



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

INSTITUTION BASED PROGRAMME (IBP) DECEMBER SESSION

EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION

ECT 306: PHYSICS SUBJECT METHODS

DATE: Thursday 3rd May 2012

TIME: 8.00a.m – 10.00a.m

INSTRUCTIONS: Answer question one and any other two questions.

QUESTION 1

- a) Give four characteristics of a scientific literate person. [4marks]
- b) Outline four main objectives of projects as a method in the teaching of physics. [4marks]
- c) Outline the scientific method of acquiring knowledge. [4marks]
- d) Explain how the study of physics differs from the study of other subjects like history. [4marks]
- e) What are the advantages and disadvantages of using the teacher demonstration method in teaching physics? [4marks]
- f) i) What does the acronym ASEI/PDSI stand for. [2marks]
ii) What does this approach advocate? [2marks]
- g) Explain some of the emerging issues that have been incorporated in the revised physics curriculum. [4marks]

QUESTION 2

The 8-4-4 physics curriculum has been reviewed several times since its inception. Outline the various phases of curriculum development outlining some of the factors that led to its review. [4marks]

QUESTION 3

The following question was given to high school physics students. Provide a marking scheme clearly explaining areas to be awarded marks and the number of marks awarded.

- i) Calculate the effective resistance in the circuit diagram shown below? [4marks]
- ii) Explain four ways in which energy is lost in transformers and how the losses can be minimized. [2marks]
- iii) A 12v battery is connected to a circuit consisting of resistors in the arrangement shown below.

$$R_1 = 4.8\Omega, R_2 = 2\Omega, R_3 = 3\Omega, R_4 = 2\Omega, R_5 = 3\Omega, R_6 = 6\Omega$$

Calculate the following:-

- a) Total resistance of the circuit. [4marks]
- b) Total current in the circuit. [4marks]
- c) Current recorded by the ammeter. [3marks]
- d) Voltage across R_4 . [1mark]
- e) Current flowing through R_6 . [2marks]

QUESTION 4

- a) Give seven reasons for writing schemes of work. [7marks]
- b) Outline three areas to consider when writing schemes of work. [3marks]
- c) i) What is a general objective? [2marks]
ii) Describe the characteristics of a good instructional objective. [8marks]

QUESTION 5

- a) Distinguish between
 - i) The heuristic and expository teaching.
 - ii) Didactic and discovery learning. [10marks]
- b) Choose a suitable topic from the secondary school syllabus and explain how this topic can be taught using the demonstration method. Give reasons why the demonstration method is more suitable for the topic. [10marks]