

**FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI.**

**SCHOOL OF BIOLOGICAL SCIENCES**

**DEPARTMENT OF BIOCHEMISTRY**

**RAIN SEMESTER EXAMINATION QUESTIONS (2017/2018 SESSION) Date: 28/08/18**

**Course Code & Title: BCH 510-BIOGAS, BIOFEUL TECHNOLOGY. (3Units).**

**Instructions: Attempt Five (5) Questions in All. Time: 3Hrs.**

- 1. With the aid of pathway(s), show how a named methanogen can produce biogas from cow dung. Include the mechanism of methanogenesis.**

**OR**

**With the aid of pathway(s), describe how biomethanol and bioethanol can be produced from a wet wood. Write balanced equations for their combustion.**

- 2. A cell produces a receptor for a growth hormone which is transported to the cell membrane and this follows a zero order reaction. What is the concentration of the receptor after 12 hours, if the rate constant is 0.5Nm per hour and at the beginning of the reaction the receptor concentration at the cell membrane is already 1Nm?**
- 3a. With the aid of relevant equations explain the rapid equilibrium model of enzyme kinetics.**
  - b. Mention four importance of the study of enzyme kinetics.**
- 4a. Explain the term fermentation?**
  - b. Discuss three major parameters to consider during the process of fermentation.**
- 5a. With at least two examples each, state the different basic sources of bioethanol.**
  - b. Discuss three environmental mitigation effects of waste-based biofuels over fossil fuels**
- 6a. Describe the process of transesterification with respect to ethanol. b. What are feedstocks? Why should they be pretreated?**
- 7. Explain any five (5) advantages of biodiesel over fossil fuel.**

**COI, KOI\*,DIU, PCI**

*Cereals*