# DEPARTMENT OF BIOCHEMISTRY
## OLABISI ONABANJO UNIVERSITY
## REMO CAMPUS, IKENNE

**2009/2010 HARMATTAN SEMESTER EXAMINATION**
**COURSE CODE : BCH 409 COURSE TITLE: GENETIC ENGINEERING**
**DATE: 15TH March. 2010 TIME: 2HR ONLY**
**INSTRUCTION: PUT ON YOUR THINKING CAP ANSWER ANY FOUR (4) QUESTIONS**

1 a. Define a restriction endonuclease map

b. A particular DNA molecule of length 3.0kb is incubated separately with two restriction enzymes A and B. When the cleaved DNA is electrophoresed, enzyme A cut the substrate DNA into three fragments of lengths 1.7kb, 0.9kb, and 0.4kb respectively. While enzyme B has generated two fragments of 1.6kb and 1.4kb respectively. Double degests produced four fragments of lengths 1.2kb, 0.9kb, 0.5kb and 0.4kb respectively. Construct a restriction map for the DNA molecule showing the relative positions of the cleavage sites of A and B, and the distances in kilo bases between them.

c. What stain has been used to visualize the bands in the gel after lectrophoresis?

d. How can you determine the sizes of the fragments on the gel? by using polyacrylamide gel (read)

2. a. Describe a procedure for cloning a full length cDNA of an eukaryotic mRNA which you wish to be expressed in E.coli

b. How would you establish that the cloned gene is expressed in the E. coli

3. a. Compare southern blotting technique with that of Northern blotting technique.

b. Compare sequencing gel with that of Agarose gel

c. Compare High stringency with that of Low stringency of hybridization.

4. There was a case of cholera epidemics in igala land. The causative agent was found to be present in a plasmid carried in the bacteria . As a scientist working in the medical laboratory, describe vividly how you will isolate and characterize the plasmid gene responsible for the epidemics.

5. Indicate with examples how the following are employed in Gene manipulations.

(a) S-1 Nuclease
(b) T4 DNA Ligase
(c) Linker Oligonucleotides
(d) Terminal Transeferase
(e) Klenow Polymerase