



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ENVIRONMENTAL HEALTH AND POPULATION HEALTH

HEH 104: BASICS IN ENVIRONMENTAL MICROBIOLOGY

DATE: Thursday 1st February 2018

TIME: 8.00a.m - 10.00a.m

INSTRUCTIONS:

SECTION A: ANSWER ALL QUESTIONS [20 MARKS]

1. a) Outline the contribution of the following scientists in the early development of microbiology
 - i. Paul Ehrlich [4 Marks]
 - ii. Alexander Fleming [1 Marks]
 - iii. Christian Gram [1 Marks]
 - iv. Louis Pasteur [4 Marks]
 - v. Edward Jenner [2 Marks]
- b) Delineate the Koch's postulates [4 Marks]
- c) Giving one example, differentiate between gram positive and gram-negative bacteria [4 Marks]

SECTION B: ANSWER QUESTION 2 [COMPULSORY] AND ANY OTHER TWO QUESTIONS

2. a) With the use of specific examples, describe the bacterial cell shapes and arrangements [12 Marks]
- b) Describe the standard bacterial growth curve [8 Marks]
3. Describe the various mechanisms by which bacteria protect themselves from heavy metal toxicity [15 Marks]
4. a) Describe four ways through which microorganisms access and cause disease in man [8 Marks]

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b) Explain the concept of sterilization as used in microbiology and describe **five** ways in which heat may be used to effect sterilization
[7 Marks]

5. Compare and contrast the prokaryotic and eukaryotic cell
[15 Marks]

6. a) Describe the **four** risk groups into which biological specimen used in the Laboratory may be categorized
[8 Marks]

b) With use of relevant examples, explain the importance of microbes to humanity
[7 Marks]

7. a) Explain the measures that should be put in place to minimize the hazards in a laboratory setting
[7 Marks]

b) Explain the types of culture media that may be constructed based on the principles of selection, differentiation and enrichment
[8 Marks]

8. Describe the environmental factors that affect microbial growth on culture media
[15 Marks]

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