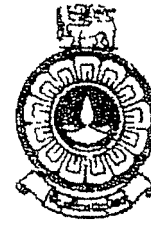


042

THE OPEN UNIVERSITY OF SRI LANKA  
ADVANCED CERTIFICATE IN LABORATORY TECHNOLOGY  
(ACLT) PROGRAMME  
DEPARTMENT OF BOTANY  
FINAL EXAMINATION - 2022  
LABORATORY TECHNIQUES IN PLANT SCIENCE – BYC2403



DURATION: TWO (2) HOURS

INDEX NUMBER: .....

DATE: 16<sup>th</sup> OCTOBER 2022

TIME: 9.30 a.m. – 11.30 a.m.

Part B

Answer any four (04) questions in the space provided.

1. a. What are two main types of plant tissues classified based on their ability to divide?

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b. Write two (02) main differences between a simple permanent tissue and a complex permanent tissue?

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c. Give two examples for each of the following plant tissue types.

Simple permanent tissues

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Complex tissues

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d. Figure 1 shows a diagrammatic view of a transverse section (TS) of a plant stem.

i. Mark the following cells/ tissues in the given diagram

Epidermis; Collenchyma; Parenchyma; Cambium

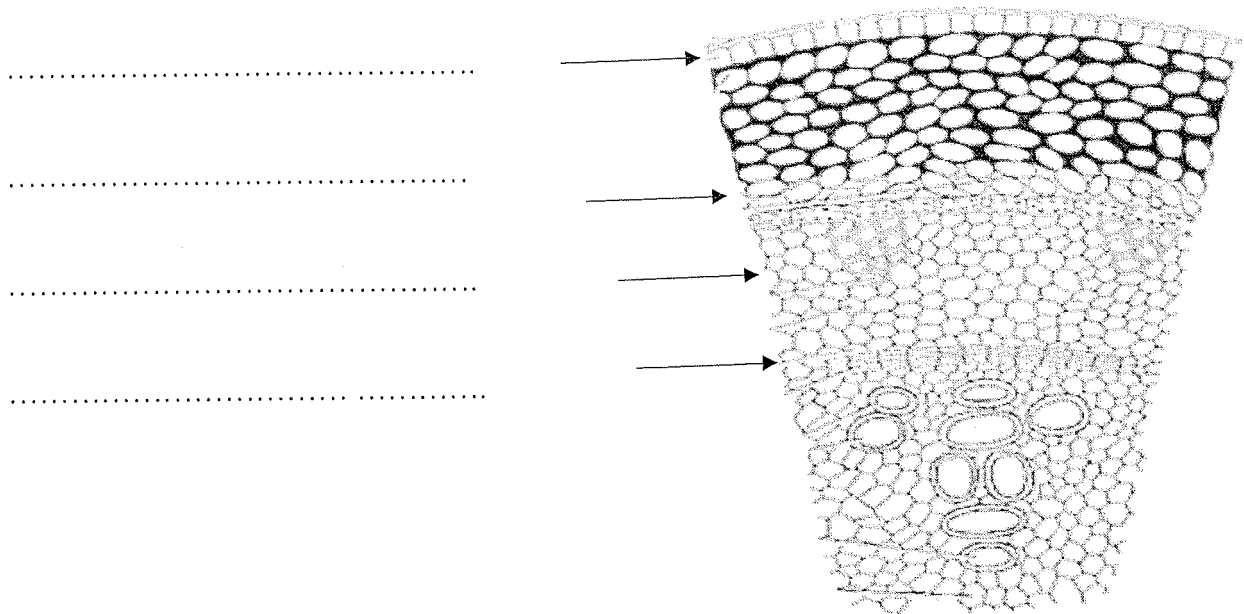


Figure 1 : TS of plant stem

ii. Indicate two functions for each of the parts you labelled above in section i.

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2. a. What are the main differences between artificial classification system and natural classification system in plants?

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b. What are the advanced features found in phylogenetic classification system?

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c. Write five (05) main characteristics features of non-vascular plants.

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d. How would you distinguish between thallophytes and bryophytes?

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e. List the five (05) main adaptations of angiosperms to survive on terrestrial habitats.

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3. a. Name the different type of microorganisms based on their energy and Carbon sources.

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b. What are the main environmental factors that affect the growth of microorganisms?

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c. According to the requirement of gaseous oxygen, microorganisms are categorized into few groups. Name those groups indicating main features of those groups.

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d. Some microorganisms are unable to grow under laboratory conditions. Give reasons.

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e. What are the categories of microorganisms that cannot be cultivated under normal laboratory conditions?

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f. What is meant by “stock cultures of microorganisms”?

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4. a. What are the main factors that are responsible for distributing the various biomes in the world?

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b. Write the characteristic features of tropical biomes in relation to their climatic factors.

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c. List the main features that can be seen in a natural vegetation located in subarctic regions.

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d. How are those features (you listed in 4 c. above) helped for the survival in that environment?

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e. Name five (05) major threats that affect the floral biodiversity in Sri Lanka?

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5. a. What are the main chemical properties you measure in a sample of soil?

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b. List the components you assess when determining the texture of a soil sample.

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c. What are the main types of water available in soil?

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d. Explain briefly how these types of water are used for the growth of plants.

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e. Draw a pie chart indicating the relative proportions of different types of microorganisms in a terrestrial soil.

f. What do you mean by the term “microbial biomass”?

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6. a. List four (04) methods commonly used for the preservation of food.

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b. State the basic principle behind each of the method you listed in above 6.a.

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c. How do chemical agents act on food as a preservative agent?

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d. Name four (04) traditional food preservation methods practiced in Sri Lanka.

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e. Write a brief note on the importance of food preservation as a solution for economic crisis.

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