

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF SCIENCE IN BIOMEDICAL
SCIENCE AND TECHNOLOGY**

BMED 447: ANIMAL CELL CULTURE AND BIOTECHNOLOGY

STREAMS: BSC (BIOMED)

TIME: 2 HOURS

DAY/DATE: TUESDAY 05/12/2017

2.30 P.M. – 4.30 P.M.

INSTRUCTIONS:

- **Answer question ONE (COMPULSORY) and TWO other questions**
- **Sketch diagrams may be used whenever they may help to illustrate your answer**
- **Do not write anything on the question paper**
- **This is a closed book exam. No reference materials are allowed in the examination room**
- **There will be No use of mobile phones or any other unauthorized materials**
- **Write your answers legibly and use your time wisely**

QUESTION ONE (30 MARKS)

- (a) Discuss the major application of animal cell culture. [8 marks]
- (b) Briefly explain the major advantages and major disadvantages of using animal cell culture. [4 marks]
- (c) Explain Hayflick limit. [2 marks]
- (d) With the use of suitable diagram, discuss the four phases involved in the process of a cell growth. [10 marks]
- (e) Explain how a particular cell type can be selected from a primary cell culture for sub-culturing. [6 marks]

QUESTION TWO (20 MARKS)

- (a) Discuss some of the conditions required for cell line growth. [8 marks]
- (b) Explain some of the criteria used when choosing cell lines. [4 marks]
- (c) Briefly describe the characteristics of a normal and transformed cell in an animal cell culture. [8 marks]

QUESTION THREE (20 MARKS)

- (a) Enumerate and discuss the important properties of the embryonic stem cells.[8 marks]
- (b) Distinguish major services offered by animal cell culture collection institutions.[4 marks]
- (c) Explain sources and signs of contamination in an animal cell culture. [8marks]

QUESTION FOUR (20 MARKS)

- (a) Discuss four laboratory equipment needed for a successful animal tissue culture.[4 marks]
 - (b) Discuss the following in relation to animal cell culture technology.
 - (i) Hybridoma [1 mark]
 - (ii) Primary culture [1 mark]
 - (iii) Cell line [1 mark]
 - (iv) Cell strain [1 mark]
 - (c) Discuss what should be done when animal cell culture are contaminated. [6 marks]
 - (d) Contamination is a real bother in animal cell culture technology. Specify the commonly used antimicrobial agents in animal cell culture medium to inhibit the growth of the microorganisms. [6 marks]
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