

Candidate Name _____

Centre Number				Candidate Number			

EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Agricultural Science Paper 1 Theory

5037/1

Tuesday

21 NOVEMBER 2017

Additional Materials

Answer Booklet

Time: 2 hours

Instructions to candidates

Write your **name**, **centre number** and **candidate number** in the spaces at the top of this page and on the Answer Booklet.

There are **Ten** questions in this paper.

Section A

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

Section B

Answer any **three** questions.

Write your answers in the Answer Booklet provided.

At the end of the examination:

- 1 fasten the Answer Booklet securely to the question paper.
- 2 enter the numbers of the **Section B** questions you have answered in the grid for Examiner's use.

Information for candidates

The number of marks is given in brackets [] at the end of each question or part question.

You are advised to spend no longer than 40 minutes on **Section A**.

Cell phones are not allowed in the examination room.

FOR EXAMINER'S USE	
Section A	
Section B	
Total	

Section A

Answer all questions in this section

- 1 **Figure 1** shows water holding capacity in different types of soils.

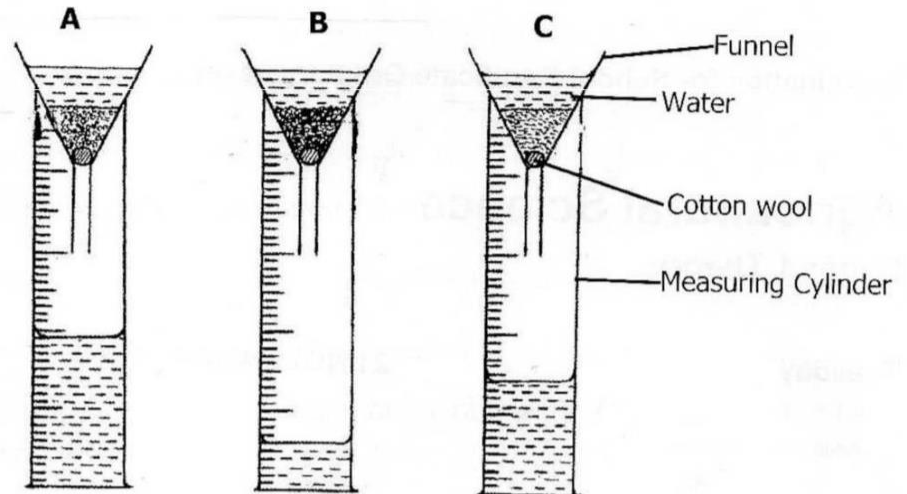


Figure 1

- (a) Name the samples of soil used in funnels **A** and **B**.

A.....

B..... [2]

- (b) (i) From the above experiment identify **two** characteristics that the different soil types have.

1

.....

2

..... [2]

- (ii) Why would you advise farmers to have a soil that has a loose friable structure?

.....

.....

..... [2]

(c) Explain why farmers are encouraged to use conservation farming.

.....

.....

[1]

(d) How is agricultural lime made beneficial to crops on a farm?

.....

.....

[1]

[8 marks]

2 Figure 2 shows the water cycle.

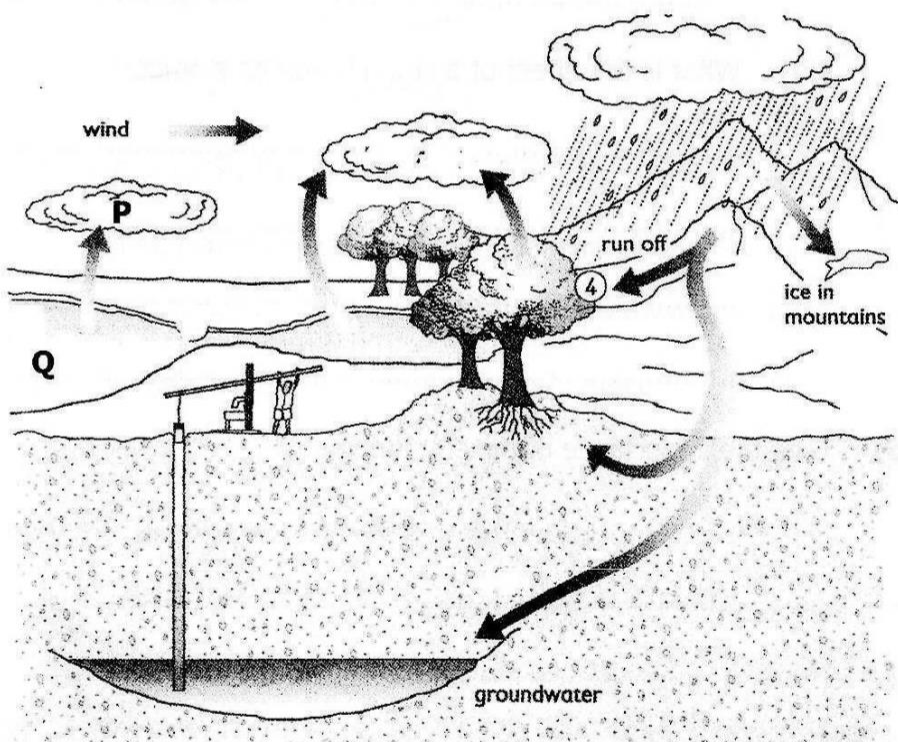


Figure 2

(a) Name the soil component this diagram represents as a source.

..... [1]

(b) Identify the processes at P and Q.

P

Q [2]

- (c) (i)** Explain the importance of the duration of rainfall to the farmer.

.....

.....

.....

[1]

- (ii)** Why is it advisable for farmers to grow crops in higher attitudes than in lower altitudes?

.....

.....

.....

[1]

- (iii)** What is the effect of a crop closing its stomata?

.....

.....

.....

.....

[2]

- (d)** Give the importance of mixed cropping.

.....

.....

[1]

[8 marks]

3 **Figure 3** shows the artificial insemination in a cow.

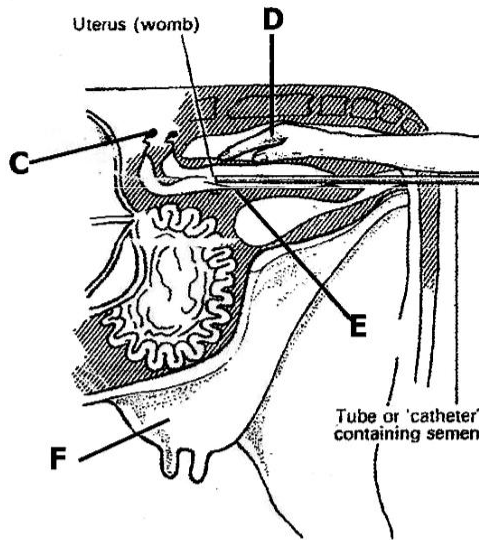


Figure 3

(a) Using letters in **figure 3**, identify:

(i) where semen is released during insemination.

..... [1]

(ii) the structure that releases an egg (ovum).

..... [1]

(b) State the function of structure **F** in **figure 3**.

..... [1]

(c) (i) Why are dairy farmers advised to use correct mating systems on their farms?

..... [1]

(ii) What does the term parturition mean?

..... [1]

- (d) (i) Explain why structure **F** in **figure 3** of a diary cow should be washed with warm water before milking.

.....

.....

.....

.....

[2]

- (ii) Why do diary farmers rest pastures?

.....

.....

.....

[1]

[8 marks]

- 4** (a) What does the term gross margin mean?

.....

.....

.....

[1]

- (b) (i) How is the income (profit) of an enterprise calculated?

.....

.....

.....

.....

[2]

- (ii) Why is capital important on a farm?

.....

.....

.....

.....

[2]

(c) Describe depreciation.

.....

.....

.....

.....

[2]

(d) Explain how farm records can help to show where improvements could be made on a farm.

.....

.....

.....

.....

[1]

[8 marks]

5 **Figure 4** shows the four stroke cycle.

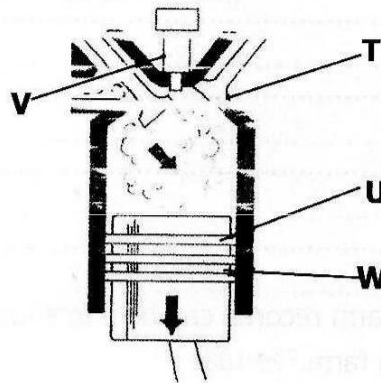


Figure 4

(a) Name the parts labelled **T** and **U**.

T

U [2]

(b) State the function of parts labelled **V** and **W**.

V

.....

W

..... [2]

(c) How would a farmer maintain the air cleaner of a tractor?

.....

.....

..... [3]

(d) Why are pulleys used on farms?

.....

..... [1]

[8 marks]

Section B

Answer any three questions from this section.

- 6 (a) List the components of soil. [6]
- (b) Explain how inorganic soil particles are formed from rocks by the following physical weathering agents:
- (i) Temperature,
- (ii) Wind action. [11]
- (c) Describe how planting appropriate trees improve soil fertility and reduce soil erosion. [3]
- [Total: 20]**
- 7 (a) State the importance of agriculture. [6]
- (b) State the problems facing cattle farmers in Zambia. [9]
- (c) Give the advantages of rearing local breeds of cattle. [5]
- [Total: 20]**
- 8 (a) (i) List the first **three** components of a ruminant stomach. [3]
- (ii) Compare digestion in a gizzard and in a rumen of a cow. [6]
- (b) (i) Why is continuous close grazing discouraged in a pasture? [5]
- (ii) How can you control ticks on a farm? [5]
- (c) Why is a farmer who keeps cattle advised to ensure that feed for the livestock does not contain objects like nails and glass. [1]
- [Total: 20]**
- 9 (a) List **three** factors of production on a farm. [3]
- (b) Define demand. [2]
- (c) Describe overhead (fixed) costs and give **one** example of a fixed cost on a farm. [4]

- (d)** A farmer made the following transactions for a maize enterprise. Purchased 4 bags of compound D of mass 50 kg at K260.00 each, 4 bags of urea of mass 50 kg at K250.00 each.

Paid K400.00 and K200.00 for ploughing and weeding respectively for the field to be done. The farmer paid K100.00 and K150.00 for harvesting and shelling respectively. The farmer harvested 200 bags of mass 50 kg each and paid K100.00 for transportation of the maize to the nearest Food Reserve Agency depot. The farmer was paid K100.00 for each 50kg bag of maize sold.

- (i)** Calculate how much the farmer spent on basal dressing fertilizer, top dressing fertilizer and transport. [3]

- (ii)** What was the farmer's total expenditure, income and profit? [3]

- (e) (i)** Outline the law of diminishing returns. [2]

- (ii)** Explain factors to consider when determining how much produce or product to produce from an enterprise. [3]

[Total: 20]

- 10 (a) (i)** Mention the disadvantages of using a disc plough to prepare a seedbed. [5]

- (ii)** Explain how rusting could be prevented on a disc plough. [3]

- (b) (i)** Illustrate the inlet stroke of a spark ignition four-stroke cycle (petrol engine). [5]

- (ii)** What are the uses of an engine on a farm? [3]

- (c) (i)** What is the velocity ratio of a machine? [2]

- (ii)** Why is the block and tackle pulley system not a perfect machine? [2]

[Total: 20]