

Course Code EDC 282. 2005.

UNIVERSITY OF SWAZILAND

FACULTY OF EDUCATION

DEPARTMENT OF CURRICULUM AND TEACHING.

FINAL EXAMINATION QUESTION PAPER, MAY 2005

TITLE OF PAPER : CURRICULUM STUDIES IN PHYSICS

COURSE CODE : EDC 282

STUDENTS : B. ED. YEAR 111, PGCE

TIME : THREE (3) HOURS

INSTRUCTIONS :

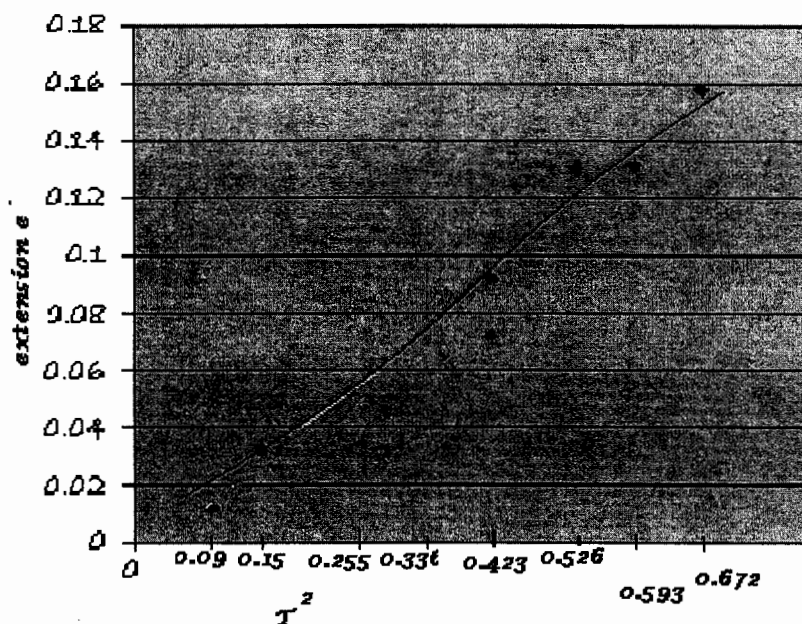
- 1. ANSWER QUESTION ONE AND TWO OTHER QUESTIONS**
- 2. ANSWER EACH QUESTION ON A FRESH PAGE.**
- 3. QUESTIONS CARRY MARKS AS INDICATED.**

SECTION A

Question 1 Compulsory.

In an experiment, a student measured the length of a spring as the load increased and the period of oscillation with different loads on it. Appropriate graphs would be used to determine the elastic constant and acceleration due to gravity g . The table of results recorded by the student and the graph drawn, together to determine the gradient of $T^2(s^2)$ against e (m) are shown below.

load (N)	Extension	T for 20 swings	Period T for one swing	T^2 / s^2
0.5	0.012	6.1	0.3	0.09
1	0.032	7.7	0.385	0.15
1.5	0.052	10.1	0.505	0.255
2	0.07	11.6	0.58	0.336
2.5	0.092	13.6	0.65	0.423
3	0.112	14.5	0.725	0.526
3.5	0.13	15.4	0.77	0.593
4	0.158	16.4	0.82	0.672

Graph of T^2 against e 

Carefully study the work of the pupil and attempt the following questions.

1. Design an appropriate marking scheme for the table and graph. [5]
2. Mark the work of the student making detailed comments to help the pupil. [10]
3. Identify two conceptual weaknesses of the pupil in data analysis and explain how you would help the pupil to correct them. [5,5]

Section B

Answer any two questions

Question 2

Students usually believe that physics is difficult and irrelevant to life. You are about to start the topic "Electromagnetic Radiation" with a Form Five class and aim to make the topic very lively and relevant.

- a. Briefly outline the meaning of **relevance** in science teaching. [5]
- b. Show how the topic "Electromagnetic spectrum" can be made relevant to Swazi children in Form Five. [5]
- c. Show how a project method could be used to motivate pupils to study relevant uses of electromagnetic radiation in their environment. [10]
- d. Briefly outline the relationship between attitudes and the achievement of cognitive skills. [5]

Question 3

A physics head of department in a secondary school observed a lesson on 'Floating and sinking', in a Form Two class. No practical activity was noticed and teacher did most of the talking, asking occasional questions that were all answered by only two pupils who raised hands. The following comment was written after the observation.

'The class was passive throughout the lesson. Teacher needs to change his methods to involve the pupils'

- a. Briefly outline any four conditions that influence class participation. [8]
- b. Identify three weaknesses of the teacher and explain how he could have been more effective. [9]
- c. Construct a plan for pupil and teacher activities in the same topic aimed at improving class participation. [8]

Question 4.

With reference to practical laboratory skills, briefly discuss the following assertions:

- a. The aims of practical work in physics reflect the scientific method. [5]
- b. Science process skills cannot be adequately learnt in poor schools. [5]
- c. Improvisation does not guarantee adequate learning of science. [5]
- d. Practical physics develops investigational skills. [5]
- e. The alternative to practical examination needs less training. [5]

Question 5

What is meant by the *deep* and *surface* approaches to study? [15]

How can these approaches be used in the effective teaching of physics? [10]