

**UNIVERSITY OF SWAZILAND**  
**FACULTY OF EDUCATION**  
**MAIN EXAMINATION PAPER 2011**

**PGCE**

**TITLE OF PAPER: Curriculum Studies in Physics**

**COURSE NUMBER: EDC 282**

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

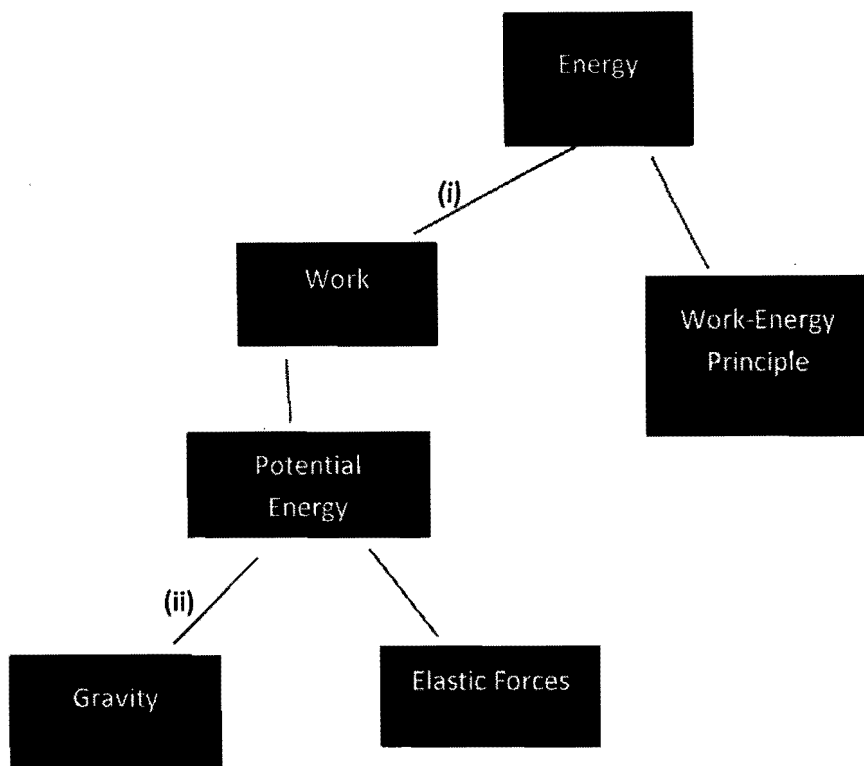
**INSTRUCTIONS**

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. All questions carry 25 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

**THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION HAS BRANDED BY THE INVIFILATOR.**

**QUESTION 1**

Below is a concept map drawn by the teacher who wants to teach about Energy to Form 4 pupils.



There are some missing concepts and words or phrases linking the concepts.

- a) Add words or phrases to the cross links (i) and (ii) (4)
- b) There are 4 missing concepts to complete this concept map. Which are they? (4)
- c) Produce your own concept map about **WORK**. Concepts already on the concept map above can still be used for this concept map. (10)
- d) Discuss how a teacher can make use of concept maps in the teaching of Physics (8)

(25 marks)

### Question 2

- a) The planetary model of the atom is often taught in introductory physics courses. Show this planetary model of an atom in a tabular form. (8)
- b) Critique the use of models in Physics education under the following concepts:
  - i) Physical models
  - ii) Analogies. (12)
- c) Show how a teacher can use analogues to overcome student misconceptions (5)

### Question 3

“There is little doubt that practical work is widely accepted by science educators in most countries as an integral part of science education.... The position of practical work in science education is largely unchallenged.”

- a) Discuss in detail the implications of the paragraph above in relation to physics teaching. (10)
- b) Discuss the difficulties you would experience in Swaziland if you were to implement what the statement above says as a physics teacher. Your argument should be very critical of the status of practical work in the high school. (10)
- c) How could the improvisation of Science teaching equipment be a partial solution to the dire shortage of science teaching apparatus in the schools? (5)

### QUESTION 4

Resources for the teaching of physics are very limited in Swaziland. Discuss how you would make use of the following as teaching resources for physics in Swaziland.

- a. Domestic electricity consumption (5)
- b. On-line-computers (5)
- c. Recoverable 'junk' material from industry (5)
- d. Amusement parks (5)
- e. Microwave oven (5)

**QUESTION 5**

Situation 1	Equipment	OHP, projection micro ammeter, coil, bar magnet, 2 connecting leads
	Concept to be studied	Faraday's Laws of induction
	Subject and Level	Subject:SGCSE Physics Form 4
Situation 2	Equipment	Computer, printer, Excel software, datalogger,
	Concepts	Variation of a pad and current in different materials, diode, filament lamp, constantan wire,
	Subject and Level	SGCSE Physics Form 5

The table above provides different pedagogical situations; describe in detail how you as a teacher, can use these teaching aids to help students learn Physics. In each situation include the following:

- a. The teacher's role
  - b. The pupil involvement
  - c. How the concept is developed
  - d. Discuss the limitations of teaching aids.
- (10 marks for each situation)  
(5)