

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE

BMET 442: RECOMBINATION DNA TECHNIQUES

STREAMS: BSC BMET

TIME: 2 HOURS

DAY/DATE: THURSDAY 23/09/2021

11.30 A.M – 1.30 P.M.

INSTRUCTIONS:

- Answer question ONE and any other TWO questions.

QUESTIONS ONE (COMPULSORY)

- (a) Describe how Diphenylamine is used in detection of DNA. (5 marks)
- (b) Explain the role of the following compounds used in DNA extraction.
- (i) Phenol chloroform (2 marks)
- (ii) Absolute ethanol of isopropanol (2 marks)
- (c) Describe briefly how DNA technology is applied in vaccine development and state its advantages over the conventional way of vaccine development. (6 marks)
- (d) Explain the importance of mapping human genome. (5 marks)
- (e) List five steps in proteome analysis. (5 marks)
- (f) Describe how DNA technology is applied in diagnosis of sickle cell anaemia. (5 marks)

QUESTION TWO (20 MARKS)

- (a) Describe the steps in Southern Blotting techniques. (10 marks)
- (b) Apart from restriction enzymes, state and explain the role of any other five enzymes used in recombinant DNA technology. (10 marks)

QUESTION THREE (20 MARKS)

- (a) Describe Sanger sequencing techniques, clearly stating the principle behind it. (10 marks)
- (b) Describe the recombinant DNA techniques applied in production of insulin in E. coli. (10 marks)

QUESTION FOUR (20 MARKS)

- (a) Describe a step wise procedure for the production of cDNA and state its applications in recombinant DNA techniques. (10 marks)
 - (b) Define the following terms as used in proteomics: (6 marks)
 - (i) Structure proteomics
 - (ii) Functional Proteomics
 - (iii) Expression proteomics
 - (c) List the common physical methods used in gene transformation. (4 marks)
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