

**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2018/2019**

**YEAR III EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INDUSTRIAL BIOCHEMISTRY/APPLIED BIOLOGY**

**HBB 2329: PROTEIN BIOTECHNOLOGY**

**DATE: DECEMBER 2018 TIME: 2 HOURS**

INSTRUCTIONS: Answer question one and any other two questions.

QUESTION ONE

a. Briefly explain the use chemical and physical methods in the isolation of protein cell membranes. (6 marks)

b. i. Briefly explain the four levels of protein organization. (4 marks)

ii. Polyacrylamide gel elecronphoresis (PAGE) is used for protein analysis. Briefly discuss. (4 marks)

c. i. Account for the production of gluconate by glucose oxidae (GOX)(4 marks)

ii. Briefly explain the application of sodium gluconate in industry (6 marks)

d. Explain the application of enzymes in leather industry. (6 marks)

QUESTION TWO

Discuss the uses of enzymes in the food industry. (20 marks)

QUESTION THREE

Insulin is a human therapeutic protein. Discuss its production. (20 marks)

QUESTION FOUR

Discuss the methods used to study protein – protein interactions. (20 marks)