

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2019 අගෝස්තු
கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2019 ஓகஸ்ட்
General Certificate of Education (Adv. Level) Examination, August 2019

කෘෂි විද්‍යාව I
விவசாய விஞ்ஞானம் I
Agricultural Science I

08 E I

08.08.2019 / 1300 - 1500

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 them 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. Sunshine recorder is mainly used to measure

- (1) day length. (2) light quality.
(3) light intensity. (4) light spectrum.
(5) sunshine duration.

2. In plants, the process which increases in the **absence** of light is

- (1) ascent of sap. (2) absorption of water.
(3) absorption of CO₂. (4) absorption of minerals.
(5) elongation of internodes.

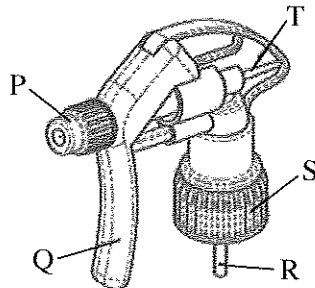
3. The rate of photosynthesis in plants is higher

- (1) in red light. (2) in green light.
(3) in continuous light. (4) when the light intensity is high.
(5) when the ambient temperature is high.

4. Use of methyl eugenol in pheromone traps in mango orchard is recommended to control

- (1) Fruit fly. (2) Mealy bug. (3) Leaf miner.
(4) Stem borer. (5) Leaf hopper.

- The following diagram shows a trigger head of a hand sprayer. Use this diagram to answer question No. 5.



5. In order to change the spray from a jet to a fine mist, the component needs to be adjusted in the above sprayer head, is

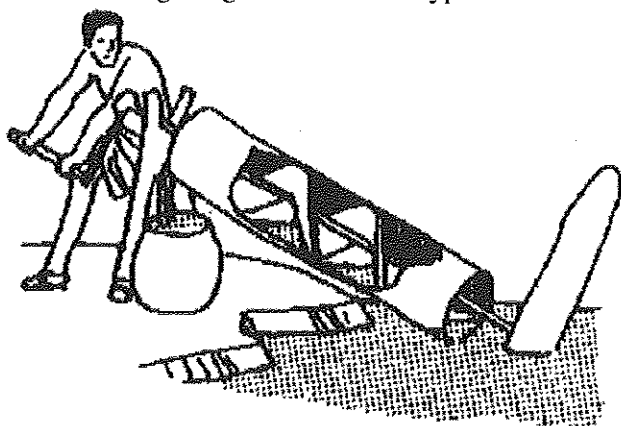
- (1) P (2) Q (3) R (4) S (5) T

6. The hormone responsible for milk let down in a cow is

- (1) Oxytocin. (2) Prolactin. (3) Estrogen.
(4) Progesterone. (5) Gonadotropin.

7. In the post-independent Sri Lanka, the rice production has increased substantially mainly because,
- A - more irrigable lands were brought into cultivation.
 B - land productivity was increased with the introduction of new technology and high external input use.
 C - there had been good weather conditions for rice cultivation since independence.
- Of above, correct statement/s would be
- (1) A only. (2) B only. (3) C only.
 (4) A and B only. (5) B and C only.
- Use the following statement to answer question No. 8.
- “When the velocity of river water increases, rocks located on the river bed lift up and bump into other rocks making tiny pieces of the rocks.”
8. The process described in the above statement can best be explained as
- (1) solution of rocks. (2) hydration of rocks.
 (3) formation of rocks. (4) physical weathering of rocks.
 (5) chemical weathering of rocks.
9. With the destruction of the soil structure,
- (1) porosity and bulk density increase.
 (2) porosity and bulk density decrease.
 (3) particle density and bulk density decrease.
 (4) porosity increases while bulk density decreases.
 (5) bulk density increases while porosity decreases.
10. The optimum range of soil pH for most of crop plants to uptake nutrients is
- (1) 3.5 – 4.5 (2) 4.5 – 5.5 (3) 5.5 – 6.5
 (4) 6.5 – 7.5 (5) 7.5 – 8.5
11. During the composting process, the C/N ratio of organic materials tends to
- (1) decrease. (2) remain constant.
 (3) increase continuously. (4) first decrease and then increase.
 (5) first increase and then remain constant.
12. A farmer wants to cultivate maize in his sloping land. His intention is to have a good crop establishment through direct seeding while maintaining a minimum soil erosion. The best tillage method for his land would be
- (1) zero tillage. (2) primary tillage. (3) minimum tillage.
 (4) secondary tillage. (5) conventional tillage.
13. The following are several statements regarding crop establishment.
- A - Keeping an equal depth while planting seeds, leads to a uniformly matured crop.
 B - Requirement of low seed quantity is an advantage of direct seeding.
 C - Labour requirement for weeding can be reduced by planting in rows.
- Of above, the correct statement/s would be
- (1) A only. (2) B only. (3) C only.
 (4) A and C only. (5) B and C only.
14. Artesian well is a
- (1) natural and ground water source.
 (2) natural and surface water source.
 (3) artificial and ground water source.
 (4) artificial and surface water source.
 (5) natural and geo-thermal water source.

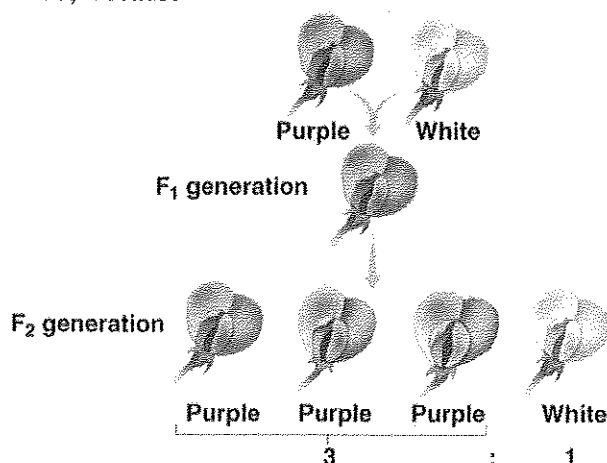
- Use the following diagram of screw type water lifting device to answer question No. 15.



15. The force uses in lifting the water in the above device is
 (1) Tension force. (2) Frictional force. (3) Centrifugal force.
 (4) Compression force. (5) Gravitational force.
16. An advantage of epigeal germination of seeds is that it provides opportunity
 (1) to grow taller. (2) for early flowering.
 (3) for early photosynthesis. (4) to protect from early grazing.
 (5) to protect from soilborne diseases.
17. A student found a light blue label containing the following information.
- | | | | |
|-----------------------------|---------|--------------------------------------|-----------------|
| Germination percentage | > 85% | Other seeds | < 100/500 g |
| Weed seeds | 5/500 g | Moisture | < 13% (maximum) |
| Colour / odour / appearance | good | Broken and mechanically damaged seed | 100/500 g |
| Tetrazolium test | 95% | Other colluvials | 2% |
- This label is used for
 (1) F_1 seeds. (2) Certified seeds. (3) Breeders' seeds.
 (4) Registered seeds. (5) Foundation seeds.
18. A commercial floriculture farmer wants to produce a large stock of disease-free, true to type plants from a sexually sterile hybrid flower plant. The most suitable propagation technique for this would be
 (1) micro propagation. (2) clonal propagation.
 (3) propagation by F_1 seeds. (4) induction of apomictic seeds.
 (5) propagation by embryo culture.

- Use the following diagram to answer question No. 19.

19. Assuming that both parent plants in the above diagram are homozygous, the reason why all of the F_1 generation have purple phenotypes would be, because
 (1) purple is dominant over white.
 (2) the F_1 genotypes are homozygous.
 (3) both parents passed on purple alleles.
 (4) expression of white colour is inhibited by purple.
 (5) intra-allelic interaction between purple and white.



[See page four

20. The main purpose of using UV resistant polyethylene in polytunnels is to
- (1) prevent entering UV light to the polytunnel.
 - (2) control the light intensity inside the polytunnel.
 - (3) enhance the greenhouse effect inside the polytunnel.
 - (4) extend the lifespan of polyethylene by reducing the photodegradation.
 - (5) reduce the temperature inside the polytunnel by blocking the entering of shortwaves.
21. A person having a small urban home garden, wants to cultivate his leafy vegetables in an environment free from weeds and soil borne pests and diseases. The most suitable method to cultivate his leafy vegetables would be
- (1) Aeroponics.
 - (2) Hydroponics.
 - (3) Hanging pots.
 - (4) Cultivation bags.
 - (5) Vertical gardening.
22. The conditions needed to develop a plant disease are
- (1) susceptible host plant, secondary host plant and pathogen.
 - (2) virulent strain of the pathogen, disease carrier and susceptible host plant.
 - (3) susceptible host plant, pathogen and environment favorable to disease development.
 - (4) susceptible host plant, disease carrier and environment favorable to disease development.
 - (5) disease carrier, virulent strain of the pathogen and environment favorable to disease development.
23. 2 - 4 Dichlorophenoxy acetic acid (2 - 4D) can be classified as
- (1) contact and selective weedicide applying to foliage.
 - (2) long residual and selective weedicide applying to soil.
 - (3) translocated and selective weedicide applying to foliage.
 - (4) short residual and non-selective weedicide applying to soil.
 - (5) translocated and non-selective weedicide applying to foliage.
24. Integrated Pest Management (IPM) aims at
- (1) increasing natural enemies of the pest.
 - (2) improving the host resistance against the pest.
 - (3) preventing the entering of the pest to the field.
 - (4) keeping pest populations below injurious levels.
 - (5) destroying the secondary hosts of the target pest.
25. During the preservation process of certain vegetables, blanching is done. The main purpose of blanching is to
- (1) preserve the colour.
 - (2) destroy the microorganisms.
 - (3) inactivate the enzymes.
 - (4) enhance the aroma.
 - (5) improve the texture.
26. The chemical factors generally use to measure the maturity of fruits are
- (1) acid content, specific gravity and texture.
 - (2) acid content, oil content and specific gravity.
 - (3) pH value, total soluble solids (TSS) and texture.
 - (4) pH value, total soluble solids (TSS) and oil content.
 - (5) total soluble solids (TSS), oil content and ascorbic acid content.
27. Fresh fruits that need to be ripen after purchasing, should be stored
- (1) in a refrigerator.
 - (2) at room temperature.
 - (3) in a dark, cold place.
 - (4) at freezing temperature.
 - (5) in an air-conditioned room.

28. Some responses of farm animals to high environmental temperature are listed below.

- A - Reduce activity and look for a shade during the mid-day
- B - Panting
- C - Drink more water and eat less feed
- D - Sweating

Of the above, the responses that could be seen in a flock of laying hens in a deep litter house would be

- (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.

29. A dairy farmer who is practicing natural mating using his own bull in the herd observed that the productivity of cows was reduced over the generations and there were increasing incidences of reproductive failures. The most possible reason for the above observations would be

- (1) aging of cows.
- (2) Brucellosis disease.
- (3) inbreeding depression.
- (4) the bull has become too old.
- (5) increase of heterozygosity in cows.

30. Among the following statements, the correct statement would be

- (1) Rice polish is a plant-based protein supplement.
- (2) Maize and soybean meal are plant-based energy supplements.
- (3) Roughage feeds contain high amounts of fiber and total carbohydrates.
- (4) The main difference between concentrate and roughage feeds is their protein content.
- (5) Animal based protein supplements are always better than plant based protein supplements as they contain high amount of energy along with high protein.

31. A farmer, who cultivate vegetables in his protected house, increases his production. The type of cost which necessarily declines would be

- (1) Marginal Cost.
- (2) Average Total Cost.
- (3) Average Fixed Cost.
- (4) Average Variable Cost.
- (5) Total Fixed Cost.

32. An environmental benefit of sustainable agriculture would be

- (1) ensure food safety.
- (2) conservation of soil and water.
- (3) ability to maintain economic profitability.
- (4) ensure the living standards of future generations.
- (5) use of more fossil fuel by lowering the use of electricity.

33. Giant Mimosa (*Mimosa pigra*) can be best explained as

- (1) an alien aquatic plant.
- (2) an alien invasive plant.
- (3) an endemic invasive plant.
- (4) an endemic medicinal plant.
- (5) an underutilized medicinal plant.

34. If the climate becomes warmer, sea levels will

- A - rise, because water expands when it gets warmer.
- B - rise, because of glaciers and ice sheets melting.
- C - fall, because hot water evaporates faster.

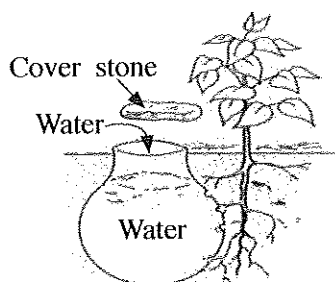
Of the above, the correct statement/s would be

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

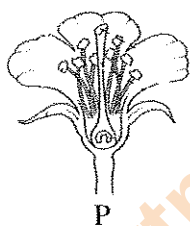
35. Ways of withdrawal of water from the earth are

- (1) distillation, run-off and evaporation.
- (2) run-off, condensation and infiltration.
- (3) evaporation, precipitation and run-off.
- (4) evaporation, transpiration and distillation.
- (5) infiltration, transpiration and condensation.

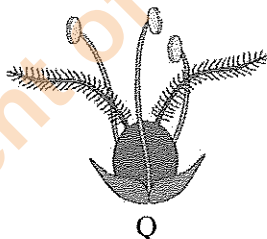
- An Agriculture Instructor advises a farmer in the dry zone, to use the irrigation technique shown in the following diagram to irrigate his newly established mango plants. Use this diagram to answer question No. 36.



36. The most suitable vessel to be used in this irrigation technique would be
- glazed old clay pot.
 - glazed new clay pot.
 - unglazed used clay pot.
 - unglazed new clay pot.
 - perforated aluminum pot.
37. The relative proportion of sand, silt and clay in a soil refers to its
- profile.
 - horizon.
 - structure.
 - texture.
 - fertility.
38. A student collected following data of a particular soil.
- | | | |
|--------------------------|---------------------------|--------------------------|
| K = 0.32 meq/100 g soil | Mg = 0.13 meq/100 g soil | Ca = 0.98 meq/100 g soil |
| Na = 0.02 meq/100 g soil | CEC = 5.00 meq/100 g soil | |
- The base saturation of the above soil should be
- 6.45 %
 - 7.25 %
 - 14.50 %
 - 29.00 %
 - 64.50 %
39. The three numbers on the fertilizer bag represent the ratio of
- Carbon, Hydrogen and Oxygen in the fertilizer mixture.
 - Calcium, Magnesium and Sulphur in the fertilizer mixture.
 - Manganese, Cobalt and Boron in the fertilizer mixture.
 - Iron, Zinc and Chlorine in the fertilizer mixture.
 - Nitrogen, Phosphorus and Potassium in the fertilizer mixture.
- Use the following diagram to answer question No. 40.



P



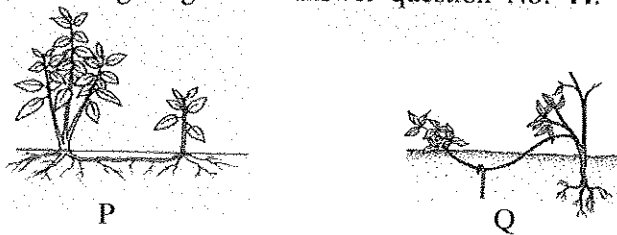
Q

40. Considering the floral structure, flowers P and Q would be pollinated by
- wind and water, respectively.
 - insects and wind, respectively.
 - wind and insects, respectively.
 - water and insects, respectively.
 - insects and water, respectively.
41. The following are some statements regarding malnutrition.
- Continuous consumption of high fiber food may create micronutrients deficiency.
 - Foods containing high fiber content have a high calorie value.
 - Fibers available in diet control the absorption of micronutrients.
- Of the above,
- A and B are correct.
 - B and C are correct.
 - A is correct and it is further explained by B.
 - A is correct and it is further explained by C.
 - B is correct and it is further explained by C.

42. For a high egg production, a layer bird should receive sufficient light during the day. The optimum day length required by a laying hen is
- (1) 10 hrs per day.
 - (2) 12 hrs per day.
 - (3) 16 hrs per day.
 - (4) 18 hrs per day.
 - (5) 20 hrs per day.

43. Chicken breeds classified under 'American Class' are
- (1) egg type heavy breeds.
 - (2) meat type heavy breeds.
 - (3) White egg laying light breeds.
 - (4) White egg laying dual purpose breeds.
 - (5) Brown egg laying dual purpose breeds.

• Use the following diagram to answer question No. 44.



44. The 'P' and 'Q' propagation methods can best be described as
- (1) propagation by roots and propagation by cuttings, respectively.
 - (2) propagation by runners and propagation by cuttings, respectively.
 - (3) artificial propagation and propagation by ground layering, respectively.
 - (4) propagation by rhizomes and natural vegetative propagation, respectively.
 - (5) natural vegetative propagation and artificial vegetative propagation, respectively.
45. Examples for bacterial diseases are
- (1) mastitis, foot & mouth and salmonellosis.
 - (2) raniket, coccidiosis and brucellosis.
 - (3) bird flue, milk fever and tick fever.
 - (4) hemorrhagic septicemia, brucellosis and mastitis.
 - (5) infectious bronchitis, gamboro and fowl cholera.
46. Following are statements regarding the three stages of a typical production function.
- A - In the first production stage, marginal product increases continuously.
- B - In the second production stage, both the Marginal Product and Average Product are declining.
- C - In the third production stage, the Marginal Product will be negative.
- 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.
47. Due to unexpected changes in some agricultural output, the respective price changes tend to be high. This could be due to
- (1) change in income of the buyers.
 - (2) change in preference of the buyers.
 - (3) elastic demand for agricultural products.
 - (4) inelastic demand for agricultural products.
 - (5) unitary elastic demand for agricultural products.
48. In a particular market for homogenous goods, there are large number of buyers and sellers. This market structure could be
- (1) a perfect competition.
 - (2) an oligopoly.
 - (3) a wholesale market.
 - (4) a monopoly.
 - (5) a monopolistic competition.

49. The impact of the recent outbreak of Fall Army Worm on maize in Sri Lanka resulted,
- (1) no change in the supply curve of the maize.
 - (2) the supply curve of the maize shifted to the left.
 - (3) the supply curve of the maize shifted to the right.
 - (4) the demand curve of the maize shifted to the left.
 - (5) the demand curve of the maize shifted to the right.
50. Following are some statements related to organic farming.
- A - It reduces human and animal health hazards by reducing the level of residues in the product.
 - B - It helps in keeping agricultural production at a maximum level and makes it highly profitable.
 - C - It ensures optimum utilization of natural resources for short-term benefit and helps in conserving them for future generation.
- Of the above, the correct statement/s would be
- (1) A only.
 - (2) B only.
 - (3) C only.
 - (4) A and C only.
 - (5) B and C only.

පැරණි නිර්දේශය/பழைய பாடத்திட்டம்/Old Syllabus

OLD இலங்கைப் பரீட்சைத் திணைக்களம், Sri Lanka Department of Examinations, Sri Lanka
 இலங்கைப் பரீட்சைத் திணைக்களம் இலங்கைப் பரீட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம்
 இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம்

අධ්‍යයන පොදු ඝනනික පත්‍ර (උසස් පෙළ) විභාගය, 2019 අගෝස්තු
 கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2019 ஓகஸ்ட்
 General Certificate of Education (Adv. Level) Examination, August 2019

කෘෂි විද්‍යාව II
 விவசாய விஞ்ஞானம் II
 Agricultural Science II

08 E II

10.08.2019 / 1300 - 1610

පැය තුනයි
 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 and decide on the questions that you give priority in answering.

Index No. :

Instructions:

- * This question paper consists of 10 questions in 12 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 - 11)

- * 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 12)

- * 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	

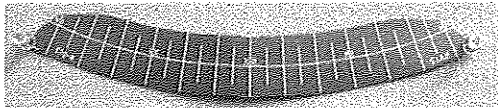
Part A - Structured Essay*Answer all questions on this paper itself.**(Each question carries 10 marks.)*Do not
write
in this
column

1. (A) Some statements on agricultural meteorology are given below. State whether the following statements are true or false.

Statement**True/False**

- (i) Rainfall is expressed and measured as for the past 24 hours.
- (ii) Robinson's cup anemometer is used to measure the wind velocity.
- (iii) Light mainly affects the plants in four ways viz, intensity, quality, duration and direction.
- (iv) Temperature is measured by daily in a weather station in the morning and afternoon.
- (v) Cloudy weather increases the incidences of pests and diseases in crops.

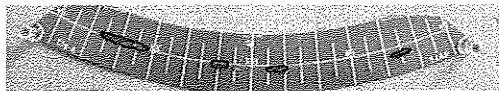
- (B) Four used sunshine recorder cards are shown in the following diagram. Use this diagram to answer questions (i) to (iii).



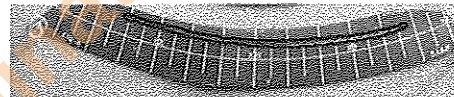
Day 1



Day 2



Day 3



Day 4

- (i) Which day had the most sunshine?
.....
- (ii) Which day was the cloudiest day?
.....
- (iii) Which day had the intermittent sunshine?
.....

- (C) There are **four subsectors** in agriculture that contribute to the Gross Domestic Product in Sri Lanka. List them.

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

- (D) Soil genesis is very important process for formation and renewal of soils.

- (i) Name the **five** main factors that affect soil genesis.

- (1)
- (2)
- (3)
- (4)
- (5)

[see page three]

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write
in this
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(ii) State **three** main features of the "O" horizon in a soil profile.

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

(iii) State **three** main levels of moisture in a field soil.

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

(iv) Name a suitable method to measure the soil moisture content.

.....

(E) Fill in the blanks in the following paragraph selecting the appropriate word from the following words.

increase, decrease and stay the same

Due to unfavorable weather in Bandarawela and Welimada areas in December, the price of tomato will immediately due to the in local supply. This will encourage in supply from other tomato growing areas. If the present situation persuades tomato growers to cultivate more in next year and with favorable weather, the next year's supply will and the prices will compared to this year.

(F) Name the **four** factors of production and then classify them as **human** or **physical**.

Factor of production	Whether human or physical?
(i)	
(ii)	
(iii)	
(iv)	

(G) Write the name of the function/curve that represent each of the following relationships in agricultural production.

- (i) Factor-factor relationship :
- (ii) Factor-product relationship :
- (iii) Product-product relationship :

2. (A) Farm animals are fed with various types of feeds in order to support their growth and production.

(i) Name an example for each of following types of feeds.

Type of feed	Example
(1) Dry roughage	
(2) Protein supplement of plant origin	
(3) Energy supplement	

[see page four]

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- (ii) A Dairy farmer chopped Napier grass into pieces and put them into a pit silo while mixing with rice polish and pressing. Once the pit was filled fully, the contents were again pressed well and covered with a thick polyethylene sheet. Edges of the polyethylene sheet were covered with soil.

State the main reason for each of following activities.

- (1) Chopping grass into pieces

.....

- (2) Mixing grass with rice polish

.....

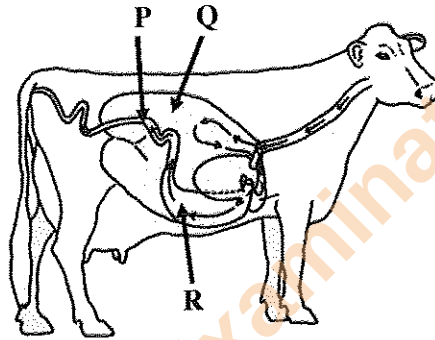
- (3) Pressing the contents of the silo

.....

- (4) Tightly covering the contents with polyethylene

.....

- (B) The following diagram shows the digestive system of a cow. Write the specific function of each of the parts labeled as P, Q and R in the diagram.



	Part	Specific function
(i)	P	
(ii)	Q	
(iii)	R	

- (C) State the main objective of performing each of following activities during milking a cow.

- (i) Performing strip cup test

.....

- (ii) Dipping the teats in a potassium permanganate solution soon after completion of milking

.....

- (D) State **two** advantages of cross breeding compared to selection in farm animal improvement.

- (i)

- (ii)

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(E) A poultry farmer added glucose and vitamin B to drinking water prepared for day-old chicks, newly introduced to the brooder. State the main reason for adding each of those substances to drinking water.

(i) Glucose

.....

(ii) Vitamin B

.....

(F) What is the optimum temperature required for the proper growth of the chick embryo?

.....

(G) Plant nutrients are essential for healthy growth of crop plants.

(i) Name **two** groups of plant nutrients categorized based on the amount required.

(1)

(2)

(ii) Name the **two** methods of nutrients absorption by plants.

(1)

(2)

(iii) Define “mobile nutrients” in plants.

.....

.....

(iv) State **two** examples for mobile plant nutrients.

(1)

(2)

(v) Immobile nutrients also play an important role in plant physiological activities.

(1) State **three** examples for immobile plant nutrients.

(a)

(b)

(c)

(2) State how a nutrient deficiency in plant could be identified due to immobile nutrient.

.....

.....

(H) Land preparation helps to develop suitable soil environment for crop growth. State **four** physical changes in soils that would take place after land preparation.

(i)

(ii)

(iii)

(iv)

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- (I) A farmer wants to establish a chilli crop in his land located in low country wet zone. He was advised first to plant the seeds in a nursery and then transplant in the field.

(i) What is the reason to advice him to plant the seeds first in a nursery?

.....
.....

(ii) What is the best type of nursery for him?

.....

- (J) It is needed to make the photosynthesis process more efficient in order to obtain higher crop yields.

(i) List **two** practices to improve the photosynthesis in fruit crops.

(1)

(2)

(ii) Name the **four** factors that might affect the rate of photosynthesis.

(1)

(2)

(3)

(4)



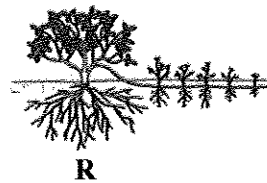
3. (A) Layering is an effective propagation method for some plants that do not root readily from cuttings. Following diagram shows different methods of layering. Use this diagram to answer questions (i) to (v).



P



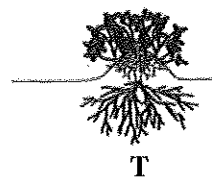
Q



R



S



T

Fill the blank with the letter of the relevant line drawing.

Name of the layering method

Letter of the relevant drawing

(i) air layering

.....

(ii) trench layering

.....

(iii) mound layering

.....

(iv) serpentine layering

.....

(v) simple ground layering

.....

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(B) A student wanted to measure the seed germination percentage of a seed lot stored separately in three gunny bags. He took 2–3 random samples from each gunny bag and mix them in a container and three sub-samples were taken. Then 100 seeds were taken from each sub-sample and placed them separately on tissue papers inside a tray and saturated the tissue papers with water.

He frequently checked the tray to see that the tissue papers remain moist and recorded the number of germinated seeds.

(i) Why did he take 2–3 random samples from each gunny bag?

.....

(ii) Why did he mix all randomly taken samples in a container?

.....

(iii) Why did he take three samples from the mixed seeds?

.....

(iv) Ultimately, he recorded following data from three samples.

Sample No.	No. of seeds germinated
1.	85
2.	92
3.	87

Calculate the germination percentage of the seed lot.

.....

.....

.....

(C) Tissue culture is commonly used to propagate plants in large scale commercial nurseries. State the main purpose of adding each of the following ingredients to a tissue culture media.

Ingredient	Purpose
(i) Inorganic nutrients	
(ii) Energy source	
(iii) Carbon materials	
(iv) Growth regulators	
(v) Gelling agents	

(D) Use of healthy and viable seeds as the planting material is important for good crop establishment.

(i) State a technique to measure the viability of dormant seeds.

.....

(ii) State a main advantage and a disadvantage of seed dormancy.

Advantage

.....

Disadvantage

.....

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(E) Ancient Sri Lankans had a very good knowledge on water resource management and they used different techniques to increase the groundwater recharge.

(i) List **two** techniques used by the ancient Sri Lankans to increase groundwater recharge.

(1)

(2)

(ii) State a main importance of recharging groundwater.

.....

(F) A farmer cultivated his lowland with a Capsicum crop during the dry season. During the flowering stage of the crop, unusual heavy rains were experienced. A few days after the rains, farmer observed that leaves of Capsicum plants have become yellow and he smelled hydrogen sulfide coming out from the field.

(i) What is the reason for this situation?

.....

(ii) State a method to rectify this situation.

.....

(iii) Name a crop that can adopt to above situation.

.....

(G) A student recorded following data in a clay loam soil

Water content at saturation = 40 cm/meter

Available water content = 13.4 cm/meter

Water content at permanent wilting point = 16.7 cm/meter

(i) Calculate the water content at the field capacity.

.....

.....

.....

(ii) Calculate the amount of gravitational water.

.....

.....

.....

(iii) What is the amount of unavailable water content in this soil?

.....

(H) Many natural resources are used in different farming systems.

(i) Name **three** main groups of natural resources used in agriculture.

(1)

(2)

(3)

(ii) State **two** special features of rainfed farming system.

(1)

(2)

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(iii) What is 'zero tillage'?

.....

.....

.....

(iv) What is the main difference between zero tillage and minimum tillage?

.....

.....

(I) Postharvest losses in foods take place at different stages of postharvest handling.

(i) State **two** precautions need to be taken to minimize the postharvest losses of fruits and vegetables during transport.

(1)

(2)

(ii) Write **two** consequences of postharvest losses of foods.

(1)

(2)

(iii) State a method to convert perishable foods to non-perishable foods.

.....

(J) Though transpiration brings many advantages to the healthy growth of plants, in certain circumstances it becomes a disadvantage to the growth of the plants.

(i) State under what situations the transpiration should be controlled.

.....

.....

(ii) Name **three** methods to control transpiration in plants.

(1)

(2)

(3)

4. (A) Conservation of genetic resources is essential to maintain the biodiversity.

(i) Define *in-situ* conservation and *ex-situ* conservation***In-situ* conservation**

.....

.....

.....

***Ex-situ* conservation**

.....

.....

.....

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(ii) State an example for each of the following found in Sri Lanka.

(1) *In-situ* conservation site

(2) *Ex-situ* conservation site

(B) Protected structures are used to control soil and aerial environments to obtain higher crop production.

(i) State the purpose of the use of temporary protected structures for certain crop species during their certain stages of growth.

.....

(ii) State the importance of greenhouse effect inside the protected structures established in upcountry area.

.....

(C) Soilless culture is commonly used to cultivate high value crops in modern intensive agriculture.

(i) State **one** example for circulating method of hydroponics.

.....

(ii) State **two** examples for non-circulating method of hydroponics.

(1)

(2)

(iii) Name a common method of soilless solid media culture used in urban agriculture.

.....

(D) State whether following statements related to pest management are **true** or **false**.

Statement

True/False

(i) Insects in the orders Coleoptera and Lepidoptera are major pests of stored grain.

.....

(ii) Mass trapping is an **ineffective** control strategy at low pest densities.

.....

(iii) Clean cultivation and crop rotation are two examples of biological control of pests.

.....

(E) It is necessary to take special care in handling pesticides.

(i) State **two** important precautions need to be taken in storing pesticides.

(1)

(2)

(ii) Write **two** activities one **should not do** while applying the pesticides.

(1)

(2)

(iii) Why it is important to keep remaining pesticides in the original containers?

.....

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(F) Weeds may cause a number of issues and may restrict the growth of crop plants. Hence it is important to control weeds.

(i) What is a weed?

.....
.....

(ii) State the **three** type of weeds based on their life cycle.

(1)
(2)
(3)

(G) It is recorded that 16% of the global crop loss is due to plant diseases.

(i) List the **three** main types of microbial disease causal agents.

(1)
(2)
(3)

(ii) State **two** abiotic factors that cause plant diseases.

(1)
(2)

(H) State **two** main qualities of packing materials used in food packaging.

(i)
(ii)

(I) State **two** advantages of having a balanced diet for humans.

(i)
(ii)

(J) Diversified foods have many advantages as well as disadvantages.

(i) State one main advantage of diversified foods.

.....

(ii) State one main disadvantage of diversified foods.

.....

(K) Use the following statement to answer questions (i) and (ii).

“Avoid applying any pesticides to plants that are flowering, particularly insecticides. Also avoid pesticide drift to nearby blooming plants, including weeds.”

(i) Why pesticides should **not** be applied to plants in flowering?

.....

(ii) Why it is necessary to avoid pesticide drift to nearby flowering plants including weeds?

.....

* *

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OLD
Sri Lanka Department of Examinations, Sri Lanka
இலங்கைப் பரீட்சைத் திணைக்களம், Sri Lanka Department of Examinations, Sri Lanka
ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තු, ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තු, ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තු

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General Certificate of Education (Adv. Level) Examination, August 2019

කෘෂි විද්‍යාව 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 **15** marks.

5. (i) Describe the pre-harvest factors responsible for post-harvest losses in crops.
(ii) Describe the agricultural uses of plant growth regulators.
(iii) Explain the importance of identifying Agro-ecological zones in Sri Lanka.
6. (i) Describe the different methods of removing seed dormancy.
(ii) Describe the measures that have been taken by the government to uplift the Agriculture sector in Sri Lanka.
(iii) Describe the importance of pasture conservation in Sri Lanka.
7. (i) Explain the importance of soil physical characters for crop growth.
(ii) Describe the importance of using protected structures to face the challenges of climate change.
(iii) Describe the advantages and disadvantages of different methods of poultry rearing.
8. (i) Explain the factors affecting the supply of agricultural products.
(ii) Describe the impact of alien and invasive weeds to the agricultural production in Sri Lanka.
(iii) Describe the importance of applying organic manure into crop fields.
9. (i) Describe the impact of environmental factors on the plant disease occurrence and spread.
(ii) Describe various nursery techniques commonly used in Sri Lanka.
(iii) Describe impact of over-nutrition on human health.
10. (i) Explain the factors to be considered in selecting a water source for irrigation.
(ii) State different types of livestock farm records and describe the advantages of maintaining correct farm records.
(iii) Describe the role of mixed cropping to maintain the food security.

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