Technical University of Mombasa

Faculty of Applied and Health Sciences

DEPARTMENT OF PURE AND APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMMUNITY HEALTH

BSCH 13S

AAB 4102 : GENERAL MICROBIOLOGY

SUPPLEMENTARY/SPECIAL EXAMINATION

JULY 2014 SERIES

2 HOURS

Instructions to candidates:

This paper consists of **FIVE** questions
Answer question **ONE** (compulsory) and any other **TWO** questions

QUESTION ONE

a) (i) By use of diagram illustrate various form of flagella distribution in cell wall. **(4 marks)**

(ii) Microbial culture consisting of 4 cells was incubated at optimum growth conditions for 6 hours. Calculate the final population given the generation time of the microorganisms is 30 minutes. **(3 marks)**

b) (i) Explain the structure and operation of Dark field microscope over bright field microscope. **(2 marks)**

(ii) List the advantage and disadvantage of Dark field microscope. **(2 marks)**

c) Compare prokaryotic and Eukaryotic cells. **(5 marks)**

d) Define the following terms;

(i) Selective media **(2 marks)**

(ii) Aseptic technique **(2 marks)**

(iii) Incubation **(2 marks)**

e) Discuss sterilization in presence of moisture using Autoclave method. **(6 marks)**

QUESTION TWO

a) Describe heat sterilization methods under the following headings;

(i) Sterilization by heat in absence of moisture **(6 marks)**

(ii) Sterilization by heat in presence of moisture by autoclaving. **(4 marks)**

b) Explain how to test for sterility of the following materials;

(i) Media **(2 marks)**

(ii) Petri plates **(3 marks)**

c) Discuss the extrinsic factors that affect microbial growth **(5 marks)**

QUESTION THREE

a) Outline the procedure in isolation of pure cultures using pour plate technique **(2 marks)**

b) List the disadvantages of aerobic plate count in enumeration of microorganisms **(2 marks)**

c) Explain the techniques that can be used to improve microscopic observation of cells. **(3 marks)**

d) Using Breed's smear method, 12 cells was the average field count. Given the diameter of field was 0.04mm, calculate the number of cells per one ml of original sample. **(4 marks)**

e) Describe steps to follow in making the slide preparation for viewing under microscope **(5 marks)**

QUESTION FOUR

a) Enumerate six precautions to observe while working in the laboratory **(6 marks)**

b) Highlight the steps, reagent and the expected output in gram's stain reaction. **(10 marks)**

c) Discuss key components necessary in media formulation. **(4 marks)**

QUESTION FIVE

a) (i) Use a diagram to illustrate the balance of nitrogen in cycle of elements. **(12 marks)**

(ii) Differentiate between putrifaction and Ammonification **(4 marks)**

b) Explain how pH influence the growth of microorganisms **(4 marks)**