

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

RESIT/SPECIAL

**FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR
SCIENCE IN BIOCHEMISTRY**

BIOC 443: INTEGRATED LABORATORY TECHNIQUES III

STREAMS: BSC (BIOC) Y4S2

TIME: 2 HOURS

DAY/DATE: THURSDAY 04/02/2021

2.30 P.M. – 4.30 P.M.

INSTRUCTIONS:

- i. Answer Question One and any other Two Questions**
- ii. Do not write on the question paper**

QUESTION ONE (30 MARKS)

- a. Differentiate between the two types of primers used in PCR. (4 marks)
- b. Outline the key consideration while designing suitable primers. (5 marks)
- c. Calculate the total number of cells suspended in a final volume of 5 ml, taking into account that the cells were diluted 1:2 before counting and the number of cells counted with the haemocytometer was 400. (6 marks)
- d. Describe how frozen stocks of cells can be revived. (7 marks)
- e. Describe the steps involved in polymerase chain reaction. (8 marks)

QUESTION TWO (20 MARKS)

Describe how cell harvesting can be achieved by using:

- a. Mechanically means. (5 marks)

- b. Proteolytic enzymes. (15 marks)

QUESTION THREE (20 MARKS)

- a. Describe how isolation of DNA can be achieved using EDTA as the isolation buffer. (10 marks)
- b. Describe the factors that determine the concentration, amount or activity of a given cell component that can be detected in the fluids of a healthy individual. (10 marks)

QUESTION FOUR (20 MARKS)

- a. Briefly describe how analyzing of information of particular DNA sequence can be done using bioinformatics tools. (10 marks)
- b. Describe how DNA cloning is achieved using the cell based approach. (10 marks)
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