

AL/2016/18/E-I

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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
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අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2016 අගෝස්තු
 கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2016 ஓகஸ்ட்
 General Certificate of Education (Adv. Level) Examination, August 2016

කෘෂි තාක්ෂණවේදය I
 விவசாயத் தொழினுட்பவியல் I
 Agro Technology I

18 E I

පැය දෙකයි
 இரண்டு மணித்தியாலம்
 Two hours

Instructions:

- * Answer **all** 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 application of soft technology in food production is
 - (1) selecting a suitable site for growing paddy.
 - (2) interior design of an office.
 - (3) selecting proper materials for a part of a machine.
 - (4) calculating the total power consumption of a factory.
 - (5) developing technologies for waste management.
2. A student recorded the average paddy yield (MT/ha) of 6 farmers from a village in Kurunegala district, as given below.

4.6, 5.3, 6.6, 4.5, 4.3, 5.3

 The mean and the range of the above data are (MT/ha)
 - (1) 6.3 and 6.6 - 4.3, respectively.
 - (2) 3.6 and 4.3 - 5.3, respectively.
 - (3) 6.6 and 4.3 - 6.6, respectively.
 - (4) 5.1 and 4.3 - 6.6, respectively.
 - (5) 5.1 and 6.6 - 4.3, respectively.
3. Blood sugar level of a person can be rapidly increased by consuming a food containing,
 - (1) high amount of resistant starch.
 - (2) high amount of dietary fibre.
 - (3) low amount of vitamins.
 - (4) moderate amount of minerals.
 - (5) high amount of non-resistant starch.
4. The major disease that could occur due to vitamin A deficiency is
 - (1) Xerophthalmia.
 - (2) Goitre.
 - (3) Scurvy.
 - (4) Beri-beri.
 - (5) Anaemia.
5. Which of the following can be considered as a quantitative loss of food due to spoilage?
 - (1) Formation of off-colour
 - (2) Formation of off-flavour
 - (3) Change in texture
 - (4) Change in nutrients
 - (5) Formation of undesirable taste
6. A sample of coconut oil was prepared through a hygienic process and securely packed and sealed in a clear glass container. The sample got rancid within a short period of time. The most probable causal factor for this change would be,
 - (1) light.
 - (2) temperature.
 - (3) enzymes.
 - (4) humidity.
 - (5) heavy metals.
7. Food security of a country could be achieved directly through,
 - (1) encouraging food export.
 - (2) encouraging food import.
 - (3) improving the purchasing power of the consumer.
 - (4) maintaining an open-economy.
 - (5) maintaining a close-economy.
8. The number of climate zones, agro-climate zones and agro-ecological regions in Sri Lanka are
 - (1) 3, 5 and 7, respectively.
 - (2) 3, 7 and 24, respectively.
 - (3) 1, 5 and 46, respectively.
 - (4) 3, 5 and 24, respectively.
 - (5) 3, 7 and 46, respectively.

[see page two]

9. The Yala season in Sri Lanka is best described as the period with rainfall from
 (1) first inter-monsoon only. (2) southwest monsoon only.
 (3) northeast monsoon only. (4) first inter-monsoon and southwest monsoon.
 (5) first inter-monsoon and northeast monsoon.
10. Parthenogenesis is best explained as
 (1) the growth of embryo without fertilisation.
 (2) an asexual reproduction technique found in bacteria.
 (3) the formation of fruits without seeds.
 (4) the formation of flowers without ovule.
 (5) formation of genetically different offspring.
11. The growth hormone/s responsible for apical dominance is
 (1) Auxin. (2) Gibberellin.
 (3) Cytokinin. (4) Auxin and Gibberellin.
 (5) Gibberellin and Cytokinin.
12. Rooting in stem cuttings is stimulated by the use of
 (1) Abscisic acid. (2) Indole Acetic Acid. (3) Jasmonic Acid.
 (4) Ethylene. (5) Ribonucleic acid.
13. The edible part of barley (*Hordeum vulgare*) is
 (1) flowers. (2) seeds. (3) leaves. (4) roots. (5) bark.
14. Several selected plant parts of Adathoda (*Justicia adhatoda*) are listed below.
 A - Roots B - Flowers
 C - Stem D - Fruits
 Of the above, the parts used for medicinal purposes are
 (1) A, B and C only. (2) A, B and D only.
 (3) A, C and D only. (4) B, C and D only.
 (5) All A, B, C and D.
15. Consider the following diseases/disease symptoms.
 A - Swelling B - Cough
 C - Skin diseases D - Heart diseases
 E - Urinary infections
 Of the above, Polpala (*Aerva lanata*) could be used to treat
 (1) A, B and C only. (2) A, B and D only.
 (3) A, B and E only. (4) C, D and E only.
 (5) B, C and D only.
16. Following are statements related to sea grass.
 A - Found abundantly in deep and dark sea areas with less wave action.
 B - Dugongs and turtles depend on sea grass.
 C - Abundant in northwestern sea belt of Sri Lanka.
 Of the above, the correct statement/s is/are
 (1) A only. (2) B only. (3) C only.
 (4) A and C only. (5) B and C only.
17. The most possible reason for high post-harvest losses of vegetables in Sri Lanka is,
 (1) having many types of vegetables.
 (2) long distance transport.
 (3) temperature variations during day and night.
 (4) improper handling.
 (5) high temperature.
18. The most suitable method to control weeds in a paddy field is,
 (1) primary land preparation.
 (2) the use of light traps.
 (3) use of less amount of chemical fertilizer.
 (4) use of organic fertilizer.
 (5) cultivation at correct time in the season.

19. An activity with an involvement of biotechnology is
- (1) dried fish production.
 - (2) production of ice cream.
 - (3) production of yoghurt.
 - (4) production of salted lime.
 - (5) canning of fruits.
20. A statement with reference to a business is given below.
 "An entrepreneur who produces bio-fertilizer is involved in marketing it and educating farmers on how to use it. He also supplies credit facilities to farmers."
 The above is a
- (1) production-oriented business.
 - (2) service-oriented business.
 - (3) marketing-oriented business.
 - (4) agro technology-oriented business.
 - (5) production and service-oriented business.
21. Factors that should be considered in selecting a good business opportunity are
- (1) capital investment and social issues.
 - (2) the technology that is going to be used and the availability of electricity.
 - (3) availability of infrastructure facilities and labour.
 - (4) market potential and capital investment.
 - (5) environmental impact and expected profit.
22. The most relevant financial information needed to make decisions on a business is
- (1) the demand and supply.
 - (2) the capital investment and recurrent expenditure.
 - (3) the balance sheet and the cash flow.
 - (4) changes in the profit during the recent past.
 - (5) cost of production and annual income.
23. Characteristics of a person that could be a good entrepreneur,
- (1) is flexible and depend on the others.
 - (2) is flexible but independent.
 - (3) has self-confidence but not devoted to work.
 - (4) make rigid decisions and works independently.
 - (5) should have sufficient cash in hand and be ready to take risks.
24. Application of pesticides at recommended dosages assures
- (1) killing of all insects.
 - (2) killing of all weeds.
 - (3) eradication of pests throughout the growing season.
 - (4) no pests during the growing season.
 - (5) managing pest populations for a specific period.
25. The main difference of the Sri Lankan type biogas digester compared to the Indian type biogas digester is
- (1) the Sri Lankan type is designed to produce biogas from straw.
 - (2) the inlet and the outlet of the Sri Lankan type digester is located at the same height.
 - (3) the digestate of the Sri Lankan type digester should be removed periodically.
 - (4) the methane concentration of the Sri Lankan type digester is higher.
 - (5) in the Sri Lankan type, digestion and the gas storage are done in the same chamber.
26. One of the presently used traditional technologies for insect pest control in paddy cultivation is
- (1) application of chemical insecticides.
 - (2) mulching.
 - (3) manual removal of insects.
 - (4) erecting poles for birds in the field.
 - (5) rearing fish in the flooded paddy field.
27. Mould board plough is used for,
- (1) intercultivation.
 - (2) secondary land preparation in lowlands.
 - (3) making plant beds.
 - (4) digging ditches.
 - (5) primary land preparation in uplands farming.

[see page four

28. Seed metering device of a seeder is to
 (1) maintain the row spacing. (2) close the furrow.
 (3) guide the seeds to the furrow. (4) control the spacing in a row.
 (5) rotate the wheels.
29. The crop that is most suitable to prevent soil erosion is,
 (1) pigeon pea. (2) maize. (3) cowpea.
 (4) mung bean. (5) sorghum.
30. Soil conservation can be best achieved by having
 (1) wind breaks. (2) use of micro-irrigation methods.
 (3) restricted human activity. (4) good plant canopy.
 (5) livestock in the farming system.
31. An irrigation method suitable for a sandy soil is
 (1) flood irrigation. (2) basin irrigation.
 (3) use of perforated underground tubes. (4) sprinkler irrigation.
 (5) pitcher irrigation.
32. How long would it take to empty a water tank of 12 m³ capacity by using a water pump, which delivers water at a rate of 100 liters/minute?
 (1) 30 minutes (2) 1 hour (3) 2 hours (4) 12 hours (5) 24 hours
33. An example for a subsurface irrigation method is
 (1) basin irrigation. (2) ring irrigation. (3) deep open ditch.
 (4) furrow irrigation. (5) drip irrigation.
34. Fertility of a paddy field can be improved by
 (1) salt. (2) blue green algae.
 (3) gypsum. (4) Rhizobium bacteria.
 (5) rice plants.
35. Fall of immature leaves of a plant could be due to the deficiency of
 (1) sulphur. (2) zinc.
 (3) phosphorus. (4) sodium.
 (5) potassium.
36. Select the correct statement in relation to tissue culture.
 (1) Micro-propagation is a sub division of tissue culture.
 (2) Transferring of plantlets cannot be done without a laminar flow cabinet.
 (3) Fruits cannot be used to initiate callus.
 (4) Albert solution cannot be used to prepare a culture media.
 (5) Totally virus free plants cannot always be produced by tissue culture techniques.
37. Following are some components of a garden
 A - Water
 B - Stones/pebbles/rocks
 C - Bonsai
 D - Large number of trees
 E - Sand
 Of the above, a Japanese garden is mostly consisted of
 (1) A, B, C, and D only. (2) A, B, C and E only.
 (3) A, B, D and E only. (4) A, C, D and E only.
 (5) B, C, D and E only.
38. Following are some types of garden arrangements.
 A - Pot groups
 B - Miniature garden
 C - Fish tank garden
 D - Hanging basket
 E - Rock gardens
 Of the above, indoor garden arrangements are
 (1) A, B, C, and D only. (2) A, B, C and E only.
 (3) A, B, D and E only. (4) A, C, D and E only.
 (5) B, C, D and E only.

[see page five]

- Questions 39 and 40 are based on characteristics of weeds given below.

- A - Fibrous root system
- B - Tap root system
- C - Parallel leaf venation
- D - Ring-like arrangement of vascular bundles
- E - Only one cotyledon in seeds

39. Characteristics of a grass weed are

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

40. Characteristics of a broadleaf weed are

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

- Questions 41 and 42 are based on characteristics of a pest given below.

- A - Antennae
- B - Eight eyes
- C - Two compound eyes
- D - Eight legs
- E - Six legs

41. Characteristics of an insect pest are best represented by

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

42. Characteristics of a spider are best represented by

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

43. Solar propagator is used for

- (1) warming.
- (2) reducing the relative humidity.
- (3) accelerating rooting of stems.
- (4) cooling plants.
- (5) germinating seed paddy.

44. The main advantage of protected culture is that

- (1) the environment can be controlled to protect crops.
- (2) it uses low amount of agrochemicals.
- (3) it uses only organic fertilizers.
- (4) the chemical insect control methods are not necessary.
- (5) the crops are totally isolated from the environment.

45. Consider the following statements.

- A - The major export market of floriculture products of Sri Lanka is Netherlands.
- B - High cost of labour is a major problem in floriculture production in Sri Lanka.
- C - Sri Lankan government has banned importation of floriculture products to Sri Lanka.
- D - Lack of high quality planting materials is a major problem to improve the floriculture industry in Sri Lanka.

Of the above, the correct statements are

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

46. Few statements on animal feeds and nutrients are given below.
- A - Roughage feeds can be utilized only by ruminant animals.
 - B - Feed additives are essential for animals.
 - C - Carbohydrates, proteins and lipids are energy supplying nutrients.
 - D - CO-3 grass is suitable for cut and feeding systems.
- Of the above, the correct statements are
- (1) A and B only.
 - (2) A and C only.
 - (3) B and C only.
 - (4) B and D only.
 - (5) C and D only.
47. According to the standard recommendations, the dietary protein requirements for broiler starters and laying hens are
- (1) 18% and 12%, respectively.
 - (2) 20% and 14%, respectively.
 - (3) 22% and 16%, respectively.
 - (4) 24% and 18%, respectively.
 - (5) 26% and 20%, respectively.
48. The most critical factor affecting the hatchability of chicken eggs is the
- (1) temperature inside the incubator.
 - (2) relative humidity inside the incubator.
 - (3) ventilation inside the incubator.
 - (4) fertility of eggs.
 - (5) turning of eggs.
49. The length of the estrus cycle of a dairy cow is
- (1) 14 days.
 - (2) 21 days.
 - (3) 28 days.
 - (4) 35 days.
 - (5) 280 days.
50. Spray-dried milk powder is produced
- (1) for the convenience of the consumer.
 - (2) to preserve milk.
 - (3) to reduce the bulkiness of milk.
 - (4) to improve the nutritive value of milk.
 - (5) to avoid deleterious effects of fresh milk.



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கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2016 ஆகஸ்ட்
General Certificate of Education (Adv. Level) Examination, August 2016

කෘෂි තාක්ෂණවේදය II
விவசாயத் தொழினுட்பவியல் II
Agro Technology II

18 E II

පැය තුනයි
மூன்று மணித்தியாலம்
Three hours

Index No. :

Instructions:

- * This question paper consists of 10 questions in 07 pages.
- * This question paper comprises of Parts A, B and C.
The time allotted for all three parts is three hours.

Part A - Structured Essay (2 - 6 pages)

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

Part B and C - Essay : (page No. 7)

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

For Examiner's Use only

Part	Question No.	Marks
A	1	
	2	
	3	
	4	
B	5	
	6	
	7	
C	8	
	9	
	10	
Total		
Percentage		

Final Marks

In Numbers	
In Letters	

Code Numbers

Marking Examiner 1.	
Marking Examiner 2.	
Marks Checked by	
Supervised by	

[see page two

Part A - Structured Essay
Answer all questions on this paper itself.
(Each question carries 10 marks.)

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1. (A) State **two** examples of application of the knowledge of soft technology in environment conservation.

- (1)
- (2)

(B) List **two** ways of obtaining market information for business management.

- (1)
- (2)

(C) (i) State **two** major functions of lipids in the body.

- (1)
- (2)

(ii) State **two** major functions of minerals in the body.

- (1)
- (2)

(D) Hygienic practice is one of the most important activities in food manufacturing process. State **four** ways of contamination of food.

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

(E) State **two** activities of community-based food security.

- (1)
- (2)

(F) Mention the time periods for the following rainfall seasons in Sri Lanka.

	Month	Month
(1) First inter-monsoon	From	To
(2) Southwest monsoon	From	To
(3) Second inter-monsoon	From	To
(4) Northeast monsoon	From	To

(G) (i) Name the grafting technique given in this figure.

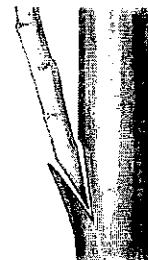
.....

(ii) Name a crop that is used for the grafting technique stated in (G)(i) above.

.....

(iii) Compared to vegetative propagation, state the main advantage of sexual propagation of plants.

.....



[see page three

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(H) State **two** advantages and **two** disadvantages of vegetative propagation with respect to the survival of a species.

(i) Advantages

(1)

(2)

(ii) Disadvantages

(1)

(2)

2. (A) List **three** medicinal uses of wood apple.

(1)

(2)

(3)

(B) Name **two** government institutes that deal with aquatic resources of Sri Lanka.

(1)

(2)

(C) State **two** possible methods of reducing post-harvest losses of fruits in Sri Lanka.

(1)

(2)

(D) State **two** methods/structures of storing grains for minimizing post-harvest losses of grains.

(1)

(2)

(E) State **two** traditional and **two** modern bio-technological applications.

Traditional applications

Modern applications

(1) (1)

(2) (2)

(F) Mention whether the following technologies are labour intensive or capital intensive.

(i) Plucking of tea leaves in a tea estate:

(ii) Drying of fermented tea leaves in a tea factory:

(iii) Traditional way of producing curd:

(G) A farmer established a dairy farm with 10 milking cows by investing Rs.5 millions. He spends Rs.1500.00 for feeding and another Rs.500.00 for other supplies daily. The average daily milk production in the farm is 70 litres and the farm gate price of milk is Rs.55.00 per litre. Answer the following questions using these information.

(i) Daily recurrent expenditure of the farm = Rs.

(ii) Daily total income of the farm = Rs.

(iii) Daily gross profit of the business = Rs.

[see page four

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(H) List the **two** major financial components required to prepare a balance sheet of a business.

- (1)
- (2)

(I) Name **two** types of nozzles that are recommended to be used when applying herbicides with a knapsack sprayer.

- (1)
- (2)

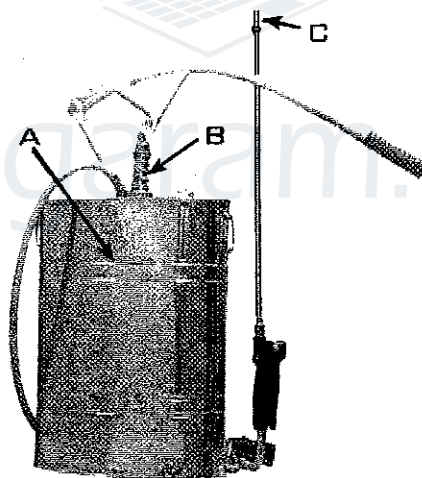
(J) Reuse is one component of the 3R concept in waste management. State **two** instances where the reuse of waste is applied.

- (1)
- (2)

3. (A) State the traditional method of accomplishing each of the agricultural operations listed below.

Operation	Traditional Method
(i) Land preparation
(ii) Supply of plant nutrients
(iii) Weeding
(iv) Grain storage

(B) Following is a diagram of a knapsack sprayer.



(i) Name **three** safety measures that should be taken when using the above machine.

- (1)
- (2)
- (3)

(ii) Name the parts A to C of the above machine and state their main function.

Part	Main function
(1) A :
(2) B :
(3) C :

[see page five

Do not write in this column

(iii) List **four** objectives of adding organic matter to soil.

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

(C) Name **three** surface irrigation methods used in upland farming and state an advantage of each method.

Surface irrigation method	Advantage
(1)
(2)
(3)

(D) List **three** methods used to conserve irrigation water.

- (1)
- (2)
- (3)

(E) State **two** physiological functions of Nitrogen in plants.

- (1)
- (2)

(F) (i) State **two** deficiency symptoms of phosphorous in plants.

- (1)
- (2)

(ii) State **two** activities in cleaning and sterilizing unit of a tissue culture laboratory.

- (1)
- (2)

(G) State **four** hard landscape materials.

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

(H) List **three** factors in the disease triangle that must be present for a disease infection to occur.

- (1)
- (2)
- (3)



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4. (A) List **three** characteristics of weeds that would affect competitiveness against crops.

- (1)
- (2)
- (3)

(B) State **two** advantages of adopting integrated pest management techniques when compared to chemical control of pests.

- (1)
- (2)

(C) Name **two** factors that should be monitored frequently in the liquid media of a hydroponic system.

- (1)
- (2)

(D) Name **four** major cut flower types exported from Sri Lanka.

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

(E) State **two** characteristics of high quality grass silage.

- (1)
- (2)

(F) State **two** advantages of fish meal as a protein source in an animal feed, when compared to soyabean meal.

- (1)
- (2)

(G) State **two** internal and **two** external qualities of eggs selected for incubation.

Internal qualities

External qualities

- | | |
|-----------|-----------|
| (1) | (1) |
| (2) | (2) |

(H) State **two** advantages of estrus synchronization.

- (1)
- (2)

(I) Name **two** methods of milk preservation that use high temperature.

- (1)
- (2)

**



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[see page seven

සියලු ම හිමිකම් ඇවිරිණි / முழுப் பதிப்புரிமையுடையது / All Rights Reserved

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 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

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2016 අගෝස්තු
 கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2016 ஆகஸ்ட்
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 Agro Technology II

18 E II

Essay

* Select two questions from each of the Parts B and C and answer four questions only.
 (Each question carries 15 marks.)

Part B

5. (i) Describe the possibility of improving livelihood of Sri Lankans through proper application of knowledge on soft technology.
 (ii) Describe the impact of bad food habits on non-communicable diseases.
 (iii) Explain the impact of agrochemicals on food spoilage.
6. (i) Describe the methods that can be used to maintain food security at domestic level.
 (ii) State the adaptation measures used in agriculture to minimize impacts of climate changes.
 (iii) Describe the challenges faces by mangrove ecosystems for their sustainable existences.
7. (i) Describe different bio-technological applications used in agriculture.
 (ii) State the risks of inappropriate use of agrochemicals.
 (iii) Describe the harmful impacts of agricultural waste on the environment.

Part C

8. (i) Describe the limitations in mechanization of the agricultural sector in Sri Lanka.
 (ii) Describe the use of new technologies and their advantages in protected culture.
 (iii) Using appropriate diagrams, describe the operating principle of a piston pump.
9. (i) Explain the methods that can be used to control soil erosion in vegetable cultivation in the up country regions of Sri Lanka.
 (ii) Explain the advantages and disadvantages of artificial insemination of cows when compared to natural insemination.
 (iii) Describe the establishment of a soil-less culture, using appropriate crop as an example.
10. (i) Describe the main steps involved in producing grass silage.
 (ii) Explain how integrated weed management methods can be implemented in lowland paddy fields in Sri Lanka.
 (iii) Describe the various methods used to preserve meat.



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