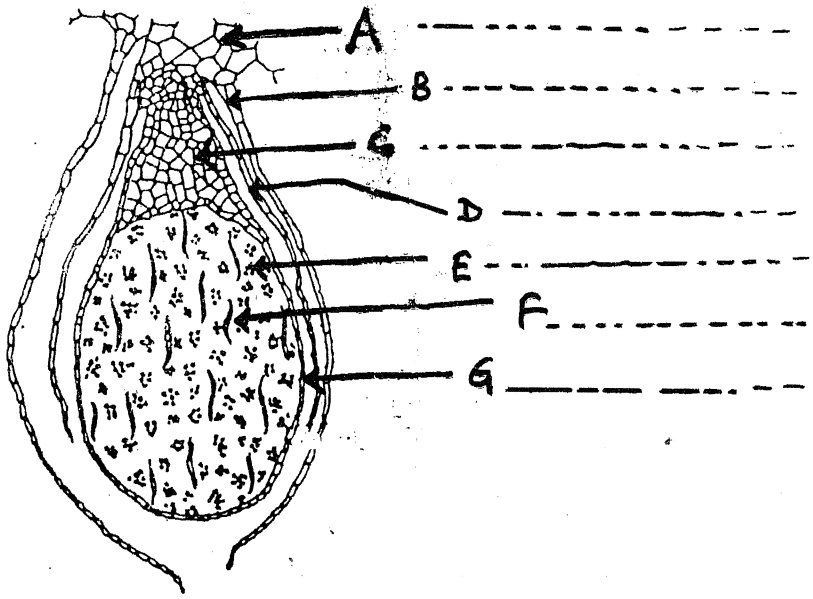
PAPER I

DURATION: TWO (02) HOURS. **INDEX NO. .....**

DATE : 19th June 2008 **TIME: 10.00 a.m. – 12.00 noon**

Answer all questions in the space provided.

01. The diagram given below represent the longitudinal section (L.S) of the sporophyte of a bryophyte.



a) Name the parts labeled A-G on the dotted lines in the diagram.

b) Give the generic name and the Class to which the plant having the above sporophyte belongs.

Generic Name : .....

Class : .....

c) What is the main function of part F in the diagram?

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d) Draw the diagram of the transverse section (T.S.) of the mature sporophyte of *Riccia* in the space given below. Label all the parts.

e) Some important features of Bryophytes are listed in column A. Write the generic name of the member of the bryophyte showing each particular feature in the space given in column B.

	Column A	**Column B**
i.	Presence of elaterphore in the sporophyte	.....
ii.	A thallus having a median longitudinal furrow on the dorsal side	.....
iii.	A flattened thallus composed of overlapping lobes	.....
iv.	A thallus with chimney shaped air pores	.....
v.	Presence of 3 rows of leaves in the stem of the gametophyte	.....

02. a) List <u>five (5)</u> general characteristics of viruses.

i. .....

ii. .....

iii. .....

iv. .....

b) In the space given below, draw the external structure of a tobacco mosaic virus (TMV) and label all the parts.

c) Give the four (04) main stages of the replication cycle of a bacteriophage.

i. .....

ii. .....

iii. .....

iv. .....

d) Give three (03) major differences between the Gram +ve and Gram –ve cell walls of bacteria.

	Gram +ve cell wall	**Gram –ve cell wall**
i.	.....	.....
	.....	.....
ii.	.....	.....
	.....	.....
iii.	.....	.....
	.....	.....

e) Name five (05) methods of asexual reproduction in Cyanobacteria.

i. .....

ii. .....

iii. .....

iv. .....

v. .....

03. a) Draw fully labeled diagrams of the two (02) modifications of fungal hyphae given below.

i. Appressorium

ii. Haustorium

b) What are the functions of each of the above structures.

i. .....

.....

.....

ii. .....

.....

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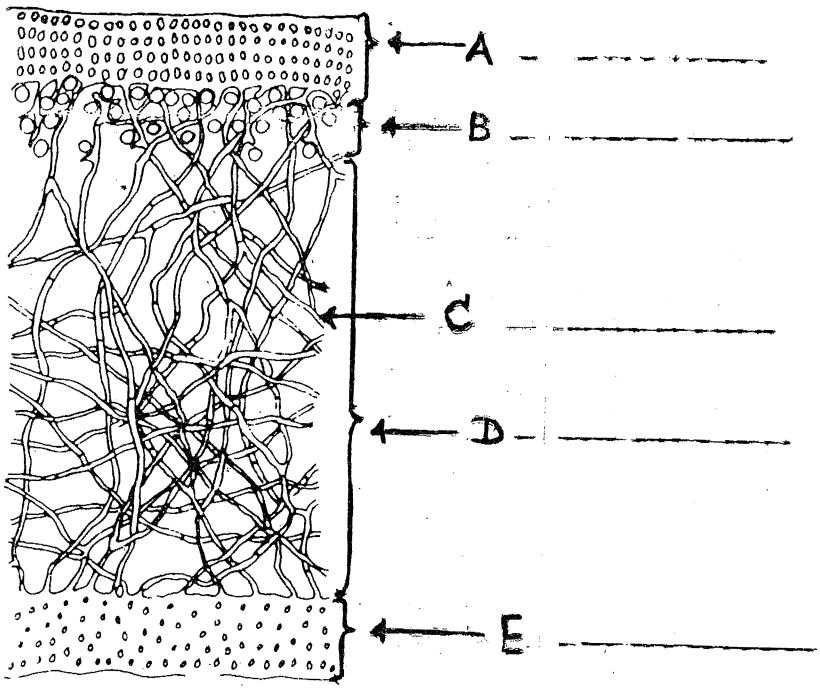
c) Based on the distribution of algae or Cyanobacteria and fungi, two major types of lichen thalli can be recognized. What are these two (02) types?

i. .....

ii. .....

d) The following diagram shows a cross section of the lichen thallus *Parmelia perlata*. Label the parts A – E on the dotted lines in the diagram.



e) Out of the two types of thalli you mentioned in part (c), to which type does the thallus in part (d) belong?

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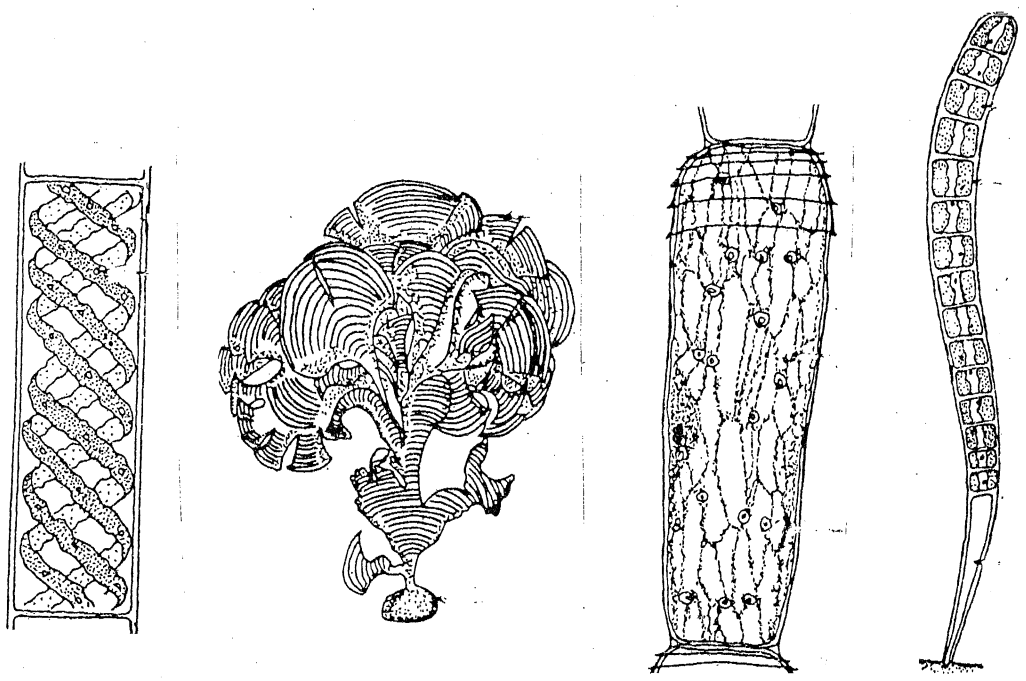
04. The diagrams A, B, C and D given below represent the structure of four (04) genera of algae.



A. ..... B. ..... C. ..... D.....

a) Name the genus in the space provided below each diagram.

b) Give <u>two (02)</u> main identifying characteristics of each of the above algae.

A – i. .....

ii. .....

B – i. .....

ii. .....

C – i. .....

ii. .....

D – i. .....

ii. .....

c) With the help of fully labeled diagrams only illustrate the two (02) processes of sexual reproduction of A, in the space given below.

d) Explain the following terms associated with algae.

i. Isomorphic alteration of generations.

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ii. Heterotrichy.

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iii. Oogamous gametes.

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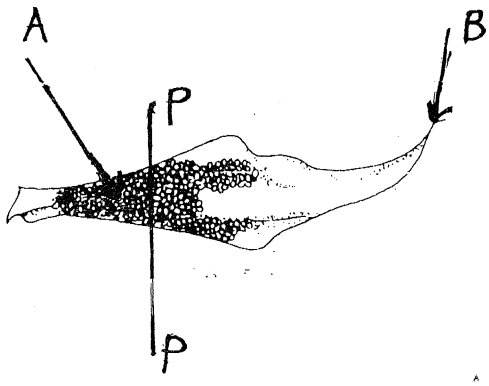
05. The diagram below represents the lower surface of a microsporophyll of *Cycas*.



a) Name the parts labeled as A and B.

A. - .....

B. - .....

b) Make a fully labeled drawing of the transverse section through p – p.

c) Name the two (02) types of shoots in a *Pinus* stem.

i. ..... ii. .....

d) Make a fully labeled line diagram of the transverse section (T.S) of the mature stem of *Pinus* in the space given below.

e) Give four (04) structural differences between the transverse section of a young *Pinus* stem and the transverse section of a typical monocotyledons stem.

	T. S of young *Pinus* stem	**T.S. of a typical monocotyledonous stem**
i.	.....	.....
	.....	.....
ii.	.....	.....
	.....	.....
iii.	.....	.....
	.....	.....
iv.	.....	.....
	.....	.....

06. a) Briefly explain the importance of dispersal of fruits and seeds.

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b) Name the three (03) main parts of a seed.

i. .....

ii. .....

iii. .....

c) Draw a fully labeled diagram of a longitudinal section (L.S) of a typical dicotyledonous seed in the space given below.

d) Briefly explain the changes which occur in a seed during germination.

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e) Write four (04) agents/methods of dispersal of fruits and seeds indicating <u>two(02)</u> structural adaptation shown by the fruits and seeds dispersed by each method/agent.

	Agent/method of dispersal		Structural adaptations
i.	.....	i.	.....
		ii.	.....
ii.	.....	i.	.....
		ii.	.....
iii.	.....	i.	.....
		ii.	.....
iv.	.....	i.	.....
		ii.	.....

07. a) Differentiate between the primary meristem and the secondary meristem in plants.

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b) Give <u>two (02)</u> examples for each of the above meristems in plants.

i. Primary meristem - i. .....

ii. .....

ii. Secondary meristem - i. .....

ii. .....

c) Give <u>four (04)</u> structural features of a meristamatic plant cell.

i. .....

ii. .....

iii. .....

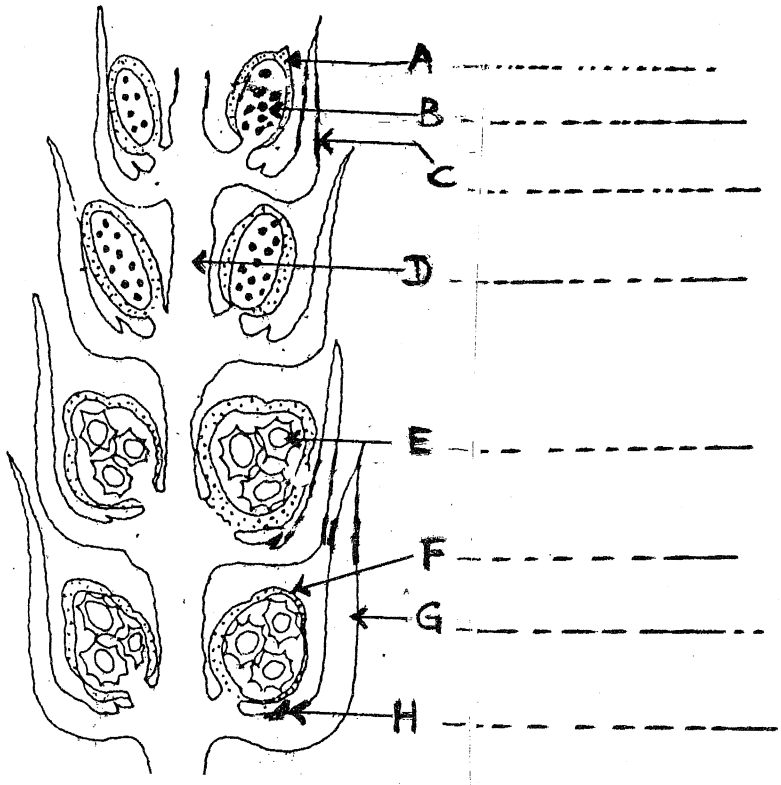
iv. .....

d) Draw a fully labeled diagram to show different regions of a root in the space given below.

e) Give <u>five (05)</u> accessory functions that roots perform in addition to the main functions of anchorage and absorption. Give one example for each (Generic name is sufficient).

	Function	Example
i.	.....	.....
	.....	
ii.	.....	.....
	.....	
iii.	.....	.....
	.....	
iv.	.....	.....
	.....	
v.	.....	.....
	.....	

08. a) The diagram given below represents the vertical section of the strobilus of *Selaginella*. Name the parts labeled A – H on the dotted lines in the diagram.



b) Draw and label a line diagram of a transverse section of the stem of *Selaginella* to show the distribution of tissues.

c) Draw and label the vertical section of the strobilus of *Lycopodium* in the space given below.

d) Name <u>three (03)</u> living genera belonging to the order Ophioglossales.

i. .....

ii. .....

iii. .....

e) Draw fully labeled diagrams of <u>two (02)</u> genera mentioned in part (d) above, in the space given below. Name each genus you have drawn.

i. ..... ii. .....