



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2009/2010

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

HML 404: FOOD AND WATER MICROBIOLOGY

DATE: Monday, 28th December, 2009

TIME: 2.00 p.m. – 4.00 p.m.

INSTRUCTIONS:

SECTION A

Answer **ALL** questions (10 marks each)

1. a) State the family name of the following water borne viruses
 i) Rotavirus
 ii) Human corona virus
 iii) Hepatitis A virus
 iv) Poliovirus

(4 marks)

 b) Explain the sources of carbon and light for the following organisms
 i) Chemolithotrophs (chemoautotroph) (2 marks)
 ii) Photoheterotrophs (2 marks)
2. a) Explain the term Coliform. (2 marks)
 b) State four reasons for choosing *Escherichia coli* as an ideal coliform
 during water analysis. (4 marks)
 c) Outline the indole test for *Escherichia coli*. (4 marks)
3. a) Outline milk pasteurization using Ultra High Temperature technique.

(3 marks)

- b) Outline the following methods used in testing the quality of milk
 - i) Phosphatase (3 marks)
 - ii) Methylene blue (4 marks)

SECTION B

Answer only **TWO** questions (20 marks each)

4.
 - a) Explain the applications of heat in the control of food poisoning microorganisms. (10 marks)
 - b) Explain the precautions taken before collecting chlorinated tap water for bacteria analysis. (5 marks)
 - c) Discuss aflatoxicosis disease under the following headings:-
 - i) Causative agent. (2 marks)
 - ii) Disease condition. (3 marks)

5.
 - a) The current floods have caused spread of cholera in many parts of Kenya.
 - i) State the causative agent of the above named disease. (2 marks)
 - ii) Explain how the agent is transmitted (3 marks)
 - iii) Name one isolating media for the agent (1 mark)
 - iv) Outline Oxidase test for the agent causing cholera (4 marks)
 - b) Outline the presumptive test as used in enumeration of bacteria in water samples. (10 marks)

6.
 - a) Name a selective media and a diagnostic test used for isolation and identification of the following pathogenic bacteria found in food
 - i) *Clostridium perfringens* (2 marks)
 - ii) *Staphylococcus aureus* (2 marks)
 - iii) *Campylobacter jejuni* (2 marks)
 - iv) *Bacillus cereus* (2 marks)
 - b) Explain the following processes in sewage treatment
 - i) Primary (4 marks)
 - ii) Tertiary (8 marks)