

**FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI**  
**SCHOOL OF HEALTH TECHNOLOGY**  
**DEPARTMENT OF BIOMEDICAL TECHNOLOGY**  
**2014/2015 HARMATTAN SEMESTER EXAMINATION**

**COURSE: Biopharmaceutical Technology**      **Date: 30/4/2015**

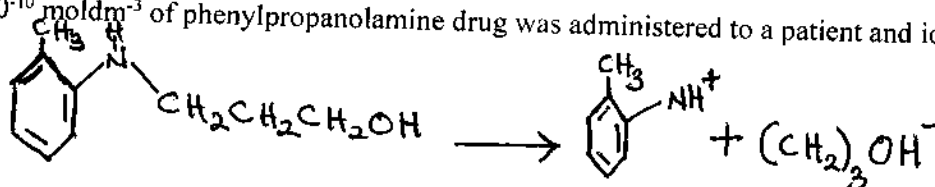
**COURSE CODE: BMT 555**

Instruction: In section A, answer question 1 and any other one.  
 In section B, answer any two questions

Time: 2hours; Unit: 2

**Section A**

1.  $4.52 \times 10^{-10} \text{ mol dm}^{-3}$  of phenylpropanolamine drug was administered to a patient and ionized as shown below:



- (e) State two major processes phenylpropanolamine undergoes (1marks)
- (f) Estimate (i) relative acid strength (4marks)  
 (ii) percentage ionization (3marks)  
 (iii) partition coefficient of phenylpropanolamine if its solubility in octanol is  $3.15 \times 10^{-10}$ . (3marks)
- (g) State (i) four functional groups that can be found in drugs with their structure (5marks)  
 (ii) give one example for each and medicinal uses in 1(c)(i) (5marks)
- (h) Define the following : (i) Conformational isomerism (2marks)  
 (ii) Bioisosterism. (2marks)
- (Total: 25marks)
- 2(a) Briefly discuss drug discovery process from plant source. (2marks)
- (b) Outline three major effects of drugs in humans. (3marks)
- (d) State five factors that influence solubility of drugs in the human system. (5marks)
- (Total: 10marks)
- 3(a) Give two (2) examples of amphoteric drugs; state all functional group present in each. (4marks)
- (b) Briefly distinguish between two classes of bioisosterism with relative example. (2marks)
- (c) Distinguish between (i) enantiomers and diastereomers with relative example. (2marks)  
 (ii) Cis- isomers and trans- isomers with relative example (2marks)
- (Total: 10marks)

**Section B**

1. Define the following: (i) Biopharmaceutical (5marks)  
 (ii) Toxicokinetics (5marks)  
 (iii) Pharmacodynamics (5marks)  
 (iv) Drug tolerance (5marks)
- (Total: 20marks)
- 2(a) A substance is suspected of having a medicinal usefulness. Discuss how you would confirm the efficacy and toxicity of this substance.
- (b) Define drug safety
- 3(a) Classify Biopharmaceutics, using examples (Total: 20marks)  
 (10marks)
- (b) Discuss with reasons, the need for further research and development of biopharmaceuticals in Nigeria (10marks)
- (Total: 20marks)