

(ஐவ் கிர்ட்டேயசு/புதிய பாடத்திட்டம்/New Syllabus)

NEW

ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව

இலங்கைப் பரீட்சைத் திணைக்களம்

Department of Examinations, Sri Lanka

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2020
 கல்விப் பொதுத் தராதரப் பத்திர (உயர் தரப் பரீட்சை, 2020
 General Certificate of Education (Adv. Level) Examination, 2020

ජෛවපද්ධති තාක්ෂණවේදය

II

உயிர்முறைமைகள் தொழினுட்பவியல்

II

Biosystems Technology

II

66 E II

පැය තුනයි

மூன்று மணித்தியாலம்

Three hours

අමතර කියවීම් කාලය - මිනිත්තු 10 යි

மேலதிக வாசிப்பு நேரம் - 10 நிமிடங்கள்

Additional Reading Time - 10 minutes

Use additional reading time to go through the question paper, select the questions you will answer and decide which of them you will prioritise.

Index No. :

Instructions :

- * This question paper comprises of **two** parts, Part A and Part B. The time allotted for **both** parts is **three** hours.
- * Use of non-programmable calculators is allowed.

PART A — Structured Essay : (pages 2 - 7)

- * Answer **all four questions on this paper itself.**
- * Write your answers in the space provided for each question. Note that the space provided is sufficient for your answers and that extensive answers are not expected.

PART B – Essay : (pages 8)

- * Answer **four** questions only. Use the papers supplied for this purpose. At the end of the time allotted for this paper, tie the two parts together so that Part **A** is on top of Part **B** before handing them over to the Supervisor.
- * You are permitted to remove only Part **B** of the question paper from the Examination Hall.

For Examiner's Use Only

Part	Question Nos.	Marks Awarded
A	1	
	2	
	3	
	4	
B	5	
	6	
	7	
	8	
	9	
	10	
Total		

Total Marks	
In numbers	
In words	
Code Numbers	
Marking Examiner 1	
Marking Examiner 2	
Marks checked by	
Supervised by	

[see page two

PART A – Structured Essay
Answer all four questions on this paper itself.

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column

1. (A) The concentration of CO₂ in Earth's atmosphere is around 400 ppm.

(i) State an activity contributing to increase the CO₂ concentration in the atmosphere.

.....

(ii) State an activity contributing to decrease the CO₂ concentration in the atmosphere.

.....

(B) Soil organisms influence vast variety of functions in ecosystems.

(i) State **two** importances of soil organisms in biosystems.

(1).....

(2).....

(ii) Name **two** soil organisms that can be used as bio-pesticides.

(1).....

(2).....

(C) Microbes in wastewater create many health and environmental issues when released **untreated**.

(i) State a group of microbes that can be used as an indicator to test the presence of harmful microbes to humans in wastewater.

.....

(ii) If wastewater released from a particular treatment plant to contain microbes, state **two** suitable methods to eliminate those microbes prior to release wastewater to the environment.

(1).....

(2).....

(D) Chain survey is considered as one of the oldest surveying methods.

(i) What is the main limitation in chain surveying?

.....

(ii) State the main principle of chain surveying.

.....

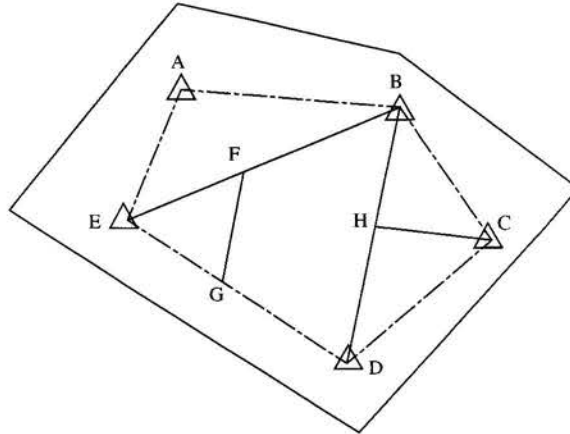
(iii) In addition to the metric chain or engineering chain, name **two** most important equipment / instruments needed in chain surveying.

(1).....

(2).....

[see page three]

(iv) Use the following chain surveying sketch to answer question (1) and (2).



(1) Name a subsidiary survey line shown in the above diagram.

.....

(2) Name a check line shown in the above diagram.

.....

(E) Micropropagation is commonly used in commercial floriculture nurseries.

(i) Define 'micropropagation'.

.....
.....
.....

(ii) State the specific advantage of micropropagation over other vegetative propagation methods.

.....

(iii) Name a food crop propagated by micropropagation.

.....

(F) Maturity indices are the indications of the readiness of the fruits and vegetables for harvest. List **two** chemical factors that could be used as maturity indices of fruits.

(i).....

(ii).....

Q1

75

2. (A) A farmer wanted to increase groundwater yield in the agrowell in his farm. For this, it is necessary to increase the groundwater recharge in his land. State **one** simple and economical method to increase recharging of groundwater.

.....

(B) Aquatic plants are widely used in the ornamental fish industry. List **three** main functions of ornamental aquatic plants in an aquarium.

(i)

(ii)

(iii)

[see page four]

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- (C) Following are some statements regarding livestock production. State whether each statement is true (T) or false (F).

Statement	True (T) or False (F)
(i) Eggs are a good source of complete protein.	☐
(ii) All grades of eggs are equally nutritional.	☐
(iii) A cow is milked only once a day.	☐
(iv) COB test is done to find out whether milk is adulterated with Urea.	☐
(v) In Sri Lanka, broiler chicken are given steroids to fatten them faster.	☐

- (D) General objective of the Food Act is to ensure the availability of safe, wholesome and honestly presented food supply for human consumption.

- (i) State **four** activities controlled by the Food Act, No. 26 of 1980.

- (1).....
(2).....
(3).....
(4).....

- (ii) Who is the authority to enforce the Food Act No. 26 of 1980?

.....

- (E) Food label is a legal requirement and it provides valuable information to the consumers to select their desired foods. State the main importance of the following information found on a label of a food product.

Information	Importance
(i) Batch No.	
(ii) Common name of the product	
(iii) Registration No.	
(iv) Date of manufacture and date of expiry	

- (F) State **two** mechanisms used to control temperature in polytunnels located in low country.

- (i).....
(ii).....

Q2

75

3. (A) State the main function of each of the following components in an engine cooling system.

Component	Main function
(i) Radiator	
(ii) Thermostat valve	
(iii) Water pump	

[see page five]

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(B) State **three** important factors to be considered in installing a centrifugal pump in the water lifting system.

(i).....

(ii).....

(iii).....

(C) Sprinkler irrigation is a method of applying irrigation water similar to rainfall.

(i) State **two** main advantages of a sprinkler irrigation system.

(1)

(2)

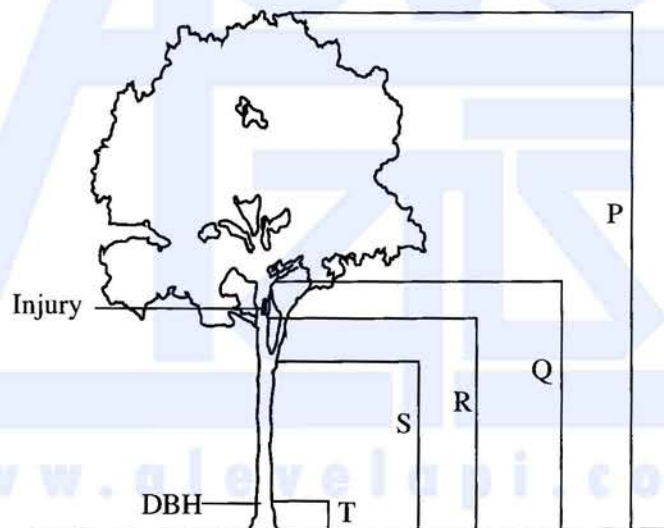
(ii) State **two** main limitations of a sprinkler irrigation system.

(1)

(2)

(D) Use the following diagram to answer questions (i) to (iii).

P, Q, R, S and T are different types of heights measured in forest mensuration.



(i) What is the commercially important height of the timber tree shown in the above diagram?

.....

(ii) State the reason for your answer in above.

.....

(iii) What is the value of 'T' (in meters) used in Sri Lanka?

.....

[see page six]

(E) Use the following diagram to answer questions (i) and (ii).



P



Q

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column

(i) Of the above two diagrams, what is the right way of lifting a weight?

(ii) If he lifts the weight in the wrong way, what type of hazard he may be subjected to?

(F) Clearly underline the **correct** phrase given in the parenthesis in the following sentences.

(i) Foliage plays an important role in floral arrangements. In floral arrangements, (yellow/green/variegated) foliage provides a dark background to highlight the bright colours of flowers.

(ii) Foliage is typically (more expensive than/ same as cost of/ less expensive than) flowers.

(iii) In floral arrangements, foliage is mainly used (to add more colour/ as a filler/ to enhance the shelf-life).

(iv) The height of the floral arrangement should be (half/ one and half times/three times) the height of the container.

(v) In order to keep the flowers fresh for a longer period, mix 3 table spoons of (sugar/ salt/ liquid soap) with 1 liter of lukewarm water and add to the container.

Q3

75

4. (A) Following are some statements regarding the use of multimeter. State whether each statement is true (T) or false (F)

Statement

True (T) or False (F)

- (i) While testing voltage, the multimeter is connected to the tested component in a parallel connection.
- (ii) When testing current, you must disconnect power to receive a proper reading.
- (iii) To perform a resistance test, you must connect the multimeter to the component in series.

☐
☐
☐

(B) Fill in the blanks in the sentences from (i) to (iii) with a suitable term selected from among the terms given below

Voltage, Unipolar, Resistance, Bipolar, Candela

- (i) Charge is
- (ii) The energy per unit charge is called the
- (iii) The unit to measure luminous intensity is

[see page seven]

(C) Microcontrollers are mainly used in automatically controlled devices. In addition to serial and parallel ports and timers what are the other **four** basic components a microcontroller must consist of?

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- (i)
- (ii)
- (iii)
- (iv)

(D) In the rubber industry, it is common to vulcanize the products.

(i) What is vulcanization?

.....

.....

.....

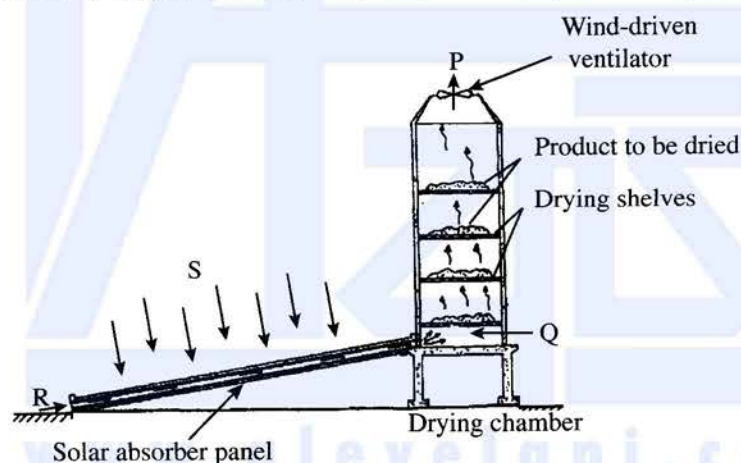
(ii) What is the main purpose of vulcanization of rubber?

.....

(iii) Why is Sulphur added to rubber during vulcanization?

.....

(E) Use the following diagram of solar dryer to answer questions (i) and (ii).



(i) Match labels P, Q, R, and S shown on above diagram with following phrases

Phrase	Label
(1) Fresh air	
(2) Solar radiation	
(3) Hot air	
(4) Moist hot air	

(ii) Name a vegetable that can be dried using above solar dryer.

.....

(F) Microfinance institutes provide financial services to poor and low-income clients. State **two** main advantages of microfinance system to low income clients.

- (i).....
- (ii).....

Q4

75

නව නිර්දේශය / புதிய பாடத்திட்டம் / New Syllabus

ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව
 இலங்கைப் பரீட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம்
 Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka
 இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரīட்சைத் திணைக்களம்

NEW

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2020
 கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2020
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ජෛවපද්ධති තාක්ෂණවේදය II
 உயிர்முறைமைகள் தொழினுட்பவியல் II
 Biosystems Technology II

66 E II

Part B - Essay

Instructions:

- * Answer four questions only.
- * Each question carries 100 marks.
- * Give clearly labelled diagrams where necessary.
- * Use of non-programmable calculators is allowed.

5. (a) Describe the different methods of layering of plants.
- (b) Explain the steps in the process of making green tea using a flow chart.
- (c) Describe the factors to be considered in selecting a water pump for irrigation purposes.
6. (a) Explain how soil texture and soil structure are important for biosystems.
- (b) Describe the facts to be considered in feeding the food fish, rearing in a fish pond.
- (c) Describe the different methods of preserving timber.
7. (a) Explain the important steps in broiler meat processing, mentioning the objective of carrying out each step.
- (b) Describe the major constraints of growing crops in a polytunnel.
- (c) If a person wants to commence a meat processing industry, state the main supporting services related to his/her business with their importance.
8. (a) Explain the importance of edible landscaping for domestic food security.
- (b) Describe the food preservation principles found in traditional food preservation methods.
- (c) A person bought an electric kettle having the power of 1800 W. It is connected to the main current having 230V voltage.
 - (i) Calculate the current in the coil of the kettle.
 - (ii) When the kettle filled with water was connected to the wall plug, switched on and heated up for 2 minutes, the fuse of the circuit was melted. When he checked the circuit, he could not find any fault in the circuit but he noticed that the rating of the melted fuse is 5A.
 - (1) Calculate the total amount of energy transferred by the kettle during the 2 minutes.
 - (2) What could be the reason for melting the fuse?
 - (3) If he is having fuses rating 1A, 5A, 10A and 13A, which one is the most suitable fuse to use for this circuit?
 - (4) What is the reason to select the above fuse?
9. (a) Describe the importance of soft landscape elements in landscape designing.
- (b) Describe the procedure of using an auto level in surveying.
- (c) Describe different tests that are used to find out the sensory perception of a new food product.
10. (a) Describe how to minimize the **nonpoint** source water pollution.
- (b) Describe the different types of harrows used in land preparation.
- (c) Describe the role of sensors and actuators in a control system.

* * *