



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

INSTITUTION BASED PROGRAMME

DECEMBER SESSION EXAMINATION FOR THE DEGREE OF MASTER OF EDUCATION

ECT 527: METHODS AND TRENDS IN PHYSICS EDUCATION

DATE: Thursday 3rd May, 2012

TIME: 9.00 a.m. – 12.00 p.m.

INSTRUCTIONS: *Answer any three questions.*

Q1. Designing a physics course has to consider the following (among others):

- Print materials
 - Instructional Resources
- (a) Outline the important print materials and their roles in instruction.
- (b) Indicate the key resources the programme will require for implementation.
- (c) There are situations which require improvisation of resources:
- (i) distinguish between conventional and improvised resources
 - (ii) identify two skills a physics teacher requires to be effective in improvisation of resources.
- [23 marks]

Q2. At school level, the physics content is contained in the syllabus which has a specific structure. Explain the following:

- (a) There is less content at Form I and Form II but a lot more for Form III and IV.
- (b) Some topics are spiraled.
- (c) From the constructivist theory, it can be said that boys have a head start in physics.
- (d) There are ways of reminding learners that physics is useful to society during instruction.
- [23 marks]

Q3. One challenge of subject design is how to teach interdisciplinary or interphasing topics in physical science.

- (a) Identify two topics in physics which are regarded as interphasing.
- (b) Outline a strategy that can be used to teach such topics in a harmonious manner.
- (c) Outline the curriculum design that would avoid the aspect of interphasing topics and the resulting instructional problems. [23 marks]

Q4. Physics content has many concepts.

- (a) Distinguish between a concept and a fact.
- (b) Some concepts are perceived to be difficult:
 - (i) Give two characteristics of a 'difficult' concept in physics.
 - (ii) State two concept in physics you regard as difficult.
- (c) Consider some common strategies a physics teacher can employ to teach a difficult concept with the view of alleviating the difficulty in concept development. [23 marks]

Q5. Physics has a lot of contributions to society. Using the following areas, highlight the main contributions:

- (a) Industry
- (b) Agriculture
- (c) Communication [23 marks]

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