



OFFICE OF THE DEPUTY VICE CHANCELOR-ACADEMICS AND STUDENTS AFFAIRS

UNIVERSITY EXAMINATIONS

2016/2017 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER EXAMINATION

FOR DEGREE

IN

BACHELOR OF SCIENCE

COURSE CODE: MIC 415

COURSE TITLE: BIOTECHNOLOGY

DATE: 19/06/2017

TIME: 9:00AM-12:00 NOON

INSTRUCTIONS TO CANDIDATES

- Answer all questions
- Do not write on the question paper
- Marks are shown at the end of each question
- Show workings in the answer booklet for award of full marks
- Mobile phones are not allowed in the examination venue
- Each question should begin on a fresh page
- Duration is 3 hours

THIS PAPER CONSISTS (3) PRINTED PAGES

PLEASE TURN OVER

2016/2017 ACADEMIC YEAR
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FOR BACHELOR OF SCIENCE
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Section A: answer all questions (40marks)

QUESTION ONE

- i. Define tissue culture (1mark)
- ii. Describe four applications of tissue culture (2mark)
- iii. Describe the main stages involved in plant tissue culture (2marks)

QUESTION TWO

- i. Using examples, describe the differences between continuous and batch fermentation (3marks)
- ii. Describe four environmental effects of oil spill (2marks)

QUESTION FOUR

- i. Describe four factors that govern the production of recombinant therapeutic proteins in *Bacillus subtilis*. (2marks)
- ii. Describe four (4) potential applications of genetic manipulation of micro-organisms (2 marks)
- iii. Define recombinant DNA (2 marks)

QUESTION FIVE

- i. Describe the steps of manufacturing of insulin using microbes as a cell factory (3marks)
- ii. State the functions of human growth hormone (3marks)

QUESTION SIX

Using specific examples differentiate between prehistoric biotechnology and modern biotechnology. (3marks)

QUESTION SEVEN

- i. List the phases of bio-waste composing (2marks)
- ii. Describe the requirements of an effective vaccine (3marks)

Section B: Answer any 2 questions ONLY (30marks)

QUESTION NINE

Discuss the applications biotechnology in agriculture (15marks)

QUESTION TEN

- i) “The ban on genetically modified organisms, especially GMO food in Kenya should continue”.
Discuss the view (8marks)
- ii) “Building capacity for developing and managing biotechnology is essential in institutionalizing GMO in Kenya: Discuss (7marks)

QUESTION ELEVEN

Using specific examples, discuss the applications of gene technology in:

- i) Animal improvement (5marks)
- ii) Health (5 marks)
- iii) Plant improvement (5marks)