CRAWFORD UNIVERSITY
FAITH CITY, IGBESA, OGUN STATE
2012/2013 HARMMATTAN SEMESTER EXAMINATIONS

COLLEGE: NATURAL AND APPLIED SCIENCES
DEPARTMENT: BIOLOGICAL SCIENCES
PROGRAMME: B.Sc BIOCHEMISTRY
COURSE CODE: BCH 405 **UNIT:** 2 **TIME ALLOWED:** 3 HOURS
COURSE TITLE: EXPERIMENTAL BIOCHEMISTRY 1V
STATUS: COMPULSORY

INSTRUCTION: ANSWER ALL QUESTIONS

SECTION A

You are provided with the following:
Spectrophotometer, Standard sugar solution (120µg/ml), Anthrone reagent, sample x and laboratory glassware.

1. Prepare a serial dilution of the standard sugar solution (120µg/ml) to cover 0.0, 48.0, 72.0, 96.0 and 120µg/ml. Make each dilution to 1.0ml and place 1.0ml of each dilution and unknown sample X in a boiling tube, keeping all the tubes in the ice cold water, add 6.0ml of Anthrone reagent to each tube. Mix and place in a boiling water bath for 10 minutes. Read the absorbance at 620nm against the reagent blank.

(a) Calculate the volume (ml) of the sugar in each of the standard tubes;
(b) Prepare a table of value and plot the standard curve;
(c) Determine the concentration of the unknown sample X and use the value obtained to determine the concentration of sugar in 35.0cl 0f soft drink;
(d) State the principle employed in the Anthrone method of carbohydrate determination.

SECTION B

ALTERNATIVE TO PRACTICAL

1(a) Define the following terms and state their significance:

(i) Acid value;
(ii) Iodine value;
(iii) Saponification value.

(b) What is the function of the following reagents in the preparation and purification of starch from sweet potato tubers, starch amylose and amylopectin:

(i) 1-butanol;

(ii) 0.15% sodium hydrogen metabisulphite;

(iii) 80% aqueous methanol.

2. Describe briefly the extraction of oil from coconut

3. Differentiate between the two components of starch based on the following:

(i) Density;
(ii) Solubility;
(iii) Iodine value;
(iv) Percentage composition;
(v) Texture;
(vi) Glycosidic linkages.

4 The concentration of a compound B, an amino acid, was determined spectrophotometrically at 275nm. Below are the data on absorption at 275nm of different concentrations of compound B:

Concentration (µg/ml)	OD at 275nm
0	0.01
33	0.45
50	0.69
100	1.37
150	2.06
200	2.73
Unknown concentration	1.63

(a) Calculate the volume (ml) of protein solution that should be added to the respective tube if the standard amino acid concentration is 200µg/ml;
(b) Prepare a table of value;
(c) With the data provided, plot a standard curve on the graph paper;
(d) Determine the unknown concentration of X in µg/ml and µg/100ml.