UNIVERSITY OF SWAZILAND

FACULTY OF EDUCATION
FINAL EXAMINATION PAPER

April/May 2008

B. Ed. II AND PGCE F/T

TITLE OF PAPER : Curriculum Studies in Physics

COURSE NUMBER: EDC 382

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 worth 40 marks and all the other questions 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

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

Question 1 Compulsory

The following is a list of fundamental and derived quantities commonly used in Mechanics.
Time (t), Displacement (s), Mass (m), power, velocity, acceleration, impulse, periodic motion, momentum, kinetic energy, work, Force

a. Construct a concept map, with appropriate arrows to link up all the 12 quantities in the list. For each quantity, insert an appropriate equation under its name to emphasize the interrelationship of quantities. [24]

b. Dimensional analysis can be used to investigate relationships between physical quantities. Use dimensional analysis to investigate how the frequency f of oscillation of a drop of water depends on
   - Liquid surface tension γ (N/m)
   - Drop radius r (m) and
   - density ρ (kg/m^3) [10]

c. Outline the limitations of dimensional analysis in the learning and teaching of physics. [6]

Question 2

Analyze the problem of teacher based misconceptions and lack of experience in handling physics equipment on teaching in Swaziland. [20]

Question 3

African countries are inert consumers of the products of science, science education and technology. Analyze the implications of this observation for the concept of contextualization in science education. [20]

Question 4

Discuss the use of mathematical tools in the teaching of physics in classes. [20]

Question 5

Design and describe a learning program for physics students going to any one of the following places for an education tour: [20]

- Luphohlo Hydro Power Station
- MTN control room
- Medical laboratory
- Bridge construction site.