

**THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
ADVANCED CERTIFICATE OF SECONDARY EDUCATION
EXAMINATIONS**

134/3

**AGRICULTURE 3
(PRACTICAL)**
(For Both School and Private Candidates)

Time 3:20 Hours

Year: 2020

Instructions

1. This paper consists of **three (3)** questions.
2. Answer **all** questions.
3. Question **one** carries 20 marks and the other **two** carry **15** marks each.
4. Cellular phones and any unauthorized materials are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

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- You are provided with specimens S_1 for experiment I and S_2 for experiment II, two 250 cm³ measuring cylinders, two 100 cm³ beakers and a wall clock. Perform the following procedures and answer the questions that follow:

Procedures

Experiment I

- Put 100 cm³ of water in a 250 cm³ measuring cylinder.
- Using a 100 cm³ beaker, put specimen S_1 up to the 100 cm³ mark.
- Empty specimen S_1 into the measuring cylinder at step (i) and shake well.
- Let the mixture stand for ten minutes while observing what happens in the mixture and record the final reading of the mixture in the measuring cylinder.

Experiment II

Repeat the same procedures of **Experiment I** for specimen S_2 using another set of apparatuses.

Questions

- What have you observed after shaking well the mixture in experiments I and II? **(1 mark)**
 - What is the inference of your observation in experiments I and II? **(2 marks)**
 - Giving a reason, comment on the volumes of the mixture in experiments I and II after shaking well the mixture and letting it to stand for 10 minutes. **(2 marks)**
 - Calculate the percentage of air composition in each of specimen S_1 and S_2 . **(10 marks)**
 - Based on the percentage of air composition calculated in part (d), suggest the type of soil in each of specimens S_1 and S_2 . In each case give a reason for your suggestion. **(3 marks)**
 - Referring to the percentage of air composition in each of specimens S_1 and S_2 , briefly describe air-water relationship in the two specimens. **(2 marks)**
- You are provided with specimens E_1 and E_2 in the 250 cm³ pyrex beakers, two bunsen burners, two tripod stands, a match box, two wire gauzes and two thermometers. Perform the following procedures and then answer the questions that follow:

Procedures

- Put each of the wire gauze on top of the tripod stand.
- Place tripod stands over the bunsen burners.
- Place each of the beakers containing specimen E_1 and E_2 on wire gauze on the tripod stands.
- Immerse thermometers in each of the beakers containing specimens E_1 and E_2 .
- Light the bunsen burners and heat specimens E_1 and E_2 . Take records of the temperature for each of the specimens after 2 minutes of heating.
- Switch off the bunsen burners and remove beakers from the source of heat to let specimens E_1 and E_2 cool. Take records of temperature for each of the specimens after 5 minutes of cooling.

Questions

- Record the results of the experiment as shown in the following table:

Specimens	Temperature of the specimens after 2 minutes of heating (°C)	Temperature of the specimens after 5 minutes of cooling (°C)
E_1		
E_2		

(2 marks)

- (b) From the results of the experiment, suggest which specimen can be best used than the other as a coolant in a tractor engine. Give two reasons for your suggestion. **(3 marks)**
- (c) Briefly describe the mechanism of cooling the tractor engine using the specimen that you have suggested. **(4 marks)**
- (d) Account for two limitations of a tractor engine cooling system that uses the specimen you have suggested. **(2 marks)**
- (e) Briefly explain four reasons for engine overheat in a cooling system using the selected specimen. **(4 marks)**
3. You are provided with specimens L_1 , L_2 , a measuring cylinder and a beaker. Perform the following procedures and then answer the questions that follow:

Procedures

- Measure 25 cm³ of specimen L_1 and pour it into a beaker.
- Squirt few streams of L_1 into specimen L_2 and observe carefully.

Questions

- (a) What is the aim of the experiment? **(1 mark)**
- (b) Briefly explain your observations in the experiment. Give three reasons to support your observations. **(3 marks)**
- (c) What conclusions can you make from the experiment? **(1 mark)**
- (d) Account for five predisposing factors for what has been diagnosed in the experiment. **(5 marks)**
- (e) As a livestock scientist provide an advice to the livestock keepers on five measures to be taken in order to obtain clean and normal specimen L_1 . **(5 marks)**