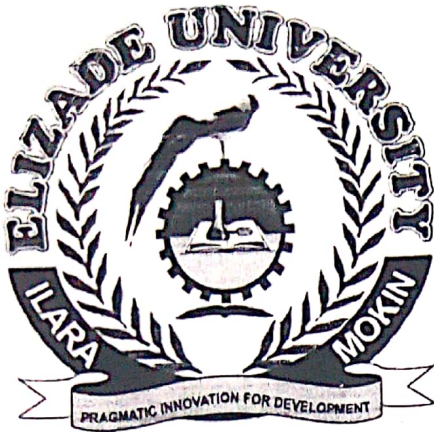


**ELIZADE UNIVERSITY,  
ILARA-MOKIN,  
ONDO STATE**



**FACULTY: BASIC & APPLIED SCIENCES**

**DEPARTMENT: BIOLOGICAL SCIENCES**

**FIRST SEMESTER EXAMINATION**

**2013/2014 ACADEMIC SESSION**

**COURSE CODE: BTH 202**

**COURSE TITLE: INTRODUCTION TO GENETIC ENGINEERING (PRACTICAL)**

**DURATION: 1hour: 30 minutes**

A handwritten signature in black ink is enclosed in a rectangular box.

**HOD's SIGNATURE**

**INSTRUCTIONS**

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

**Instruction: Answer all questions in the answer booklets provided**

Use the picture below to answer the questions that follows.

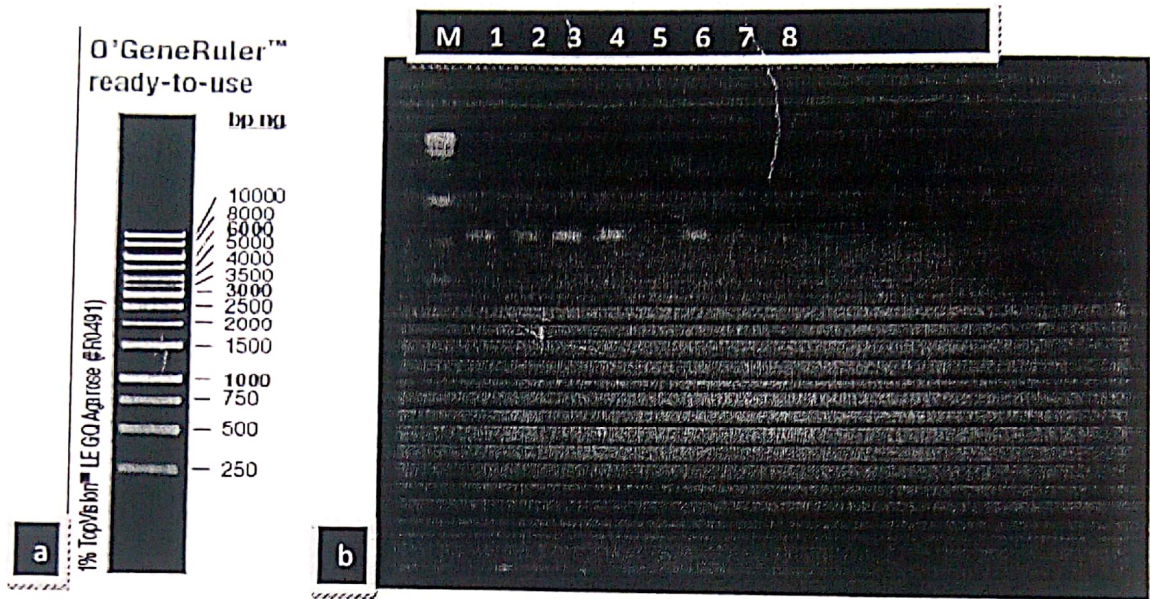
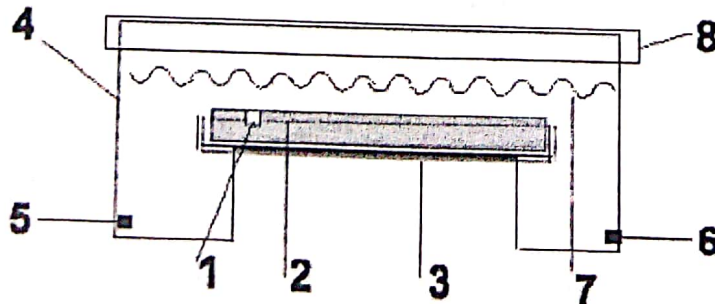


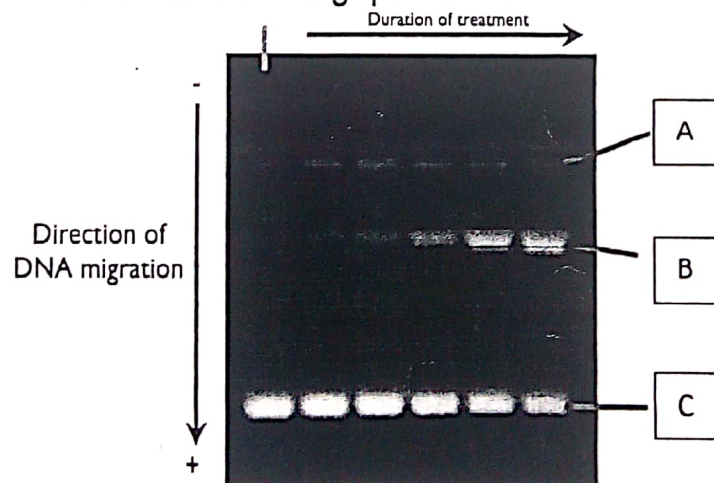
Fig 1. a. represent a 1Kbp DNA size ladder. b. M- DNA marker or ladder the same as in A, Lane 1 - 8 shows the position of a PCR product on an agarose gel.

1. I. Using the picture above, compare the position the PCR product to the DNA size ladder and determine the size of the amplicon.  
 II. Describe how you could prepare 1.5% w/v of agarose gel for electrophoresis  
 III. During the preparation of the agarose gel, DNA staining dye was added to the gel before cooling, explain why this is necessary and give example of such dye.  
 IV. Why is it necessary to exercise precaution when handling a certain DNA staining dye?
2. Use the diagram below to answer the following questions.



NB. 5 and 6 are the electrode for either pole.

- I. Identify and name what device the diagram represents
  - II. Label 1 – 8
  - III. Define gel electrophoresis
  - IV. Why is electrical current necessary for separating molecules by gel electrophoresis?
  - V. Briefly explain why the DNA molecule migrates towards the positive pole.
3. I. Identify and name sample A
- II. What is sample A mostly used for?
- III. DNA amplification by PCR is achieved through multiple cycles of *in vitro* DNA replication that undergoes certain set of conditions.
- List and explain these conditions and their respective temperatures.
  - Outline the components of the PCR reaction solution
- IV. Explain some of the problems commonly encountered when performing PCR protocol
4. Use the diagram below to answer the following questions.



Plasmid DNA has several distinct conformations that can be described as **supercoiled**, **linearized** or **circular** and this determines how slow or fast they migrate on the agarose gel.

- I. From the diagram above, specify what conformation A, B and C represents.
- II. Give reasons for your answers in 4 (I)

5.

- I. Identify and name sample **B**
- II. Briefly explain how this device is used in the molecular biology laboratory.
- III. What safety precaution must be observed when using this device?