DATE: 28TH MARCH 2024 **TIME: 09.30 A.M. - 12.30 P.M.**

Part B- Short Answer Questions (20 Marks)

01.

1.1 Define the term "Pharmaceutical Biotechnology" (04 marks)

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1.2 Give three (03) scopes of pharmaceutical biotechnology. (06 marks)

I) .....
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II) .....
.....
III) .....
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02.

2.1 What is meant by "gene cloning"? (05 marks)

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2.2 Give two (02) methods to generate DNA fragments for cloning. (05 marks)

I).....
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II).....
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Index Number: .....

Part C- Structured Essay Questions (60 Marks)

01.

1.1 Explain why restriction mapping is important in genetic engineering. (04 marks)

1.2 Briefly describe six (06) major steps of Southern blotting technique. (06 marks)

1.3 Briefly explain the essential steps of heat-shock transformation method. (05 marks)

02.

2.1 Outline four (04) features of a plasmid vector. (04 marks)

2.2 Briefly explain the terms selection and screening which are required to identify the desired gene among the recombinant clones. (06 marks)

2.3 Describe a method to select the recombinant clone of your interest. (05 marks)

03.

3.1 Briefly explain the term "genetically modified organisms". (05 marks)

3.2 Describe the applications of transgenic animals in medical and other associated fields. (05 marks)

3.3 Write brief description on immunoglobulins. (05 marks)

04.

4.1 Briefly describe four (04) advantages of using immobilized enzymes over free enzymes in pharmaceutical industry. (06 marks)

4.2 Outline four (04) factors to be considered when designing a fermenter. (04 marks)

4.3 Using a labelled diagram, illustrate antibiotic production using a fermenter. (05 marks)