

**CONFIDENTIAL**  
**THE UNITED REPUBLIC OF TANZANIA**  
**NATIONAL EXAMINATIONS COUNCIL OF TANZANIA**  
**ADVANCED CERTIFICATE OF SECONDARY EDUCATION**  
**EXAMINATION 2023**

**131/3A**

**PHYSICS 3A**  
**(PRACTICAL A)**

**03 HOURS PRACTICAL ADVANCE INSTRUCTIONS**

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**1.0 IMPORTANT**

- 1.1 GREAT CARE MUST BE TAKEN **NOT** TO DIVULGE THIS INFORMATION TO BOTH CANDIDATES AND UNAUTHORIZED PERSONS EITHER DIRECTLY OR INDIRECTLY.
- 1.2 MAKE SURE THAT THE CANDIDATES ARE PROVIDED WITH THE APPARATUSES INDICATED IN THESE PRACTICAL INSTRUCTIONS ONLY AND **NOT** OTHERWISE.

**2.0 PREPARATION OF APPARATUSES**

In addition to the normal fitting of a Physics laboratory, each candidate will require the following:

- 2.1 Aluminium wire of thickness 2 mm bent into a circular loop of diameter 20 cm  
A stopwatch/clock  
A metre rule  
A pendulum bob  
A cotton thread of 120 cm long  
A retort stand with its accessories  
A pair of cork pads.
- 2.2 150 ml of hot water at 90 °C labelled **B**  
A beam balance (to be shared)  
A stopwatch/clock  
A thermometer (0 °C – 100 °C)  
A calorimeter (100 ml) with its lid and stirrer  
A source of heat.

- 2.3 Two dry cells (ABC Supper Electric, size D, each 1.5 V) connected in series and soldered both ends labelled **E**  
A key/switch, labelled **K**  
An ammeter (0 - 1) A labelled **A**  
Voltmeter (0 - 3) V labelled **V**  
A resistance box of range 0  $\Omega$  to 100  $\Omega$  labelled **S**  
Unknown resistor (2  $\Omega$ ) should be covered and labelled **R**  
10 pieces of connecting wires.