FACULTY OF EDUCATION

MAIN EXAMINATION PAPER

MAY, 2016

B.Ed. / PGCE (Full Time)

TITLE OF PAPER: Curriculum Studies in Physics/Curriculum Studies in Physics 11

COURSE NUMBER: EDC 382/ CTE534

TIME ALLOWED: **Three (3) hours**

INSTRUCTIONS:

1. This paper contains FIVE questions.
2. Question 1 is COMPULSORY. You may choose **ANY THREE** questions from questions 2,3,4,5.
3. Each question carries 25 marks.
4. Any piece of material not intended for marking purposes should be clearly CROSSED OUT.
5. Ensure that responses to questions are NUMBERED CORRECTLY

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR

This paper consists of **6** printed pages

Question 1

a. i. Attached find Questions 4 & 5 from the October/ November 2014 Physical Science Paper 3 Extended. Analyze the two questions using the specification grid for the assessment of objectives. **[6]**

ii. Explain why it is necessary for a teacher of Physics to prepare a specification grid when setting tests to assess students' performance. **[6]**

b. Study Activity 1.4 below and answer the sub-questions i) and ii) that follow:

i. Suggest a topic for a lesson involving this activity **[1]**

ii. What science processes would you expect the learners to engage in when carrying out this activity? Show at what stage each process takes place. **[12]**

Question 2

a. Explain **five** reasons why the nature of science should be taught in schools in Swaziland? **[15**

b. Discuss these two elements of the nature of science that seem challenges to some educators:

i. Science and its methods can answer all questions.

ii. Scientists are particularly objective. **[10]**

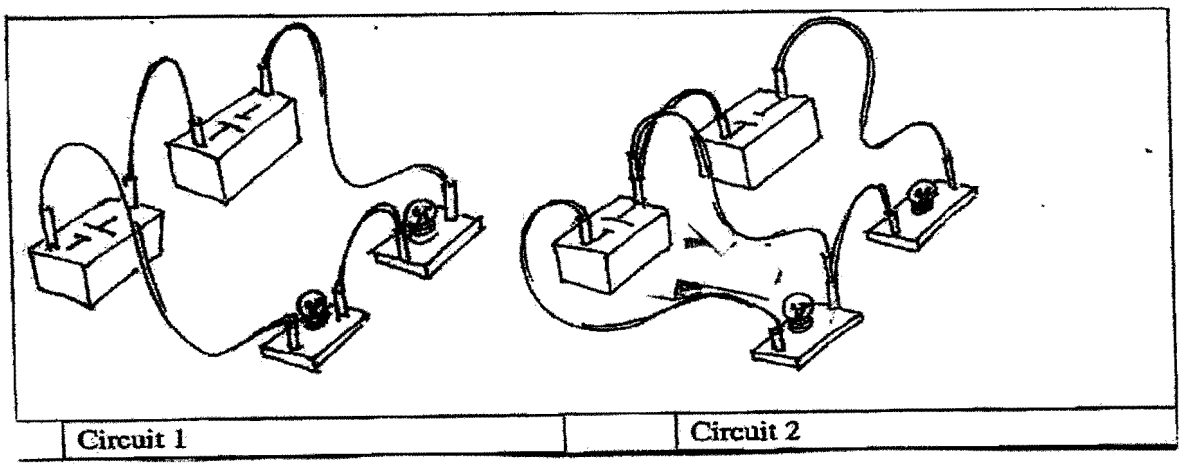
Question 3

Science, technology, society and environment (STSE) education have become a "buzzy" expression in the media these days,

a. Give three goals you consider most important in STSE education. **[6]**
b. Describe the three ways of approaching the curriculum content of STSE namely:
   i. Historical **[3]**
   ii. Philosophical and **[4]**
   iii. Issues based. **[3]**
c. What are three likely challenges Swaziland is likely to face in implementing this curriculum? **[9]**

Question 4

a. You provided your students with the following apparatus: 2 cells, 1.5V with holders; 2 lamps with holders; 4 leads and an extra wire. You ask the students to set up a complete circuit and circuit 1 is produced.



i. What would you expect to happen in circuit 1? Explain your answer. **[2]**

ii. Another student added a wire as shown in circuit 2. How does this wire change the set up? Explain your answer. **[3]**

iii. Construct two psychomotor objectives for the activity above. **[4]**

iv. Construct two objectives, with at least one being high order cognitive domain. **[4]**

v. What content idea are learners expected to deduce from circuit 1? **[2]**

b. How can a physics teacher in Swaziland demonstrate the relevance of physics to the student? **[10]**

Question 5

a. As a teacher of Physics, you receive the following list of requirements from the Examination council for preparation for the Physics practical test:

i. At least 60cm retort stand with clamps,
ii. A split cork'
iii. A thin string of about 1m,
iv. 150g, 300g, 500g masses for a bob,
v. A stop watch or electric timer capable of an accuracy of +/-0.2 s,
vi. A 1 metre rule.

Task:

Prepare a practical test to determine if the mass of a pendulum has any effect on its period.**[15]**

b. What are the purposes of carrying out practical work in school physics? **[10]**

For Examiner's Use

4 (a) Fig. 4.1 shows the graph of the motion of a sky-diver after jumping off a plane and before opening his parachute.

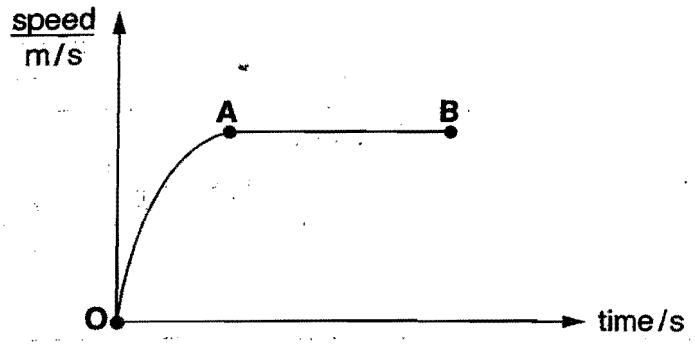


Fig. 4.1

(i) Explain, in terms of the forces acting on the sky-diver, why the acceleration is decreasing in the section **OA**.

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..... [3]

(ii) State why the speed is constant in section **AB**.

..... [1]

(b) After point **B**, the sky-diver opens his parachute.

Explain how the parachute helps the sky-diver to land safely on the ground.

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..... [3]

For Examiner's Use

5 (a) (i) A student gets an electric shock when changing the bulb of a bedside lamp even though the switch is off. On opening the plug connecting the lamp, he finds that the live and neutral wires were swapped.

Explain how this mistake caused the student to get the electric shock.

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(ii) The bedside lamp is rated 240 V, 11 W.

The lamp is switched on for one hour (3600 s).

Calculate the energy, in Joules, converted by the lamp.

..... [2]

(b) An electric multiplug socket is rated 5 A.

Explain, with a numerical reason, why it would be dangerous to connect an appliance rated 250 V, 2 kW, to this socket.

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..... [3]

[Turn over