

UNIVERSITY OF SWAZILAND

**FACULTY OF EDUCATION
EXAMINATION PAPER 2007**

B. Ed. II AND PGCE F/T

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. Each question is worth 25 mark
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

Practical question paper 0625/5/j/m/04

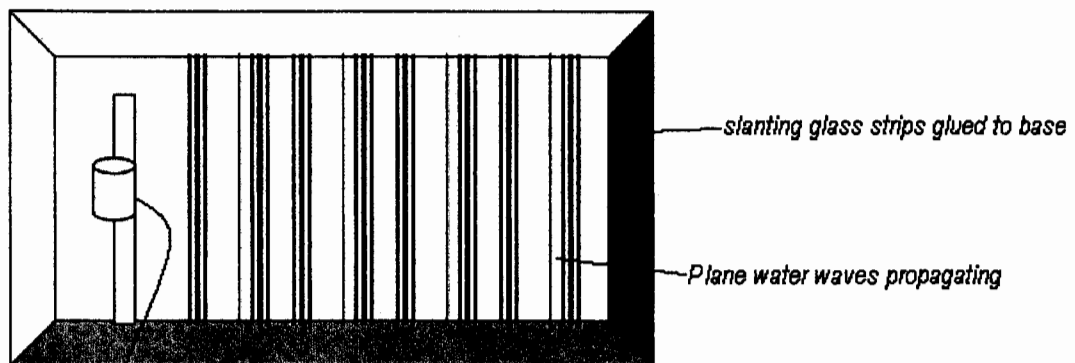
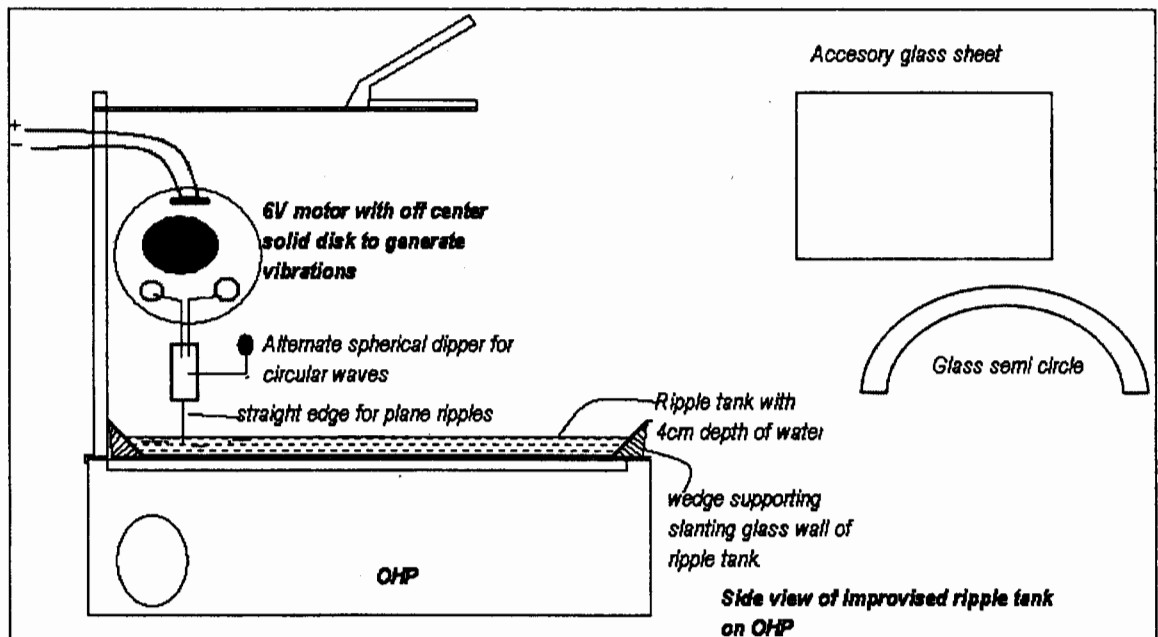
THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR

Question 1

A Physics teacher devised a ripple tank for projection from an overhead projector. The tank consists of a flat clear glass panel, slanting glass sides bound together with water resistant glue. Ripples are propagated in a depth of 4cm of water. Wave accessories used consist of a glass sheet, and a smooth curved surface.

For each improvisation, outline

- Four concepts or levels of ideas that can be developed
- Two practical weaknesses in the design
- Any two misconceptions that can arise from the improvised ripple tank. [25]



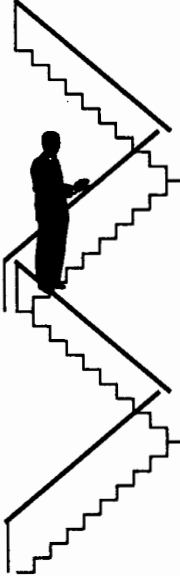
Motor (vibrator) attached to straight edge dipper **TOP VIEW OF PROJECTION RIPPLE TANK.**

Answer any three questions from the following.

Question 2

The box below shows an activity that was designed for a Form 2 class.

Position energy 1. To change your height above the ground you have to use energy to climb higher.



Mass of person in kg	Extra height in metres	Extra energy in Joules
40kg	4m	1,600J
40kg	8m	3,200J
40kg	12m	4,800J
60kg	4m	2,400J
60kg	8m	4,800J
60kg	12m	7,200J
80kg	20m	16,000J

LOOK at the data and then **WRITE DOWN** a mathematical formula for calculating the converted energy when you know the extra height (in metres) and the mass (in kg) moved upwards.

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- Critique the presentation of the data in this activity. [5]
- Design two more questions to establish the fact that gravitational potential energy is independent of horizontal movement. [10]
- Outline the pedagogical advantage of using this approach in teaching physics in a large class. [10]

Question 3

Analyze Question 1 in the attached examination paper and use a specification grid to outline the hierarchy of cognitive and manipulative skills which can be used to mark the students' answers fairly. 0625/5 M/J 04 Q1 [25]

Question 4

Discuss shifting paradigms in science, using the history of the discovery of the atom.

Question 5

Discuss the similarities in the groups of concepts described below. For each pair outline how the underlying concept can be used to teach physics. [25]

<p>Pair 1</p> <ul style="list-style-type: none">❖ The pointer of a triple beam balance has an aluminum plate that oscillated vertically between two magnets❖ An electric motor has four rubber 'feet' at the corners of the base	<p>Pair 2</p> <ul style="list-style-type: none">❖ Change of temperature with time in the natural cooling of a hot body❖ The discharge of a capacitor
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