TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BTMB

ABT 4206 : BIOCHEMICAL TECHNIQUES AND INSTRUMENTTATION I

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Dec 2016

Instructions to Candidates

You should have the following for this examination

Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

a) List five factors affecting the retention of a chromatographic column (5 marks)

b) Differentiate between the following;

i) K_a and K_h (4 marks)

ii) Free and dynamic capacity in ion exchangers (4 marks)

iii) Functional coefficient (f) and Electrophoretic mobility (μ) (4 marks)

c) List four criteria for selection of gel for electrophoresis (4 marks)

d) Describe SDS detergent and its application in electrophoresis (4 marks)

e) List five factors that affect HIC (5 marks)

Question TWO

a) Explain the law of mass action (5 marks)

bi) Find the pH of a solution prepared by dissolving 18.68 g of tris (MW = 121.135 g/mol) with 9.34 g of tris hydrochloride (MW = 157.596 g/mol) in 0.50 L of water. pKa for tris hydrochloride is 8.075. (7 marks)

ii) If 24.0 mL of 1.0 M HCl is added to the mixture in (a) above, what will be the new pH of the solution? (8 marks)

Question THREE

a) Explain the effect of pH on protein solubility using illustration (10 marks)

b) Describe the structure and application of polyacrylamide gelling compound in electrophoresis (10 marks)

Question FOUR

Describe the;

a) Effect of bead size on gel filtration experiment (10 marks)

b) Lowry (Folin) protein assay (10 marks)

Question FIVE

Explain SDS-PAGE electrophoresis (20 marks)