FACULTY OF BASIC MEDICAL SCIENCES

DEPARTMENT OF BIOCHEMISTRY

REMO CAMPUS, IKENNE

2010/2011 HARMATTAN SEMESTER EXAMINATION

COURSE TITLE: GENETIC ENGINEERING

TIME: 2 HRS 30MINS

COURSE CODE: BCH 409

DATE: 28TH JUNE, 2011

INSTRUCTIONS: ANSWER ALL QUESTIONS

1 a. The nucleotide sequence of a polylinker in a particular plasmid vector is:

GAATTC|CCGGGATCC|TCTAGAG|TCGAC|CTGCAG|GCATGC|

Identify the position of seven restriction enzyme sequence from this polylinker

b. Given the following short DNA sequence (5' to 3')

ATAGCACAGGGACCACATGCACACACATGACATAGGACAGATAGCAT

What oligonucleotide primer (17-mers) would be required for PCR amplification of this duplex? Give reasons for your answer.

2 a. What is DNA polymorphism?

b. Briefly explain the fundamental types of polymorphism that is exploited for DNA typing

3 a. Briefly explain the steps involved in the Southern blot technique.

b. List five enzymes used in recombinant DNA technology and state their biological function(s)

4 a. Describe three types of cloning vectors

b. Mention the features that is essential for a cloning vector

c. Briefly highlight the principles involved in directional cloning

5 a. What is polynucleotide hybridization?

b. What is a hybridization probe?

c. List three types of hybridization probe

d. What practical approach would you use to create a hybridization probe for a given DNA segment of unknown sequence?