



**ELIZADE UNIVERSITY**

**ILARA-MOKIN**

**ONDO STATE**

**DEPARTMENT: BIOLOGICAL SCIENCES**

**B. Sc. DEGREE EXAMINATION**

**SECOND SEMESTER 2015/2016 SESSION**

**COURSE CODE: BTH 202**

**COURSE TITLE: INTRODUCTION TO BIOTECHNOLOGY AND  
GENETIC ENGINEERING**

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**DURATION: 2 HOURS**

**HOD's SIGNATURE**

**NAME:.....MAT. No: .....**

**Instructions**

- 1. Answer four questions**
- 2. Begin each answer on a fresh page**

1. Write short notes describing the properties such as monomeric units, chemical bonds, functional groups, examples etc. of the following biomolecules (i) Carbohydrate (ii) Protein (iii) nucleic acids [9 marks]
  - (b) What are the functions of the following cellular organelles (i) Lysosomes (ii) Endoplasmic reticulum (iii) Ribosome (iv) Nucleus [6 marks]
2. Mention the type(s) of phosphorylation that occur during the following metabolic processes:
  - (i) Photosynthesis (ii) Fermentation (iii) Respiration [3 marks]
  - (b) Explain the following terms (i) catabolic reaction (ii) anabolic reaction (iii) glycolysis [6 marks]
  - (c) Describe two types of microbial fermentation and their importance in biotechnology [6 marks]
3. a. (i) What is DNA replication? [2 marks]
  - (ii) Why is the process said to be semi-conservative [2marks]
  - (iii) List three enzymes that are involved in DNA replication [3marks]
  - (iv) What is a gene? [2marks]
 (b) Define or explain the following terms
  - (i) Inducible genes (ii) constitutive gene (iii) Operon [6 marks]
4. Define recombinant DNA molecule [2 marks] (ii) Describe any two types of vectors that can be used in recombinant DNA technology [6 marks] (ii) what are restriction enzymes [2 marks] (b) Briefly describe any method that can be used to transfer a recombinant vector into a bacteria host [5 marks]
5. Discuss the differences between biochemical fermentation and industrial fermentation [5 marks]
  - ((b)Describe the following (i) solid state fermentation (ii) submerged fermentation (iii) batch fermentation (iv) fed-batch fermentation [10 marks]
6. Briefly describe two ways that can be used to improve production and reduce cost in industrial fermentation [4 marks] (b) Differentiate between primary and secondary metabolites and give an example of each [6 marks]
  - (c) Define intellectual property and explain why and how it is protected [5 marks]
7. What is bioinformatics? [3 marks]
  - (ii) List four applications of DNA sequence information [4 marks]
  - (b) List the four common chromatographic techniques used in protein purification and explain two of the techniques [8 marks]