**KENYA JUNIOR SCHOOL EDUCATION ASSESSMENT**
**FORMATIVE ASSESSMENT 2025**
**GRADE 9 905/2 INTEGRATED SCIENCE (PRACTICAL)**

**NAME:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
**SCHOOL NAME:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
**DATE:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **SIGN:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
**MARKS:** 30
**TIME:** 2 HOURS

|  |  |  |
| --- | --- | --- |
| **Section** | **Score** | **Learner’s Score** |
| TASK 1 | 20 |  |
| TASK 2 | 10 |  |
| **TOTAL** | **30** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SCORE RANGE** | **1-8** | **9-16** | **17-22** | **23-30** |
| **LEVEL** | BE | AE | ME | EE |
| **PERFORMANCE** |  |  |  |  |

**INSTRUCTIONS**

1. Read all the instructions carefully before attempting the questions.
2. Answer all questions in the spaces provided.
3. Perform all laboratory activities carefully while observing safety precautions.
4. **Write your name, school name, school code, and assessment number** in the spaces provided.
5. **Answer ALL questions in the spaces provided.**
6. **Do NOT remove any pages from this question paper.**
7. Answer in **English** unless instructed otherwise.
8. **Ensure you handle all materials safely.**

### ****QUESTION ONE: TESTING ACIDS, BASES, AND NEUTRAL SOLUTIONS**** (20 Marks)

You are provided with:

1. Solutions **A, B, C, D, and E** (unknown solutions)
2. **Solution X (Indicator)**
3. **Lemon juice (acidic solution)**
4. **Wood ash solution (basic solution)**
5. **Test tubes**

#### ****Procedure:****

(a) **Indicator Test for Acids and Bases**

1. Add **2 cm³** of **Solution X** to **5 cm³ of lemon juice** in a test tube and record the observed color change.
2. Add **2 cm³** of **Solution X** to **5 cm³ of wood ash solution** and record the observed color change.
3. Add **2 cm³** of **Solution X** to **5 cm³ of each test solution (A, B, C, D, and E)** one at a time and record the observed color change.

#### ****Table for Observations and Conclusions****

| **Substance** | **Observation (Color Change)** | **Conclusion (Acidic, Basic, or Neutral)** |
| --- | --- | --- |
| Lemon juice + Solution X |  |  |
| Wood ash solution + Solution X |  |  |
| Test Solution A + Solution X |  |  |
| Test Solution B + Solution X |  |  |
| Test Solution C + Solution X |  |  |
| Test Solution D + Solution X |  |  |
| Test Solution E + Solution X |  |  |

(b) **Alternative Solutions**

(i) **Name one solution that could be used instead of lemon juice.** (1 mark)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(ii) **Name one solution that could be used instead of wood ash solution.** (1 mark)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(c) **Basic Science Skills Used** (3 marks)

**Name three basic science skills necessary to carry out this practical.**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(d) **Safety Precautions** (2 marks)

**State two safety precautions taken during this practical.**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(e) **Laboratory Equipment Used** (3 marks)

**Name three pieces of laboratory equipment used in this practical.**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### ****QUESTION TWO: MEASURING DIMENSIONS AND VOLUME OF A WOODEN BLOCK**** (10 Marks)

You are provided with:

1. **A ruler**
2. **A wooden block**

#### ****Procedure:****

(a) **Measure the dimensions of the wooden block**

1. Width: **\_\_\_\_\_\_\_\_ cm** (1 mark)
2. Length: **\_\_\_\_\_\_\_\_ cm** (1 mark)
3. Height: **\_\_\_\_\_\_\_\_ cm** (1 mark)

(b) **Physical Quantities**

(i) **State the type of physical quantity represented by length.** (1 mark)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(ii) **Give a reason for your answer in (i) above.** (1 mark)

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(c) **Calculate the Volume**

**Determine the volume of the wooden block in cm³ using the formula:**

Volume=Length×Width×Height

Volume = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm³ (3 marks)

(d) **SI Unit of Volume**

**Express the volume of the wooden block in SI units.** (2 marks)

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### ****ANSWERS****

### ****QUESTION ONE: TESTING ACIDS, BASES, AND NEUTRAL SOLUTIONS**** (20 Marks)

#### ****(a) Indicator Test for Acids and Bases – Observations and Conclusions****

| **Substance** | **Observation (Color Change)** | **Conclusion (Acidic, Basic, or Neutral)** |
| --- | --- | --- |
| Lemon juice + Solution X | Turns red or pink | Acidic |
| Wood ash solution + Solution X | Turns blue or green | Basic |
| Test Solution A + Solution X | No color change | Neutral |
| Test Solution B + Solution X | Turns blue | Basic |
| Test Solution C + Solution X | Turns red | Acidic |
| Test Solution D + Solution X | Turns green | Basic |
| Test Solution E + Solution X | No color change | Neutral |

#### ****(b) Alternative Solutions****

(i) **One solution that could be used instead of lemon juice:**

* Vinegar or Orange juice (1 mark)

(ii) **One solution that could be used instead of wood ash solution:**

* Baking soda solution or Soap solution (1 mark)

#### ****(c) Basic Science Skills Used**** (3 marks)

1. **Observation** – Noting color changes during the experiment
2. **Measurement** – Measuring correct amounts of solutions using test tubes
3. **Recording Data** – Writing down observations and conclusions

#### ****(d) Safety Precautions**** (2 marks)

1. Wear protective gloves to avoid skin irritation from acidic or basic solutions.
2. Use a dropper or pipette to handle chemicals safely.

#### ****(e) Laboratory Equipment Used**** (3 marks)

1. **Test tubes** – For mixing solutions
2. **Dropper/Pipette** – For adding small amounts of solutions
3. **Indicator solution (Solution X)** – To test for acidity or basicity

### ****QUESTION TWO: MEASURING DIMENSIONS AND VOLUME OF A WOODEN BLOCK**** (10 Marks)

#### ****(a) Measuring the Dimensions of the Wooden Block****

1. Width: **4 cm** (1 mark)
2. Length: **8 cm** (1 mark)
3. Height: **3 cm** (1 mark)

#### ****(b) Physical Quantities****

(i) **Type of physical quantity represented by length:**

* **Length is a fundamental physical quantity.** (1 mark)

(ii) **Reason for the answer in (i) above:**

* **It is a basic measurable property of an object and does not depend on other quantities.** (1 mark)

#### ****(c) Calculate the Volume of the Wooden Block****

Volume=Length×Width×Height =8×4×3=96 cm³ (3 marks)

#### ****(d) SI Unit of Volume****

* The SI unit of volume is **cubic meters (m³)**.
* Convert **96 cm³** to m³:

96 cm³=96×10−6 m³=0.000096 m³

(2 marks)

### ****MARKING SCHEME BREAKDOWN****

| **Task** | **Maximum Marks** | **Candidate's Score** |
| --- | --- | --- |
| **Acid-Base Indicator Test (Observations + Conclusions)** | 10 marks | \_\_\_ |
| **Alternative Solutions** | 2 marks | \_\_\_ |
| **Basic Science Skills** | 3 marks | \_\_\_ |
| **Safety Precautions** | 2 marks | \_\_\_ |
| **Laboratory Equipment** | 3 marks | \_\_\_ |
| **Measuring Dimensions** | 3 marks | \_\_\_ |
| **Physical Quantities** | 2 marks | \_\_\_ |
| **Volume Calculation** | 3 marks | \_\_\_ |
| **SI Unit Conversion** | 2 marks | \_\_\_ |
| **Total Score** | **40 marks** | \_\_\_ |

### ****MARKING SCHEME BREAKDOWN****

| **Task** | **Maximum Marks** |
| --- | --- |
| **Acid-Base Indicator Test** | 10 marks |
| **Alternative Solutions** | 2 marks |
| **Basic Science Skills** | 3 marks |
| **Safety Precautions** | 2 marks |
| **Laboratory Equipment** | 3 marks |
| **Measuring Dimensions** | 3 marks |
| **Physical Quantities** | 2 marks |
| **Volume Calculation** | 3 marks |
| **SI Unit Conversion** | 2 marks |
| **Total** | **40 marks** |