

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
 இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம்

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

කෘෂි විද්‍යාව I
 விவசாய விஞ்ஞானம் I
 Agricultural Science I

08 E I

පැය දෙකයි
 இரண்டு மணித்தியாலம்
 Two hours

Instructions:

- * Answer **all** the questions.
- * Write your **Index Number** in the space provided in the answer sheet.
- * Instructions are given on the back of the answer sheet. Follow those carefully.
- * In each of the questions 1 to 50, pick one of the alternatives from (1), (2), (3), (4), (5) which is **correct** or **most appropriate** and mark your response on the answer sheet with a cross (X) on the number of the correct option in accordance with the instructions given on the back of the answer sheet.

1. An example for a man-made water source to extract groundwater is
 (1) a pond. (2) a river. (3) a canal. (4) a reservoir. (5) an agro-well.
2. One of the adaptations of flowering plants to self-pollination is having
 (1) dioecious plants. (2) bisexual flowers.
 (3) monoecious plants. (4) self-incompatibility.
 (5) monosexual flowers.
3. The light affects crop production in various ways. The quality of light mainly affects the
 (1) osmosis. (2) flowering. (3) respiration.
 (4) transpiration. (5) photosynthesis.
4. Land preparation increases,
 (1) both porosity and bulk density of soil.
 (2) both bulk density and aeration of soil.
 (3) both porosity and microbial population in soil.
 (4) bulk density while decreasing microbial population in soil.
 (5) microbial population while decreasing the aeration in the soil.
5. From among the following irrigation methods, the most water-efficient method is
 (1) drip irrigation. (2) basin irrigation. (3) furrow irrigation.
 (4) bubbler irrigation. (5) sprinkler irrigation.
6. Water absorption of plants is regulated by
 (1) guttation and evaporation. (2) root pressure and guttation.
 (3) evaporation and transpiration. (4) root pressure and transpiration.
 (5) evaporation and root pressure.
7. Seed viability can be determined by
 (1) GA3 test. (2) seed purity test. (3) tetrasolium test.
 (4) acid treatment test. (5) seed germination test.
8. In a soil profile, distinct soil horizons can be clearly seen in
 (1) a virgin soil. (2) a mature soil.
 (3) an immature soil. (4) a developing soil.
 (5) an agricultural soil.

9. The most suitable fertilizer to provide a specific nutrient to a crop is
 (1) biochar. (2) compost. (3) bio fertilizer.
 (4) vermicompost. (5) chemical fertilizer.
10. Deep ploughing is categorized under
 (1) primary tillage. (2) inter-cultivation. (3) optimum tillage.
 (4) minimum tillage. (5) secondary tillage.
11. The most appropriate instrument to prune small branches in horticultural crops would be
 (1) scissors. (2) hand saw. (3) secateur. (4) pruning saw. (5) budding knife.
12. The frequency of recording different meteorological parameters in an agro-meteorological unit varies from parameter to parameter. The soil thermometer readings are recorded
 (1) once a day. (2) twice a day. (3) thrice a day.
 (4) once in two days. (5) once in three days.
13. An example for a plant vegetatively propagated by leaves is
 (1) Coleus. (2) Dahlias. (3) Dracaena. (4) Caladiums. (5) Bryophyllum.
14. To cover a polytunnel, the most appropriate material is
 (1) UV cut polyethylene. (2) normal polyethylene.
 (3) low density polyethylene. (4) UV resistant polyethylene.
 (5) high density polyethylene.
15. Among the factors of production, the factor which is scarce, immovable, impossible to increase but improvable would be
 (1) land. (2) labour. (3) capital.
 (4) technology. (5) entrepreneurship.
16. The institution responsible for formulating the national agricultural research policy and priorities is
 (1) Department of Agriculture.
 (2) Department of Agrarian Services.
 (3) National Research Council of Sri Lanka.
 (4) Sri Lanka Council for Agricultural Research Policy.
 (5) Hector Kobbekaduwa Agrarian Research and Training Institute.
17. Compared with the composition of atmospheric air, soil air is high in
 (1) O₂ content. (2) CO₂ content.
 (3) O₂ and CO₂ content. (4) CO₂ and N₂ content.
 (5) O₂ and water vapor content.

- Use the following diagram to answer question No. 18.



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18. Vegetative propagation method shown in the above diagram is termed as
 (1) bark graft. (2) wedge graft. (3) whip graft. (4) splice graft. (5) saddle graft.
19. The most abundant greenhouse gas found in the atmosphere is
 (1) methane. (2) nitrous oxide. (3) water vapour.
 (4) carbon dioxide. (5) chlorofluorocarbon.

20. A farmer who continuously worked in his cattle farm got severe heart pain and cough with symptoms of fever. He might have been infected with
 (1) dengue. (2) malaria. (3) brucellosis. (4) tuberculosis. (5) leptospirosis.
21. The concept of agriculture that meets the needs of present and future generations for its products and services, while ensuring profitability and environmental health is referred to as,
 (1) organic agriculture. (2) intensive agriculture.
 (3) protected agriculture. (4) sustainable agriculture.
 (5) conservation agriculture.
22. Pest outbreak has deleterious effects on crop production. A method to control the pest population below the epidemic level is
 (1) practicing crop rotation. (2) cultivation of monocrop.
 (3) destroying the natural enemies. (4) repeated cultivation of the same crop.
 (5) cultivation of improved high yielding crops.
23. Azolla is used as biofertilizer in paddy fields because it
 (1) has an association with mycorrhiza.
 (2) has an association with nitrogen fixing Rhizobium.
 (3) has an association with nitrogen fixing cyanobacteria.
 (4) does not compete with rice plant for nutrients.
 (5) multiplies very fast to produce massive biomass.
24. The top layers of soil are darker in colour mainly due to high
 (1) microbial activity. (2) decomposition rate.
 (3) number of soil organisms. (4) amount of organic matter.
 (5) amount of secondary minerals.
25. An example for a terrestrial, broadleaf, edible weed is
 (1) Nut grass (*Cyperus rotundus*). (2) Tasselflower (*Emilia sonchifolia*).
 (3) Couch panicum (*Panicum repens*). (4) Little ironweed (*Vernonia cinerea*).
 (5) Common lantana (*Lantana camara*).
26. According to the Liebig's Law of the Minimum, from among the nutrients available to the plant, it's growth mainly depends on
 (1) the least available essential nutrient at that time.
 (2) the least available beneficial nutrient at that time.
 (3) all minimum available nutrients at that time.
 (4) the least available micro nutrient at that time.
 (5) the least available macro nutrient at that time.
27. When tested a soil sample from the school garden, following chemical properties were found.
 - Exchangeable sodium percentage (ESP) = 16%
 - Electrical conductivity (EC) = 3.2 Milli-Mohs/cm
 - pH = 9.5
 This soil can be classified as
 (1) sodic soil. (2) saline soil. (3) normal soil.
 (4) alkaline soil. (5) saline-alkali soil.
28. A farmer observed waterlogged condition at the lowest part of his land. He found that the nearby canal is located higher than the waterlogged part. The best way to drain the waterlogged part of his land is
 (1) deep ploughing to improve deep percolation.
 (2) establishment of sub-surface drainage system.
 (3) pumping of water from the waterlogged part to the canal.
 (4) use of water from the waterlogged part to irrigate the rest of the land.
 (5) cultivation of plants having high transpiration in the waterlogged part.

29. The one-sided green leaf area per unit ground surface area in broadleaf canopies is called
- (1) total leaf area.
 - (2) leaf area index.
 - (3) leaf area duration.
 - (4) leaf area ratio.
 - (5) green leaf percentage.

30. The following are two statements on genetics.

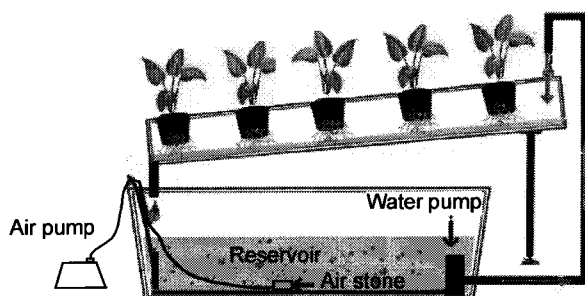
A - High genetic variation can be observed in cross pollinated plant species.

B - Genetic diversity plays an important role in the survival of a species over changing environments.

Of above statements,

- (1) A is correct but B is incorrect.
- (2) A is incorrect but B is correct.
- (3) both A and B are correct and A further explains B.
- (4) both A and B are correct and B further explains A.
- (5) both A and B are correct but there is no relationship between the two.

- Use the following diagram to answer question No. 31.



31. The hydroponic system shown in the above diagram can be best explained as
- (1) Floating Technique (FT).
 - (2) Deep Flow Technique (DFT).
 - (3) Root Dipping Technique (RDT).
 - (4) Nutrient Film Technique (NFT).
 - (5) Capillary Action Technique (CAT).
32. Pest control by improving or changing all processes from the establishment of the crop in the field to harvesting is called agronomical pest control.
- Examples of agronomical pest control practices are
- (1) burning and mulching.
 - (2) burning and crop rotation.
 - (3) use of light traps and mulching.
 - (4) water management and mulching.
 - (5) crop rotation and water management.
33. A laboratory test/s to identify plant virus diseases would be
- (1) Polymerase Chain Reaction (PCR).
 - (2) High Performance Liquid Chromatography (HPLC).
 - (3) Ultra-high Pressure Liquid Chromatography (UPLC).
 - (4) both PCR and HPLC.
 - (5) both HPLC and UPLC.
34. Recently, Department of Agriculture informed the community about a risk of an overseas pest. The name of this pest is
- (1) mealybug (*Pseudococcidae*).
 - (2) desert locust (*Schistocerca gregaria*).
 - (3) diamondback moth (*Plutella xylostella*).
 - (4) fall armyworm (*spodoptera frugiperda*).
 - (5) red coconut beetle (*Rhynchophorus ferrugineus*).

35. In slow freezed food items

- (1) fat content is decreased due to dripping.
- (2) micro nutrients can be lost due to dripping.
- (3) micro fiber content is high due to slow cooling.
- (4) protein is denaturized due to delayed freezing.
- (5) water is frozen into small ice particles due to slow cooling.

36. At the temperature of a domestic refrigerator, most of the food poisoning bacteria,

- (1) get destroyed.
- (2) form spores.
- (3) become inactive.
- (4) multiply rapidly.
- (5) grow very slowly.

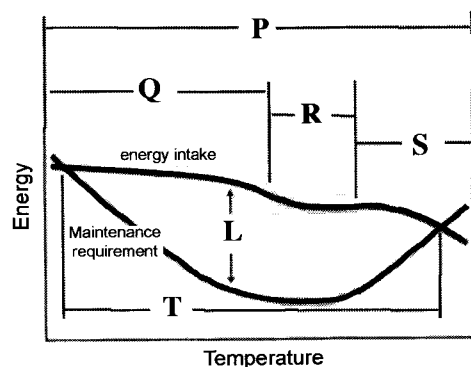
37. Losses at harvest of Manioc crop can be reduced by

- (1) irrigating the field on previous day.
- (2) washing the tubers just after harvesting.
- (3) removing the aerial parts two days prior to harvesting.
- (4) applying weedicides to the field 2-3 days prior to harvesting.
- (5) loosening the soil around the plants one day prior to harvesting.

38. The ideal time to harvest Ambul banana is

- (1) 6-7 weeks after the occurrence of the first comb.
- (2) 8-9 weeks after the occurrence of the first comb.
- (3) 10-11 weeks after the occurrence of the first comb.
- (4) 12-13 weeks after the occurrence of the first comb.
- (5) 14-15 weeks after the occurrence of the first comb.

- The following diagram shows the relationship between energy intake and maintenance requirement of cattle at different temperatures. Use this diagram to answer question No. 39 and 40.



39. On the above diagram, 'L' denotes the amount of

- (1) energy available for production.
- (2) body weight gain of the animal per day.
- (3) energy intake at a particular temperature.
- (4) energy used to maintain body temperature.
- (5) energy need to be given to the animal at that temperature.

40. According to the above diagram, the thermal neutral zone of cattle would be

- (1) P.
- (2) Q.
- (3) R.
- (4) S.
- (5) T.

41. When the cattle are in thermal neutral zone, compared to European cattle breeds, Indian cattle breeds

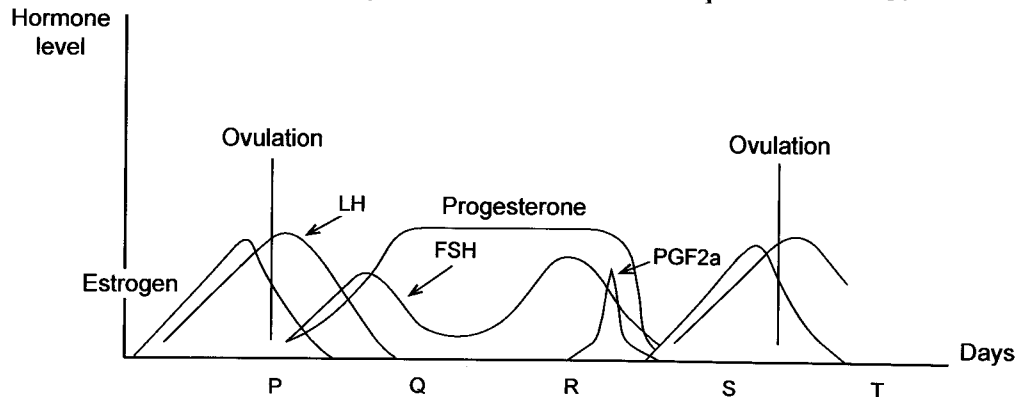
- (1) have short body hair and produce less milk.
- (2) have fewer sweat glands and produce more milk.
- (3) have well-developed dewlap with fewer sweat glands.
- (4) are less susceptible to tick fever and produce more milk.
- (5) are more susceptible to tick fever and have a well-developed navel-sheath.

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42. Disbudding of calves are normally done when they are under the age of two months, because it should be done

- (1) before the horns are emerged.
- (2) before the horns get hardened.
- (3) to minimize the risk of catching in fences.
- (4) before the horns are attached to the skull.
- (5) to avoid the risk of injury to the herdmates.

- Use the following diagram of estrous cycle of a cow to answer question No. 43.



43. As per the above diagram, the cow will come to the oestrus on

- (1) P. (2) Q. (3) R. (4) S. (5) T.

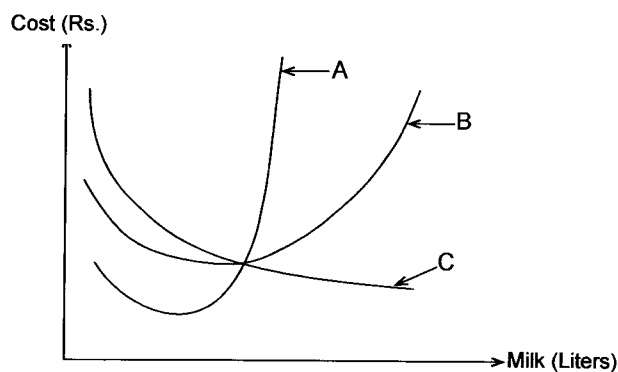
44. Marek's vaccine should be given to the chicks at

- (1) hatching. (2) the age of 3 weeks.
- (3) the age of 6 weeks. (4) the age of 7 weeks.
- (5) the age of 13 weeks.

45. A farmer observed the layer hens in his poultry eat their own eggs. He also found that they lay thin shelled eggs. The most probable reason for this behaviour of hens would be

- (1) lack of Calcium in the diet. (2) lack of minerals in the diet.
- (3) overcrowding of poultry shed. (4) high temperature in the poultry shed.
- (5) insufficient water supply for drinking.

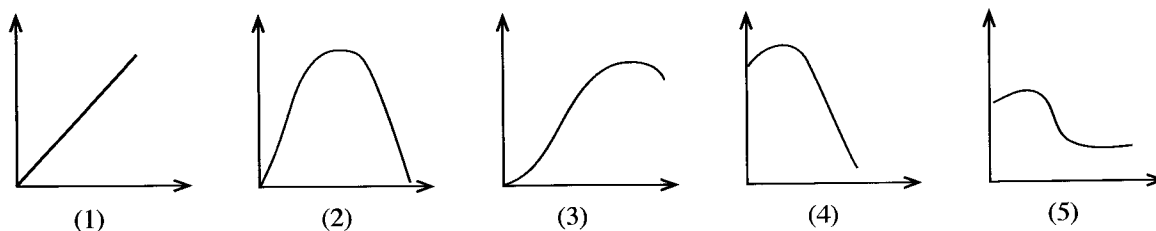
- The following diagram describes the three cost curves of a dairy farm in short run. Use this diagram to answer question No. 46.



46. Of the above diagram, the curves A, B and C are described as

- (1) marginal cost, average variable cost and average fixed cost, respectively.
- (2) marginal cost, average fixed cost and average variable cost, respectively.
- (3) marginal cost, average total cost and average variable cost, respectively.
- (4) average total cost, average fixed cost and average variable cost, respectively.
- (5) average fixed cost, average total cost and average variable cost, respectively.

47. If Kamal drinks several glasses of cool drinks to quench his thirst, the diagram that best express his total utility would be



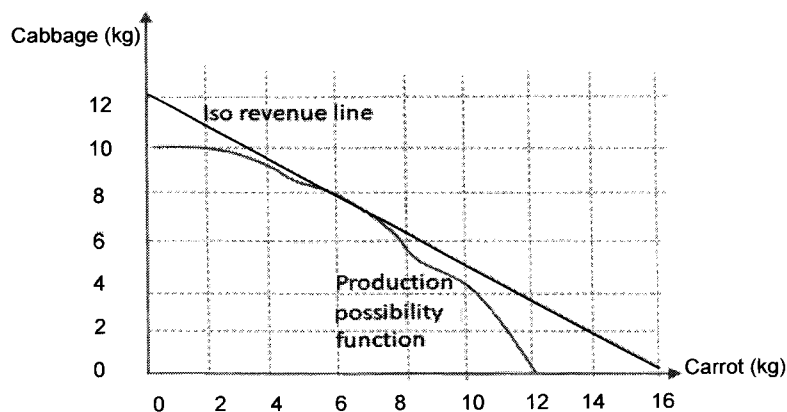
48. Following are three statements on potato cultivation

- A - Harvest losses due to heavy rains.
 B - Government reduces the import tax on potato.
 C - New variety of seed potato is introduced to farmers.

The order of the components of the external environment of the business described by the three above mentioned statements would be,

A	B	C
(1) Economic	Political and legal	Social and cultural
(2) Natural	Political and legal	Technical
(3) Natural	Technical	Social and cultural
(4) Economic	Technical	Social and cultural
(5) Social	Political and legal	Technical

- An upcountry vegetable farmer wants to cultivate carrot and cabbage in his agricultural land. The following graph describes the relationship between Iso revenue line and production possibility function of carrot and cabbage. Use this diagram to answer question No. 49.



49. The best production combination of carrot and cabbage for the farmer to obtain highest profits, would be

- (1) 10 kg and 12 kg, respectively. (2) 06 kg and 08 kg, respectively.
 (3) 12 kg and 04 kg, respectively. (4) 08 kg and 06 kg, respectively.
 (5) 04 kg and 10 kg, respectively.

50. Following are three statements regarding organic agriculture.

- A - Use of chemical fertilizer is minimum.
 B - Increases soil fertility and biodiversity.
 C - Improves the income of farmers by maximizing yield.

Of the above, the correct statement/s would be

- (1) A only. (2) B only. (3) C only.
 (4) A and B only. (5) B and C only.

ஐவ் திர்ஷ்ட்டு/புதிய பாடத்திட்டம்/New Syllabus

NEW

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

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

කෘෂි විද්‍යාව	II
விவசாய விஞ்ஞானம்	II
Agricultural Science	II

08 E II

பூசு நுகை
மூன்று மணித்தியாலம்
Three hours

අමතර කියවීමේ 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 consists of **10** questions in **11** pages.
- * This question paper comprises Part **A** and Part **B**. The time allotted for **both parts** is **three hours**.

PART A — Structured Essay (Pages 2 - 9)

- * Answer **all** 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 extensive answers are **not** expected.

PART B — Essay (Page 10 - 11)

- * 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 the top of Part **B** before handing over to the supervisor.
- * You are permitted to remove only Part **B** of the question paper from the Examination Hall.

For Examiners' Use only

(08) Agricultural Science - II		
Part	Question No.	Marks
A	1	
	2	
	3	
	4	
B	5	
	6	
	7	
	8	
	9	
	10	
Total		

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

Part A - Structured Essay*Answer all questions on this paper itself.**(Each question carries 100 marks.)*Do not
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column

1. (A) Recent COVID - 19 pandemic has created many issues with respect to food security. State **two** policy decisions taken by the Sri Lankan government to face these issues.

(i)

(ii)

(B) Wind is an important climatic factor which affects the performance of vegetative and reproductive phases in many agricultural crops.

(i) List **two** advantages of the mild wind to the crops.

(1)

(2)

(ii) List **two** disadvantages of the strong wind to the crops.

(1)

(2)

(C) Soil health is an assessment of how well soil performs all of its functions at present and how those functions are being preserved for future use.

(i) State **two** physical properties of soil that help to make a healthy soil.

(1)

(2)

(ii) State **two** essential features of a soil to be considered as a healthy soil.

(1)

(2)

(D) Acidity or alkalinity in soil is known as soil reaction.

(i) State **two** reasons for soils to become acidic.

(1)

(2)

(ii) Name a metal ion that is commonly available in an acidic soil.

.....

(iii) Name a substance that can be used to lower the acidity level in soils.

.....

(E) A nursery is a place where plants are propagated and grown to a desired age that they are ready to be transplanted in the field.

(i) State **two** advantages of rearing plants in the nurseries before establishing them in the field.

(1)

(2)

(ii) State **two** low-cost methods that can be used for sterilization of nursery soils.

(1)

(2)

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column

- (F) A pigeon pea crop having the root zone depth of 60 cm is grown in a soil with bulk density of 1.2 gcm^{-3} . The soil moisture content at the time of irrigation was 15%. If the moisture content of the soil at its field capacity is 32%, calculate the net irrigation requirement of the crop.

.....

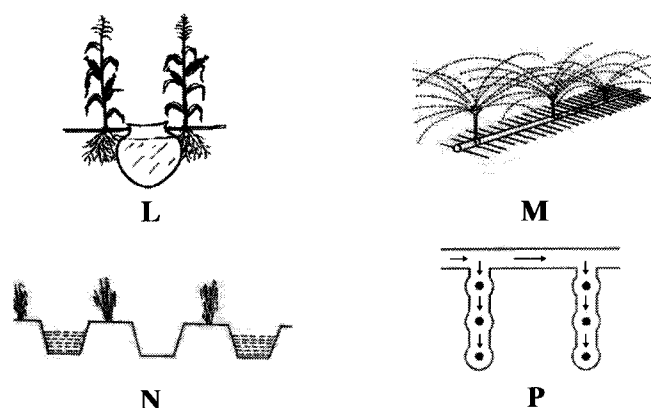
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- (G) Based on the crop water requirement, climatic factors, type of the soil and availability of irrigation water, farmers use different irrigation methods to irrigate their crops. Use the following diagrams to answer questions (i) to (iv).



Name the irrigation methods labelled as **L**, **M**, **N** and **P** in the above diagrams.

- (i) **L**
- (ii) **M**
- (iii) **N**
- (iv) **P**

- (H) Poor drainage in agricultural lands leads to reduce the agricultural productivity. State **two** main reasons for poor drainage in crop fields.

- (i)
- (ii)

2. (A) Natural vegetative propagation occurs when an axillary bud grows into a lateral shoot and develops its own adventitious roots.

Name the propagule occur naturally in each of the following crops.

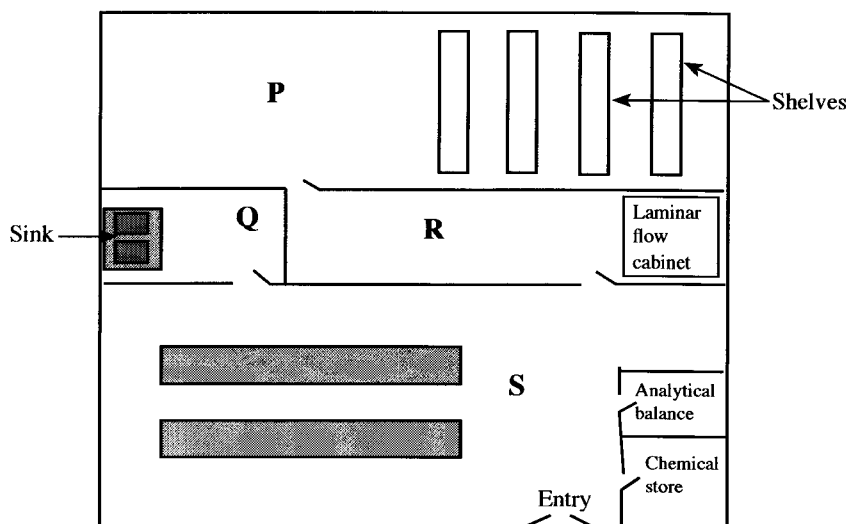
Crop	Name of the natural vegetative propagule
(i) Onion	
(ii) Mint	
(iii) Ginger	

- (B) Seed dormancy is an evolutionary adaptation that prevents seeds from germinating during unsuitable ecological conditions.

State a suitable seed treatment method each for removing seed dormancy of the following crops.

Crop	Seed treatment method
(i) Winged bean	
(ii) Mango	
(iii) Teak	

- (C) Following diagram shows a sketch of a tissue culture laboratory.
Use this diagram to answer questions from (i) to (iv).



Name sections labelled as **P**, **Q**, **R** and **S** in the above diagram.

- (i) **P**
- (ii) **Q**
- (iii) **R**
- (iv) **S**
- (D) Fertilizer application has both beneficial and detrimental effects to the crop as well as to the environment.
- (i) State **two** detrimental effects of **improper** use of chemical fertilizer on crops.
- (1)
- (2)
- (ii) State **two** detrimental effects of **improper** use of chemical fertilizer on environment.
- (1)
- (2)
- (iii) State **two** practices that can be followed to increase the fertilizer use efficiency.
- (1)
- (2)

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- (E) A commercial farmer having three potato fields cultivated same cultivar in all three fields and provided more or less similar conditions to all fields except the spacing between plants. Just before the crop maturity, he randomly measured the total leaf area of approximately one square meter quadrat from each field. Then he harvested the crop and measured the potato yield in each field. The data is as follows.

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Field	Area of the quadrat (m ²)	Total leaf area in the quadrat (m ²)	Potato yield (kg/ha)
P	1.2	2.88	12 500
Q	1.8	11.52	17 250
R	1.3	5.85	32 750

- (i) Calculate the Leaf Area Index (LAI) in each field.

(1) Field P

.....

.....

.....

.....

(2) Field Q

.....

.....

.....

.....

(3) Field R

.....

.....

.....

.....

- (ii) State the reason why field 'R' has given the highest yield.

.....

.....

.....

- (F) According to the Medical Research Institute, about 18% of the population in Sri Lanka suffers from goitre condition.

(i) What is the main cause of goitre condition?

.....

.....

.....

(ii) Name **two** food items that could prevent formation of goitre.

(1)

(2)

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(G) Selection is considered as the oldest plant breeding method.

State **two** main differences between pure line selection and mass selection.

(i)

(ii)

3. (A) Average values for growth and Feed Conversion Ratio (FCR) in broiler production are given below.

Age of birds (Days)	Weight of birds (g)	FCR
0 - 21	900 g	1.42
21 - 43	2 300 g	1.85

(i) Calculate the broiler starter feed requirement per bird.

.....

(ii) Calculate the broiler finisher feed requirement per bird.

.....

(iii) If the feed wastage in the farm is 10%, calculate the total amount of broiler starter and broiler finisher feed required to be purchased for a farm having 100 birds.

(1) Amount of starter feed required (kg)

.....

(2) Amount of finisher feed required (kg)

.....

(B) Poultry management is one of the most common livestock management practices in Sri Lanka.

(i) List **two** main characteristics of a good litter in the deep litter poultry house.

(1)

(2)

(ii) State **two** main advantages of intensive poultry production.

(1)

(2)

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(C) Artificial Insemination (AI) is the process of collecting sperm cells from a male animal and manually depositing them into the reproductive tract of a female animal.

(i) State the importance of diluting the collected semen before insemination.

.....

(ii) Name a media used to dilute the semen.

.....

(iii) What is the technique used in artificial insemination of cows?

.....

(D) Crossbreeding is used to improve the livestock productivity. State one recommended cattle breed to be used in crossbreeding with local cattle for each of the following agro-climatic zones.

Agro-climatic zone

Recommended cattle breed for crossbreeding

(i) Dry zone

.....

(ii) Up country

.....

(iii) Low country wet zone

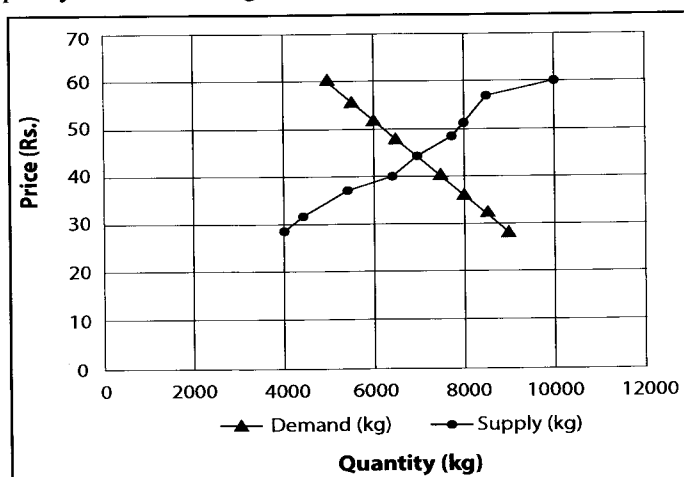
.....

(E) The structures which facilitate propagation of plants are called propagation structures. State **two** instances of using temporary propagation structures in crop production.

(i)

(ii)

(F) The following diagram describes the demand and supply of paddy with respect to the price of the paddy. Use this diagram to answer questions from (i) to (iv).



(i) What is the equilibrium price and the quantity in perfect competitive market condition?

(1) Equilibrium price

(2) Equilibrium quantity

(ii) If the government imposes a guaranteed price of 50 rupees per kg of paddy, what will be the demand and supply?

(1) Demand

(2) Supply

(iii) What should be the role of the government under the condition given in (ii) above?

.....

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- (iv) If the government decides to execute the fertilizer subsidy scheme for rice cultivation, how will it affect the demand and supply curves?

- (1) Effect on demand curve
- (2) Effect on supply curve

- (G) Various chains operate to deliver the agricultural products from the producer to the consumer.

- (i) State the main difference between supply chain and value chain.

.....

.....

- (ii) State **two** main advantages of value chain.

- (1)
- (2)

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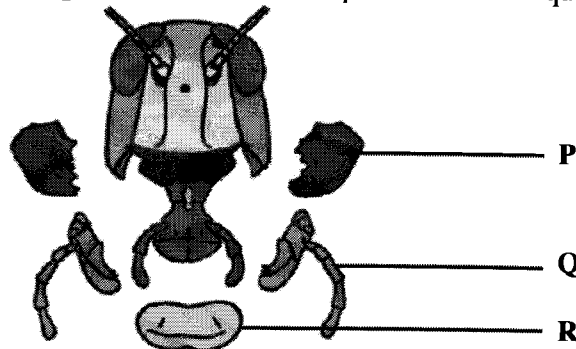
4. (A) Urban farming is becoming popular mainly due to scarcity of arable lands.

State **two** main advantages of the use of solid soilless farming techniques in urban agriculture.

- (i)
- (ii)

- (B) Insects have a range of mouth parts, adapted to particular modes of feeding.

Use the following typical diagram of insect mouth parts to answer questions (i) to (iii).



Name the mouth parts labelled as **P**, **Q** and **R** in the above diagram and state the main function of each mouth part.

	Name of the mouth part	main function
(i)	P	
(ii)	Q	
(iii)	R	

- (C) Alien invasive weeds are plants **non-native** to an ecosystem, which compete with crops causing economic damages.

- (i) State **two** main adaptations of alien invasive weeds for the survival in **non-native** environments.

- (1)
- (2)

- (ii) Name a common alien invasive weed found in Sri Lanka.

.....

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column

(D) Disease triangle is an important conceptual model used in plant pathology.

(i) List **three** components of disease triangle.

(1)

(2)

(3)

(ii) State a main use of disease triangle in epidemiology.

.....

(E) Generally, it is believed that eating fruits reduces the risk of chronic diseases.

(i) List **two** major types of fruits categorized based on their ripening pattern.

(1)

(2)

(ii) List **two** fruits having **non-starch** reserves.

(1)

(2)

(F) Mono cropping and multiple cropping are two common cropping systems.

(i) State **two** main disadvantages of mono cropping system.

(1)

(2)

(ii) State **one** main advantage of multiple cropping system.

.....

(iii) State **two** types of multiple cropping system.

(1)

(2)

(G) Those who work in agricultural farms without wearing protective gears may face many difficulties and disease conditions.

(i) Name a common zoonotic disease that could be infected to farmers working in paddy fields in Sri Lanka.

.....

(ii) State an effect of continuous inhaling of flour dusts by a person who is packing rice flour.

.....

(H) Climate change can disrupt food availability, reduce access to food and affect food quality. State **two** methods to minimize the impact of climate change on agricultural productivity.

(i)

(ii)

* *

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NEW

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 கல்விப் பொதுத் தராதரப் பத்திர (உயர் தரப் பரீட்சை, 2020
 General Certificate of Education (Adv. Level) Examination, 2020

காதி வித்யா	II
விவசாய விஞ்ஞானம்	II
Agricultural Science	II

08 E II

Part B - Essay

Instructions:

- * Answer **four** questions only.
 - * Give clearly labelled diagrams where necessary.
- (Each question carries **150** marks.)

5. (i) Describe the different sub systems of conservation farming.
(ii) Describe the positive and negative effects of plantation sector on Sri Lankan agriculture.
(iii) Describe the **non**-nutrient components found in foods which are important in human nutrition.
6. (i) Describe the contribution of inter-tropical convergence zone for the onset of monsoon rains in Sri Lanka.
(ii) Explain the effect of external factors on plant respiration.
(iii) Describe the measures to be taken to minimize the postharvest losses of perishable foods during transporting, storing and marketing.
7. (i) Explain the standard specifications to be maintained in certified seeds in Sri Lanka.
(ii) Describe different types of cattle sheds with their main advantages and disadvantages.
(iii) Describe the methods used to enhance the groundwater recharge in agricultural lands.
8. (i) Describe the effects of major soil constituents on crop cultivation.
(ii) Describe the issues faced by farmers in cultivating crops in protected structures with ways to mitigate such issues.
(iii) Describe the suitable external and internal characters of an egg selected for incubation.
9. (i) Describe the factors affecting pest population density.
(ii) Describe the 4R concept in fertilizer application to crop fields.
(iii) Marketing plan is an integral part of any business plan. Describe the main components of a marketing plan with their significance.

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10. (i) Describe the methods of controlling non-insect pests in agricultural fields.
- (ii) Explain the **two** major crop establishment techniques with their importance.
- (iii) Complete the following table. Draw marginal cost, average total cost, average variable cost, and average fixed cost curves on the graph paper provided and label them.

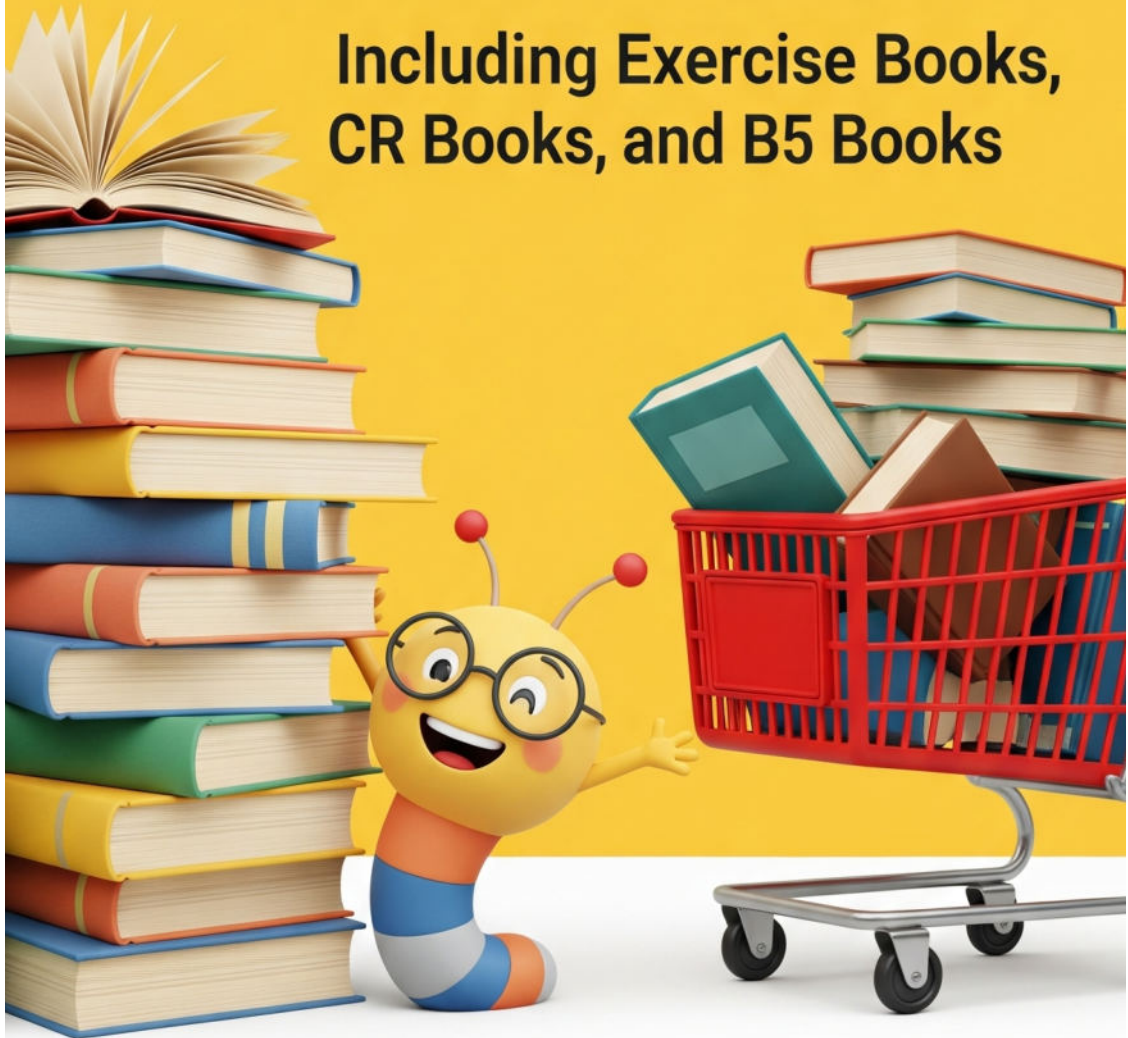
Product units	Total fixed cost	Total variable cost	Average fixed cost	Average variable cost	Total cost	Average total cost	Marginal cost
1	20	10					
2	20	20					
3	20	25					
4	20	28					
5	20	30					
6	20	52					
7	20	85					
8	20	120					
9	20	230					
10	20	410					



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