CRAWFORD UNIVERSITY
FAITH CITY, IGBESA, OGUN STATE
2009/2010 HARMATTAN SEMESTER EXAMINATIONS

COLLEGE: NATURAL AND APPLIED SCIENCES
DEPARTMENT: BIOLOGICAL SCIENCES
UNIT: BIOCHEMISTRY
COURSE CODE: BCH 313 **COURSE UNIT:** 2 **TIME ALLOWED:** 2 HOURS
COURSE TITLE: MEMBRANE BIOCHEMISTRY
INSTRUCTION: ANSWER ANY FOUR QUESTIONS

1 (a) What do you understand by the "Biological membrane".
(b) Discuss the properties of cell membrane.

2 Consider the fluid mosaic model for membrane structure. Describe fully the biomolecules in the cell membrane.

3 (a) Illustrate with diagrams only the following Lipid structures in aqueous solution.
(i) Monolayer (ii) Bilayer (iii) Unilamellar vesicle (iv) Liposomes.
(b) Discuss the properties of any THREE in (a) above

4 (a) Calculate the free energy difference at 25°C due to a galactose gradient across a membrane, if the concentration on side 1 is 2mM and the concentration on side 2 is 10mM.
(b) A phospholipid vesicle is bathed in a solution that contains 52mM Na^+ ions and the electrical potential difference across the vesicle membrane is -30mV. If the electrochemical potential is measured by the free energy change accompanying the process, what is the electrochemical potential at 25°C for Na^+ (Faraday's constant =96,485Coulombs /mole).

5 (a) Discuss the different types of transport of molecules across biological membranes.
(b) Describe the mode of toxic action of Colicin.

6 (a) Discuss fully the functions of the following in membrane structure:
(i) Cholesterol (ii) Phospholipids
(b) Write NOTES on the following
(i) Membrane proteins
(ii) Membrane anchors