

**UNIVERSITY OF SWAZILAND****FACULTY OF EDUCATION****SEMESTER 1 EXAMINATION PAPER 2010****PGCE Full Time / B Ed****TITLE OF PAPER** : Curriculum Studies in Physics**COURSE NUMBER:** EDC 282**TIME ALLOWED** Three (3) hours**INSTRUCTIONS**

1. This paper contains FIVE questions
2. Question 1 is COMPULSORY. You may then choose ANY THREE questions from questions 2, 3, 4, 5
3. Question 1 is 40 marks and Question 2-5 are worth 20 marks each.
4. Any piece of material or work which is **not** intended for marking purposes should be clearly **CROSSED OUT**
5. Ensure that responses to questions are **NUMBERED CORRECTLY**

**SPECIAL REQUIREMENTS:** Graph pad.**THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR**

**Question 1 Compulsory [40 marks]**

You are going to teach about "oscillations in physics". You realize that the playground swings can help situate learning in familiar experiences. Use this context to answer the following:

- a) **Design** a means of eliciting the pre-conceptions held by pupils about
  - i. Energy exchange in an oscillating system [8]
  - ii. Why the oscillations naturally die down. [6]
- b) Draw an experiment setup to determine the rate of decay of the swings of a simple pendulum of length 2m [10]
- c) Show how graphical analysis is used to determine:
  - i. Relationship between amplitude decrement and time [8]
  - ii. Decay constant of the pendulum. [8]

**Question 2**

- a) What are models and how are they used in science teaching? [5]
- b) How can the back view of a cyclist's pedal motion be used to model simple harmonic motion? [10]
- c) Analyze the limitations that are inherent in the use of models in teaching. [5]

**Question 3**

- a) Why is it important to do practical work in science teaching? [6]
- b) What limitations do schools in Swaziland face in practical physics? [8]
- c) What policy changes can promote practical work in science education? [6]

**Question 4**

Design strategies for introducing the use of computers to teach science in Swazi schools. [20]

**Question 5**

Analyze the problem of large classes in science teaching in Swaziland according to the following issues:

- a) Causes of the problem [4]
- b) Difficulties of experienced [4]
- c) School based interventions into the problem [4]
- d) Research findings [4]
- e) Country wide interventions into [4]