ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO STATE, NIGERIA

BASIC & APPLIED SCIENCES

BIOLOGICAL SCIENCES

FIRST SEMESTER EXAMINATION

2020/2021 ACADEMIC SESSION

COURSE CODE: BTH 403
COURSE TITLE: ADVANCED GENETIC ENGINEERING
DURATION: 2 HOURS

HOD's SIGNATURE

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

INSTRUCTION

Answer any FOUR questions.

QUESTIONS

1 a) Explain how that Mitochondrial genome is maternally inherited.

b) Write short note on the following:

i. Genome Editing

ii. DNA Hybridization

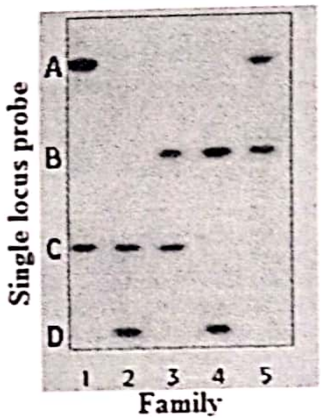
iii. Gene Expression

c) Define and state the characteristics of an RNA Polymerase?

(15 Marks)

2 a) Discuss the processing of messenger Ribonucleic Acid (mRNA)

b) The results from a single locus (A-D) probe DNA fingerprint analysis for a family (1-5) are shown in the figure below.



i. Which lane contains the DNA of the father? Explain.

ii. How many children does the man have? Explain.

iii. Which loci showed the father-children relationship? Explain.

c) Briefly explain the following term

i. DNA Profiling

ii. DNA Ladder

(15 Marks)

3 a) i) Describe briefly the process in the Extraction of Genomic DNA.

ii) Outline the methods used in DNA extraction.

b) Write short note on microsatellite, primer, and DNA probe.

c) Discuss the working principle of Polymerase Chain Reaction.

(15 Marks)

4 a) As a Bioinformatician, you were presented with a sequenced genome, list and explain the possible activities you would carry out on it.

b) List and explain commonly use methods in the transfections of animal cells

c) In gene transfer in plants, explain the following terms;

i. Transient expression

ii. Stable transformation

(15 Marks)

5 a) Give detail explanation of Sanger's chain termination method of genome sequencing

b) List and explain the applications of nanotechnology

c) Why is ribosome an interesting organelle to nanotechnologist?

(15 Marks)