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CHUKA



UNIVERSITY

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**UNIVERSITY EXAMINATIONS**

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

**BMET 443: ANIMAL CELL CULTURE AND BIOTECHNOLOGY**

**STREAMS:**

**TIME: 2 HOURS**

**DAY/DATE: WEDNESDAY 4/12/2019**

**11.30 A.M – 1.30 P.M**

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**INSTRUCTIONS**

**Answer question ONE (COMPULSORY) and any other TWO 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**

**QUESTION ONE (30 MARKS)**

- (a) Discuss the protocol adopted in an animal cell culture laboratory when thawing the cell for culture. [6 marks]
- (b) Discuss different phases of cell growth in animal cell culture laboratory. [8 marks]
- (c) Explain how viable and non viable cells can be distinguished in an animal cell laboratory [6 marks]
- (d) Discuss the procedure for cell passaging in the animal cell culture laboratory. [6 marks]
- (e) Describe the differences between the primary and continuous culture. [4 marks]

**QUESTION TWO (20 MARKS)**

- (a) Discuss the procedure for cell counting in animal cell culture laboratory using a hemocytometer. [8 marks]

- (b) Describe the differences between embryonic stem cells, pluripotent stem cells, multipotent stem cells and germ cells. [8 marks]
- (c) Give 8 basic constituents of media used in animal cell culture laboratories. [4 marks]

**QUESTION THREE (20 MARKS)**

- (a) You are working as a senior biomedical scientist in animal cell culture laboratory. Describe the standard freezing procedure you can adopt for your laboratory. [8 marks]
- (b) Discuss three aseptic techniques employed in an animal cell culture you can adopt for your laboratory. [8 marks]
- (c) Describe four (4) applications of the monoclonal antibodies produced in animal cell culture laboratories. [4 marks]

**QUESTION FOUR (20 MARKS)**

- (a) Trypsinizing cell is a very important protocol in animal cell culture technology. Discuss the standard laboratory procedure for trypsinizing animal cells for culture. [8 marks]
- (b) Tabulate some of the commonly used antibiotics and antifungals used in animal cell culture. Indicate the working concentration for the antimicrobials, target microorganisms and the stability duration in terms of days at 37C. [8marks]
- (c) Discuss the process of crypreservation and recovery of crypreserved cells of animal cells in culture laboratory. [4 marks]
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