ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Advanced Level

PHYSICS 6032/4

PAPER 4 Practical Test

SPECIMEN PAPER 2 hours 30 minutes

INSTRUCTIONS TO SUPERVISORS

Great care should be taken that any confidential information given does not reach the candidates either directly or indirectly.

Prior to the examination, the Supervisor should ensure that all apparatus provided for the candidate, as listed in these instructions, are in good working condition.

No access to the Question Paper is allowed before the examination Date and Time.

The Supervisor is **NOT** allowed to access the question paper before the examination **Date** and **Time**.

These Supervisor's Instructions consists of 6 printed pages and 2 blank pages.

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Instructions for preparing apparatus

1. The apparatus required for each question is set out on pages 3 and 4. Enough apparatus must be provided to ensure that

   (a) no candidate is kept waiting at the end of the allocated time for each question,

   (b) spare apparatus is immediately available in the event of failure or breakage of any item.

2. It is assumed that ordinary apparatus of a Physics laboratory will be available.

Instructions for the Practical Physics Supervisor

1. These instructions are enough for the Supervisor to make the right decisions.

2. Candidates should be informed that if they find themselves in real difficulty they may ask the Supervisor for practical assistance but that the extent of this assistance will be reported to the Examiner who may make a deduction of marks.

3. The Supervisor should complete the information required on page 7 and 8 of these instructions and enclose those pages in the envelope containing the answers of the candidates. A note of any help given to or any particular difficulties experienced by a candidate should also be enclosed, especially if the Examiner would be unable to discover these from the written answers.

4. Should the Supervisor decide to improvise some or part of the apparatus, he/she must ensure that this does not make the examination more or less accessible to the candidates. The Supervisor should give details to the examiner if the apparatus used differ(s) in any significant way from that specified in these Instructions.

5. It is assumed that candidates will provide themselves with such standard items as a 30 cm rule, a pair of compasses, 0° to 180° protractor and set squares. Squared paper should be available.

6. Whenever a stopwatch or stop clock is specified, candidates should be advised in advance that they may, if they wish, use quartz wristwatches with stopwatch facilities.

7. It is assumed that the number of sets of apparatus for any one experiment will be at least half the number of candidates. Where necessary, Supervisors should direct candidates as to which experiments they are to perform first. The experiments carry the same mark value.

8. **The supervisor MUST perform the experiments and submit with the candidates' answers a sample set of results in the same form as that expected of the candidates.**

Question 1: Apparatus per candidate

2 Expandable steel springs ($k \approx 25$ N/cm)

100 g mass hanger

5 × 100 g masses (slotted)

2 Retort stand sets

2 G-clamps or standard bricks

Protractor (≈ 1º or belter)

20 cm thin string (to be made into a loop)

50 cm rule (≈ 1 mm)

Question 2: Apparatus per candidate

Bread board

8 × 1.5 V cells or 6 V dual live power supply

200 kΩ resistor (R_{in})

50 Ω resistor (R_f)

Beaker with ice

500 ml Beaker

Thermometer

Digital voltmeter

0.5 m insulated copper wire (26 swg)

0.5m constantan wire (26swg)

Enough connecting wire
2 switches

Bread board or microelectronics circuit board on which the op-amp is fixed correctly.

NB: The circuit shown in **Fig. 2.1** must be set for the candidate. Set R_f at 50 Ω.

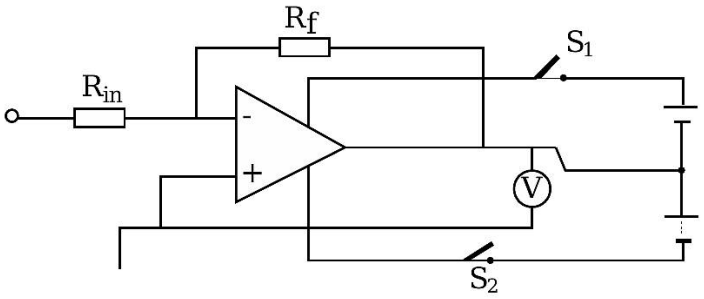


Fig. 2.1

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This form should be completed and sent to the Examiner in the envelope with the scripts.

REPORT ON PRACTICAL PHYSICS

1 Supervisor's Results

Please submit details of the results obtained in Questions 1 and 2 on a spare copy of the question paper clearly marked 'Supervisor's Results' and showing the centre number.

2 The index numbers of candidates attending each session were:

First Session	Second Session

3 The Supervisor is invited to give on a separate sheet details of any difficulties experienced by particular candidates giving names and index numbers. These should include reference to:

(a) any general difficulties encountered in making preparation;

(b) difficulties due to faulty apparatus or materials;

(c) accidents to apparatus or materials;

(d) assistance with respect to colour blindness.

Other cases of hardship, e.g. illness, temporary disability, should be reported direct to ZIMSEC on the normal "Application for Special Consideration' form.

Report on any difficulties by candidates

Supervisor's Signature_____ Date _____