



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2009/2010
INSTITUTIONAL BASED EXAMINATION FOR THE DEGREE OF MASTER
OF EDUCATION

ECT 524: METHODS OF TEACHING SCIENCE

DATE: Friday 30th April, 2010

TIME: 9.00 a.m. – 12.00 noon

INSTRUCTIONS

Answer any three questions.

- Q1. Practical work is the 'heart' of science instruction
- (a) Outline the major merits of practical work when teaching science in schools.
 - (b) Practical work can be designed to take inductive or deductive approach. Using a suitable practical arrangement and relating to own subject area,
 - (i) distinguish between the two approaches.
 - (ii) determine which is preferred for science instruction.
 - (c) Practical work at KCSE is assessed using a practical paper based on individualized mode where candidates perform tasks and record the results on paper.
 - (i) discuss the major disadvantage of this mode of assessment.
 - (ii) suggest a possible alternative mode of practical assessment at his level.
- [23 marks]
- Q2. Concept development is important in science learning and teaching,
- (a) Discuss using examples how the following assist concept development in science instruction:
 - (i) concept maps
 - (ii) analogies
 - (iii) models
 - (b) Mini-labs (Science kits) play a crucial role in concept development using a practical approach:

- (i) Outline the role of mini-labs in science instruction.
- (ii) Identify two challenges teachers of science are likely to face when using mini-labs as compared to those using conventional laboratories.
- (c) The mole concept is labeled as a difficult concept. Explain the main characteristics that are responsible for the label. [23 marks]

Q3. There is a marked difference in science performance at secondary school based on gender.

- (a) Outline the two theories that attempt to explain this difference.
- (b) Explain the following observations:
 - (i) There is no significant difference in science performance between girls and boys at primary level.
 - (ii) Most girls fail to perform on science topics that have a high mathematics component.
- (c) There are some instructional methods in science which suit girls than boys. Indicate one such method and relate to one of the theories in (a). [23 marks]

Q4. School science assessment by most Examination Boards in developing countries has been associated with the conventional methods. Using this statement as a basis discuss the following:

- (a) The assessment is based only on limited domains in science.
- (b) Assessment follows the norm referenced model.
- (c) There is an attempt to maintain some content and construct validity. [23 marks]

Q5. Discuss the following using suitable examples:

- (a) Concept maps can be used in science education to serve several purposes.
- (b) Student practical work can be designed in three forms and each form carries some advantages and disadvantages.
- (c) Group work is associated with a number of instructional advantages in Science Education. [23 marks]

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