

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**EMBU CAMPUS**

**EXAMINATION FOR THE AWARD OF DEGREE OF  
BACHELOR OF EDUCATION PRIMARY OPTION**

**PECI 112: INTRODUCTION TO SCIENCE AND AGRICULTURE**

**STREAMS: BED (P) P/T**

**TIME: 2 HOURS**

**DAY/DATE: TUESDAY 14/04/2020**

**8.30 AM – 10.30 AM**

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**INSTRUCTIONS:**

**Answer Question One and any other Two Questions**

**QUESTION ONE**

- (a) Describe what happens during the light stage of photosynthesis. [3 marks]
- (b) State three reasons why it is important to carry out classification of organisms. [3 marks]
- (c) 'Watert is life', citing examples from its functions in the human body, justify this statement. [5 marks]
- (d) You have been provided with a bottle containing a colourless odourless liquid.
  - (i) Describe two ways in which you would test if the liquid is water. [4 marks]
  - (ii) Explain how you could test if the liquid is pure water. [2 marks]
- (e) Describe any four weather measuring instruments. [4 marks]
- (f) Draw a simple electrical circuit containing a switch, two cells, copper wires, a bulb and an ammeter. [4 marks]
- (g) Describe five factors that affect soil formation. [5 marks]

**QUESTION TWO**

- (a) Differentiate between plant and animal cell. [5 marks]
- (b) Identify the five kingdoms of living things giving an example of an organism in each kingdom. [5 marks]
- (c) (i) What is meant by the term hard water. [2 marks]
- (ii) Describe three ways of removing water [3 marks]
- (d) The two compounds (a) and (b) below are cleansing agents.
- (a)  $C_{17}H_{35}COO^-Na^+$
- (b) R  $OSO_3^-Na^+$
- (i) Identify the two cleansing agents. [2 marks]
- (ii) Explain how the above agents help in cleaning. [3 marks]

**QUESTION THREE**

- (a) Describe how you would prepare a sample of hydrogen gas in the laboratory. [2 marks]
- (b) Highlight two observations that would be made when pure hydrogen burns in air. [2 marks]
- (c) The solubility of potassium nitrate and lead (II) nitrate is as shown in the table below

| Temperature (O <sub>c</sub> ) | Mass of Potassium nitrate<br>g/100g of water | Mass of Lead (II) Nitrate<br>g/100g of water |
|-------------------------------|--|--|
| 0                             | 12.5   | 37.5   |
| 20                            | 32.5   | 52.5   |
| 40                            | 62.5   | 69.0   |
| 60                            | 110.0  | 87.7   |
| 80                            | 137.5  | 110.0  |

- (i) Calculate the amount of each salt that would crystallize out if a solution saturated with both salt was cooled from 80°C to [4 marks]
- (a) 40°C
- (b) 20°C

- (ii) Explain the application of knowledge of solubility of salts. [2 marks]
- (d) Describe any three forms of energy [3marks]
- (e) (i) Define the term electric current and state its SI unit [2 marks]
- (ii) Calculate the amount of current flowing through a system when 324 Coulombs of charge flows in 3 minutes. [2 marks]
- (f) (i) Describe any three sources of electricity for electric use. [3 marks]

**QUESTION FOUR**

- (a) Highlight five environmental factors that influence agricultural production. [5 marks]
  - (b) Explain five ways in which soil fertility can be maintained. [5 marks]
  - (c) Describe appropriate vegetable crop nursery management practices. [5 marks]
  - (d) Describe five methods of preparing farm produce for storage. [5 marks]
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