BOTA 131

CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE

BOTA 131: GENERAL MICROBIOLOGY

STREAMS:BSC(ENSC,WIEM,ANSC,FOST,AGRI,HORT,BED,BIOCHEM,BMED,NARE,BSC SCI) **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 6/7/2016 **11.30 A.M. – 1.30 P.M.**

INSTRUCTIONS:

- **Answer all questions in SECTION A(50MARKS) one and any other one question in SECTION B (2OMARKS)**

1. (a) (i) State three characteristics of coliform bacteria. (3marks)

   (ii) Give three groups of free nitrogen fixers and cite an example of each. (3marks)

   (b) Explain the differences between emerging and re-emerging diseases. (4marks)

2. (a) (i) List the phases involved in the lytic cycle of animal viruses. (5marks)

   (ii) Describe the morphology of molds. (3marks)

   (iii) State two difference between Apothecium and Acervuli. (2marks)

3. (i) Identify the protozoa parasites that cause the following diseases:(3marks)

   (i) Malaria

   (ii) Trypanosomiasis

   (iii) Amoebic dysenitry.

(ii) State two ways of disposing microbial cultures. (2marks)

(iii) Explain why petriplates are incubated in an inverted position.(2marks)

(iv) Explain why working benches are wiped using 70% ethanol before samples are incubated onto media. (1mark)

(v) State the conditions under which an autoclave sterilizes media and other materials (2marks)

4. (i) State the importance of a differential stain. (2marks)

(ii) Identify the primary and counter stain during gram staining. (2marks)

(iii) Explain the following terms in relation to microbiological media. (2marks)

(i) Broth

(ii) Complex medium

(iv) Explain the importance of heat fixation during preparation of stained smears. (2marks)

(v) Explain the principle behind negative staining using anionic dyes. (2marks)

5. (i) Differentiate between bioremediation and bioleaching. (2marks)

(ii) Give the name of spherical bacteria that occur in. (2marks)

(a) Chains

(b) Clusters

(iii) Illustratelophotrichous and amphitrichous flagellation in bacteria.

(iv) Explain the role of pili and plasmids in bacteria. (2marks)

(v) Explain how bacteria obtain energy required for growth. (2marks)

SECTION B: ANSWER ONE QUESTION ONLY

6. Discuss the various industrial biotechnology products and cite specific examples of micro- organisms involved. (20marks)

7. Describe the different classes of chemical antimicrobial agents and their mode of action. (20marks)
