



**ELIZADE UNIVERSITY,
ILARA-MOKIN, NIGERIA**

FACULTY: BASIC & APPLIED SCIENCES

DEPARTMENT: BIOLOGICAL SCIENCES

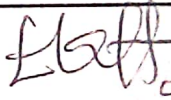
SECOND SEMESTER EXAMINATION

2018/2019 ACADEMIC SESSION

COURSE CODE: BTH 414

COURSE TITLE: MOLECULAR GENETICS

DURATION: 2 HOURS


04/07/2019

HOD's SIGNATURE

NAME:.....

MAT. No:.....

INSTRUCTION: ANSWER FOUR QUESTIONS IN TOTAL

1. Imagine yourself as a young researcher in the Department of Biotechnology where new genes are billed for expression in a carrier.
 - i. Design a primer (diagrams inclusive) needed in the expression process.
 - ii. Give reasons why more than one restriction enzymes are included in the primer design.
 - iii. What other methods can be used to express a gene of interest without using custom-made primer?
2. Describe in detail the process of constructing a recombinant DNA Molecules *in vitro*.
3. Polymerase chain reaction (PCR) is carried out in a thermo-cycler, what are the features a thermo-cycler must possess to carry out the process? Give one major application of PCR in resolving a named medical problem.
4. (a) Explain why RNA is much more variable in its 3-dimensional shape than DNA.
(b) What are the implications of this difference? Support your answers with a specific detailed example.
5. (a) What are the steps involved in Polymerase Chain Reaction?
(b) What are the problem(s) associated with molecular genetic engineering research in Nigeria and the ways forward?
6. (a) List three (3) epigenetic mechanisms that affect gene expression.
(b) Write short notes on the following terms:
 - i. Western blots
 - ii. Northern blots
 - iii. PCR limitations