

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

## JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

**UNIVERSITY EXAMINATIONS 2017/2018**

**YEAR 4 EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOCHEMISTRY AND MOLECULAR BIOLOGY**

**HBB 2420: PRINCIPLES OF GENETIC ENGINEERING II**

**DATE: JANUARY 2018 TIME: 2 HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

QUESTION ONE (30 MARKS)

ai) Briefly describe the structure of tRNA (4 marks)

ii) Outline key functions of rRNA in protein synthesis (2 marks)

b) Describe briefly the mechanism of protein synthesis at the initiation stage (6 marks)

c) Discuss briefly receptor mediated endocytosis (6 marks)

d) Explain with the aid of diagrams how screening of bacteria by replica plating is carried out (6 marks)

e) Briefly explain the following techniques;

i) Nested PCR (3 marks)

ii) Touch down PCR (3 marks)

QUESTION TWO

Discuss the process and mechanism of recombinant protein synthesis (20 marks)

QUESTION THREE

Describe the process of cloning with a plasmid vector and purification of final products (20 marks)

QUESTION FOUR

Discuss transformation and transduction as applied in genetic engineering

(20 marks)