



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

INSTITUTIONAL BASED PROGRAMME (DECEMBER SESSION)

EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION

ECT 305: CHEMISTRY METHODS

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DATE: FRIDAY 4TH MAY 2012

TIME: 4.30 P.M. – 6.30 P.M.

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INSTRUCTIONS

Answer question 1 and any other TWO.

- Q.1
- a)
 - i) We teach alkeness as a homologous series at high school. Write out the first three alkaness in the homologous series.
 - ii) What concept in regard to molecular formulae of alkaness would you tell your student comes out of the first three compounds in this regard?
 - b)
 - i) The high point of teaching is problem solving. What is the role of the teacher and the student respectively in problem solving?
 - ii) In regard to (a ii) above a student gives you the wrong answer. What would you say to the student?
 - c)
 - i) We teach for transfer of learning. With an example of chemistry illustrate lateral transfer of learning.
 - ii) Similarly illustrate vertical transfer of learning.
 - d)
 - i) “Repetition and Pavlovian psychology have their place in the learning/teaching of chemistry”
You are teaching the first four members of the alkane series. How would you see the relevance of this assertion in your class?
 - ii) Is there an exception? How would you explain it?

- Q.2 a) i) it is important that in teaching chemistry we form a link to the environment. A student asks you, “I hear that there are two ways of disposing nylon as a waste. Which are these?” what would you say?
- ii) The same student follows up, “I am told that each has an environmental hazard.” Explain an environmental hazard associated thus.
- b) i) As a teacher you double up as a laboratory manager. What would you say to your technician who has a habit of using tap water to prepare bench solutions?
- ii) There is an electric fire in your laboratory. How would you extinguish it?
- Q.3 a) i) Accidents will happen in the learning / teaching of chemistry. How would you treat a student who spills sulphuric acid on their skin?
- ii) During the same lesson another student breaks glass into their skin. What do you do?
- b) i) International issues are part of teaching chemistry. What would you tell your students the Kyoto Protocol is about?
- ii) Similarly why did the USA refuse to ratify it?
- Q.4 a) i) Measurement and testing are part of our teaching. Consider this problem that links biology and chemistry.
- “Vitamin C has the formula $C_6H_8O_6$. Calculate the number of molecules of vitamin C in 250mg of vitamin c’.

C = 12.00;

H = 1.00;

O = 16.00 ;

Avogadro’s Constant = 6.02×10^{23}

Give the magnitude of the Avogadro's constant is important in chemistry. What would you tell your students that this represents.

- b) Solve for the problem clearly and throughout showing the part of the units as you would to your class.

- Q.5
- a)
 - i) You may be consulted in the construction of a laboratory in your school. Why would you not recommend that it faces N-S direction?
 - ii) We anneal glass tubing to desired shapes for our experiments. What procedure should we follow?
 - b)
 - i) A student asks you, 'Sir / Madam could you please write for me the name and formula of a diprotic and a triprotic acid?' What would you write?
 - c)
 - ii) The same student follows up "Kindly write out the step-wise ionization of each" what would you write.