



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2009/2010

INSTITUTIONAL BASED PROGRAMME (IBP) – APRIL SESSION

EXAMINATION FOR THE DEGREE OF MASTER OF EDUCATION

ECT 523: FOUNDATIONS IN SCIENCE EDUCATION

DATE: Friday 3rd September, 2010

TIME: 9.00 a.m – 12.00 Noon

INSTRUCTIONS:

Answer question **ONE** and any other **TWO**.

Q.1 In science education at secondary school level we teach on a continuum of class practical/demonstration; ;discovery/didactic approaches.

- a) Briefly discuss THREE advantages of each half of the indicated continuum.
- b) Briefly discuss THREE disadvantages of each half of the indicated continuum.
- c) Project work is part of the practical approaches to the teaching of science. Discuss what ONE personality and TWO intellectual advantages it brings to the learner?
- d) The future of Kenya points to increased class sizes at secondary schools with the attention to economic scales during practicals. With a named subject what/why are THREE items you would purchase to observe economy in the school.

Q.2 Take a named science secondary school topic from one of your subjects. Using a teacher demonstration approach:-

- a) How/and what THREE major ideas would you teach using the **inductive**

approach.

- b) Both the inductive and the deductive approaches to science emphasize the role of observation. But there are instances where observation may lead to the wrong conclusion. **With ONE example** briefly discuss the relevance of this assertion approach-wise.

Q.3 The scientific method clearly defines a logical progression that advances an idea from a basis to a prediction.

- a) With **ONE example** briefly discuss the linear progression of the scientific method.
- b) Take a topic from one of the secondary school science subjects and use the class practical as an approach. Write out the students' laboratory practical worksheets for the experiment. **In what steps of your worksheet would the scientific approach be derived?**

Q.4 Science has a structural approach by which the central theme remains unaltered whilst investigation is peripheral. Take a high school topic "**ACIDS**".

- a) Briefly describe **TWO** experiments at form one/two level clearly showing which/how you would highlight **TWO** of the core and the peripheral investigations.
- b) State and justify a behavioural objective in each of the experiments. What philosophical guideline would you employ to assess that the objective has been achieved?

Q.5 At its various developmental levels science appeals to its historical perspective. It is important that we reflect this in our teaching. **With focus on theory development** briefly describe the points of view of:-

- a) Existentialism
- b) Falsificationism
- c) Instrumentalism