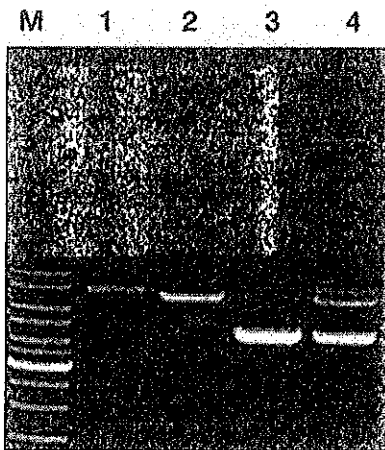


Note: All questions are compulsory. Marks are indicated against each question in square brackets.

1. Give the discovery associated with genetic engineering and genomics with timeline impacting the health system and biotechnology company? [2 marks] CO I
2. Draw the recognition sites for EcoRI, BamHI and HIND III? State the different types of restriction endonucleases? [2 marks] CO I
3. Plasmid of 3.5Kb has following configuration; covalently closed circle, super coiled and open circle. Define these configurations and describes its mobility on agarose gel electrophoresis indicating which one will move faster? [2 marks] CO II



4. What are the salient features of a plasmid? Give the basic information on pBR322 such as size of the vector, when and who constructed it, and how many copies pBR322 a bacterial host cell can accommodate. Also, draw the structure of pBR322? [3 marks] CO II
5. What is insertional inactivation cloning vector, describe the mechanism of screening of the transformed and recombinant pUC8 vector into a host cells? [3 marks] CO II
6. Draw the structure of the following; [3 marks] CO I
 - a. Bacteriophage lambda
 - b. M13 Vector