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## Samoa School Certificate

# AGRICULTURAL SCIENCE 2021

## QUESTION and ANSWER BOOKLET

Time allowed: 3 Hours & 10 minutes

### INSTRUCTIONS

1. You have 10 minutes to read **before** you start the exam.
2. Write your **Student Education Number (SEN)** in the space provided on the top right hand corner of this page.
3. **Answer ALL QUESTIONS.** Write your answers in the spaces provided in this booklet.
4. If you need more paper to write your answers, ask the Supervisor for extra paper. Write your SEN on all extra sheets used and clearly number the questions. Attach the extra sheets at the appropriate places in this booklet.

STRANDS		Pages	Time (min)	Weighting
STRAND 1	AGRICULTURE IN SAMOA	2	13	8
STRAND 2	SOIL	5	18	10
STRAND 3	FARM MANAGEMENT, ECONOMICS AND MARKETING	8	32	20
STRAND 4	CROP PRODUCTION	12	50	24
STRAND 5	ANIMAL PRODUCTION	18	54	30
STRAND 6	TOOLS EQUIPMENT AND FACILITIES	25	13	8
TOTAL			180	100

Check that this booklet contains pages 2-28 in the correct order and that none of these pages are blank.

**HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

Study the picture given below and answer Question 1.



For Questions 1 to 3, choose and write the LETTER of the correct answer in the box provided.

1. What is an ecosystem?

- A. A community.
- B. A biosphere.
- C. A biological community of interacting organisms and their physical environment.
- D. Its reliance on silence to guide decisions and set boundaries.

SL 1

2. Name ONE agricultural practice in Samoa.

- A. Irrigation
- B. Travelling
- C. Climbing
- D. Walking

SL 1

3. Select the correct definition for **monohybrid crosses**.

- A. Describes a mating experiment between two organisms that are identically hybrid for two traits.
- B. The hybrid of two individuals with homozygous genotypes that results in the opposite phenotype for a certain genetic trait.
- C. The type of hybrid that is produced when two different single-cross hybrids are cross-pollinated.
- D. The type of hybrid that is produced when two different inbreds are cross-pollinated.

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SL 1

Study the picture given below and answer Question 4.



Source: Google search

4. Describe a managed ecosystem.

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SL 2

5. Explain ONE long term effect of using pesticides in farming.

[illegible]

SL 3

Study the picture given below and answer Questions 6 and 7.



Source: Google search

For Question 6, choose and write the LETTER of the correct answer in the box provided.

6. Name a cause in any farming system that reduces soil fertility.

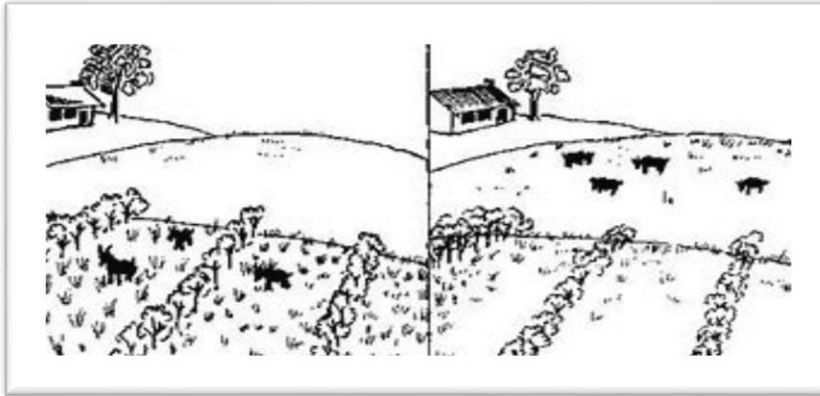
- A. Over use of mechanical labour and chemical properties of soil that can lead to land degradation.
- B. Over watering of plants.
- C. Rotating of crops in an area.
- D. Grazing of cattle in a paddock.

SL 1

7. Describe any farming method that can improve soil fertility.


SL 2

**Study the picture given below and answer Questions 8 and 9.**



**Source:** Google search

8. Explain how the soil conservation method shown in the picture is beneficial for the environment.

[illegible]

SL 3

9. Discuss the effect of over grazing of livestock on soil properties.

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SL 4

For Questions 10 to 15, choose and write the LETTER of the correct answer in the box provided.

10. The change in the total cost that arises when the quantity produced is increased by one unit is referred to as the:

A. marginal cost.  
B. business cost.  
C. unit cost.  
D. average cost.

SL 1

11. What is a gross margin?

A. A planning and decision-making framework used to compare the costs and benefits of alternatives faced by a farm business.  
B. A company's net sales revenue minus its cost of goods sold.  
C. Business costs, such as rent, that are constant whatever the amount of goods produced.  
D. The sum of all costs incurred by a firm in producing a certain level of output.

SL 1

12. The sum of all costs incurred by a firm in producing a certain level of output.

A. Fixed cost.  
B. Service cost.  
C. Cost of rent.  
D. Total cost.

SL 1



13. Define fixed cost.

- A. A cost that varies with the level of output.
- B. Is a planning and decision-making framework used to compare the costs and benefits of alternatives faced by a farm business.
- C. Business costs, such as rent, that are constant whatever the amount of goods produced.
- D. Is a company's net sales revenue minus its cost of goods sold.

☐

SL 1

14. A cost that varies with the level of output is the:

- A. variable cost.
- B. cost of service.
- C. gross domestic income.
- D. cost of returnees.

☐

SL 1

15. The cost added by producing one additional unit of a product or service.

- A. Marginal cost.
- B. Variable cost.
- C. Differentiation value.
- D. Input cost.

☐

SL 1

16. List TWO companies in Samoa that operate based on gross margin.

- (i) \_\_\_\_\_
- (ii) \_\_\_\_\_

SL 2

17. List TWO types of farm records used in a poultry farm.

- (i) \_\_\_\_\_
- (ii) \_\_\_\_\_

SL 2

18. Explain how to promote coconut cream to consumers.

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SL 3

19. Explain how the sale of a farm produce benefits from going through a market channel.

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SL 3



Study the picture given below and answer Questions 21 and 22.



Source: Google search

For Questions 21 and 22, choose and write the LETTER of the correct answer in the box provided.

21. The interaction of agriculture and trees, including the agricultural use of trees.

- A. Agroforestry
- B. Forestry
- C. Mixed farming
- D. Crop rotation

SL 1

22. Name a type of species in a forest.

- A. Tools.
- B. Tractor.
- C. Insects.
- D. None of the above.

SL 1

Study the picture given below and answer Questions 23 – 26.



Source: Google search

For Questions 23 to 26, choose and write the LETTER of the correct answer in the box provided.

23. The vascular tissue in plants which conducts sugars and other metabolic products downwards from the leaves is the:

A. zylem.  
B. trunk.  
C. cambium.  
D. phloem.

SL 1

24. A cellular plant tissue from which phloem, xylem, or cork grows by division, resulting (in woody plants) in secondary thickening is the:

A. vascular tissue.  
B. woody stem.  
C. cambium layer.  
D. zylem.

SL 1

25. The vascular tissue in plants which conducts water and dissolved nutrients upwards from the root and also helps to form the woody element in the stem is the:

- A. xylem.
- B. spongy mesophyll.
- C. chlorophyll.
- D. grana.

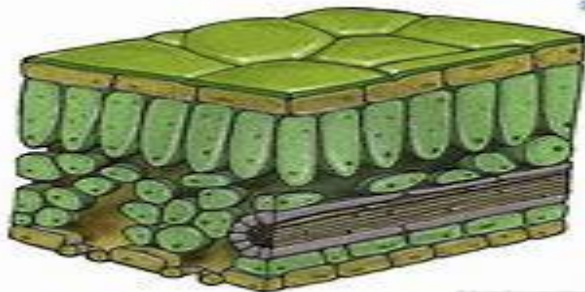
SL 1

26. At the very center of the tree which is the oldest part of the tree. Pith is defined as the:

- A. bark.
- B. stomata.
- C. lower epidermis.
- D. pith.

SL 1

**Study the picture given below and answer Questions 27 – 29.**



Source: Google search

**For Questions 27 to 29, choose and write the LETTER of the correct answer in the box provided.**

27. A plastid in green plant cells which contains chlorophyll and in which photosynthesis takes place is the:

- A. grana.
- B. chloroplast.
- C. stoma.
- D. vascular tissue in plants.

SL 1

28. Each of a pair of curved cells that surround a stoma, becoming larger or smaller according to the pressure within the cells is the:

- A. lower epidermis.
- B. upper mesophyll.
- C. guard cell.
- D. pith.

☐

SL 1

29. Any of the minute pores in the epidermis of the leaf or stem of a plant, forming a slit of variable width which allows movement of gases in and out of the intercellular spaces is the:

- A. vascular bundle.
- B. guard cell.
- C. stomata.
- D. cork cambium.

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SL 1

Study the picture given below and answer Questions 30 and 31.



Source: Google search

30. Describe agro forestry.

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SL 2

31. Explain the impact of agro forestry in a farming community.

[illegible]

SL 3

32. Explain THREE functions of roots.

[illegible]

SL 3



33. Explain the reason why farmers do pruning on their fruit trees.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

SL 3
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34. Discuss in your own words the movement of water in plant.

[illegible]

SL 4
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Study the picture given below and answer Questions 35 to 38.



Source: Google search

For Questions 35 to 38, choose and write the letter of the correct answer in the box provided.

35. Identify ONE characteristic of the pig breed above.

- A. Tail
- B. Mouth
- C. Colour
- D. Hoofs

SL 1

36. Name ONE poultry production in Samoa.

- A. Layer production.
- B. Sausage production.
- C. Broiler production.
- D. Giblets process.

SL 1

37. A stock of animals within a species having a distinctive appearance and typically having been developed by deliberate selection are:

- A. varieties.
- B. human.
- C. living cells of a host.
- D. breeds.

SL 1

38. Name the pig breed shown in the picture on page 18.

- A. Large white.
- B. Landrace.
- C. Duroc.
- D. None of the above.

SL 1

Study the picture given below and answer Question 39.



Source: Google search

39. Name the dairy cattle shown in the picture.

- A. Friesian Holstein.
- B. Jersey.
- C. Brahman.
- D. Drought master.

SL 1

Study the picture given below and answer Question 40.



Source: Google search

For Questions 40 to 42, choose and write the letter of the correct answer in the box provided.

40. Name the identification method shown on the calf ears above.

- A. Ear notches.
- B. Ear tattoos.
- C. Ear tags.
- D. Ear brandings.

SL 1

41. What is the process of collecting sperm cells from a male animal and manually depositing them into the reproductive tract of a female?

- A. Tail docking.
- B. Dredging.
- C. Artificial insemination.
- D. Ear tag.

SL 1

42. An organism that lives on or in a host organism and gets its food from or at the expense of its host is the:

- A. pest.
- B. exoskeleton insects.
- C. weeds.
- D. parasites.

SL 1

43. List TWO parasites that you have studied.

(i). \_\_\_\_\_

(ii). \_\_\_\_\_

SL 2

44. Describe the function of the mono gastric digestive system of a pig.

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SL 2

45. Briefly describe the effect of tuberculosis in cattle.

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SL 2

Study the picture given below and answer Question 46.



46. Briefly explain the step by step process of castrating a pig.

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SL 2

47. Explain the importance of raising pigs in a semi subsistence farm.

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SL 3

48. Explain the function of the ruminant digestive system of a cow.

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SL 3

49. Describe the symptoms and control measures for mastitis on dairy cows.

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SL 4

50. Describe how you select the most pure breed of beef cattle for a farmer.

[illegible]

SL 4



Study the picture given below and answer Question 51.



For Questions 51 and 52, choose and write the letter of the correct answer in the box provided.

51. What is the usage of the tool shown above?

- A. Digging the soil.
- B. Pruning of stems and branches.
- C. Cutting grasses.
- D. Cutting hairs.

SL 1

52. Disperses liquid through a hand-held nozzle that is attached to a pressurized reservoir carried on the operators back is the main function of the:

- A. knapsack sprayer.
- B. hand cultivar.
- C. mist blower.
- D. chain saw.

SL 1

Study the picture given below and answer Question 53.



Source: Google search

53. What is the function of a weed eater?

- A. Uses a set of curved tines attached to a rotating shaft that is powered by your tractor's PTO.
- B. Useful for treating large outdoor areas quickly and getting insecticide into areas of dense foliage uses a two-cycle gasoline motor.
- C. It is used in activities such as tree felling, bucking, pruning, cutting and harvesting of firewood.
- D. Is a garden tool used for cutting grass, small weeds, and ground cover.

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SL 1

54. Explain the best time of applying pesticide on vegetables.

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SL 2

55. Describe the safe and proper ways of storing tools.

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<b>SL 3</b>

STUDENT EDUCATION NUMBER									

## AGRICULTURAL SCIENCE

2021

*(For Scorers only)*

STRANDS		Weighting	Scores	Check Scorer	AED Check
STRAND 1	AGRICULTURE IN SAMOA	8			
STRAND 2	SOIL	10			
STRAND 3:	FARM MANAGEMENT, ECONOMIC AND MARKETING	20			
STRAND 4	CROP PRODUCTION	24			
STRAND 5	ANIMAL PRODUCTION	30			
STRAND 6	TOOLS	8			
<b>TOTAL</b>		<b>100</b>			