# OLABISI ONABANJO UNIVERSITY
DEPARTMENT OF BIOCHEMISTRY
REMO CAMPUS, SAGAMU
2017/2018 RAIN SEMESTER EXAMINATIONS

**COURSE TITLE:** BIOCHEMICAL METHODS
**COURSE CODE**: BCH 304 **TIME ALLOWED:** 2 Hours

**INSTRUCTION:** Answer **FOUR** Questions in all at least a question from each section.

## SECTION A

1. a. What is the other name for Lineweaver-Burk equation?
   b. Derive the Lineweaver-Burk equation from Michaelis-Menten equation.

2. (a) Explain how you will use this table to determine the kinetic parameters of cellulase from the termite (*Armitermes eveuncifer* Silvestri).

| **Substrate/Inhibitor↓** | **1/V (Units/mg)** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1/S (mg/ml) →** | 150 | 200 | 250 | 333 | 350 | 450 | 500 | 1000 |
| **CMC + No Inhibitor** | 1.2 | 1.3 | 1.6 | 2.0 | 2.3 | 2.5 | 2.7 | 5 |
| **CMC + NaCl** | 0.9 | 2.3 | 2.9 | 3.7 | 3.9 | 4.9 | 5.6 | 10 |
| **CMC + $NaH_2PO_4$** | 2.8 | 2.8 | 3.2 | 3.8 | 4.1 | 4.7 | 6.3 | 7.7 |

   (b) Determine the (i) Km and (ii) Vmax of the enzyme.
   (c) Determine the type of inhibition exhibited by
      (i) NaCl
      (ii) $NaH_2PO_4$

## SECTION B

3. a. Give the qualitative tests carried out to detect the presence of the following in a preparation.
   (i) carbohydrate (ii) reducing sugar (iii) monosaccharide (iv) pentose (v) ketose

   b. Describe a quantitative test to determine either the total carbohydrate or reducing sugar contents of a given sample.
   c. On what principle is the test described in "b" based on?

## SECTION C

4. a. (i) Briefly describe how you will prepare agarose gels.
      (ii) What gives an agarose gel its gelling properties?
      (iii) How can you control the pore size in the gel?
      (iv) Give one advantage of using agarose gel.
   b. Draw a labeled apparatus that shows an agarose gel placed in horizontal position.

5. After initial steps of plant extraction in the laboratory, a biochemist obtained a crude sample he believes contain DNA due to its absorption at 600 *nm*. However, he needs to work with a pure sample of DNA.
   i. What bioanalytical method will he use to obtain this pure sample that absorbs at 260 nm
   ii. List the materials needed and discuss the practical steps involved
   iii. What is the principle of the method in (i).

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