



UNIVERSITY OF SWAZILAND
Faculty of Health Sciences

Department of Environmental Health Science

Main Examination 2012

Diploma in Environmental Health Science

Title of paper: RURAL WATER SUPPLY TECHNOLOGY

Course code: EHM 205

Time allowed: 2 HOURS

Marks allocation: 100 Marks

Instructions:

- 1) Answer **FOUR** questions
- 2) Each question is weighted 25 marks
- 3) Write neatly and clearly
- 4) Begin each question in a separate sheet of paper

This paper is not to be opened until the invigilator has granted permission

Main Examination: December 2012

EHM 205

QUESTION 1.

- a) What are the differences from the chemical point of view between water derived from shallow and deep wells. (10)
- b) Describe the possible sources of pollution in each kind of well. (15)

TOTAL 25 MARKS

QUESTION 2.

“You are an Environmental Health Officer stationed in your area of jurisdiction”

- a) Make a determination of which water-using sectors are most dominant and how did you arrive at this determination. (10)
- b) Do you think the past trends will continue into the future and why? (5)
- c) Are there water supply problems in your area of jurisdiction and if so could these be alleviated by modifying water use rates in one or more of the water using sectors? (5)
- d) How much of the reduction current rates of use do you think could be achieved? (5)

TOTAL 25 MARKS

QUESTION 3.

- a) Explain why coliform bacteria are used as indicators of contamination in drinking water quality. (5)
- b) Discuss the limitation of coliforms as an indicator. (8)
- c) Why is a positive test for faecal coliforms in a public water supply considered more serious than a positive test for total coliforms? (12)

TOTAL 25 MARKS

QUESTION 4.

As an Environmental Health Officer, you have been asked to design a sampling and analyses scheme for the Great Usuthu River.

- a) How would you go about designing such a scheme? (15)
- b) What factors would you control at the point where samples were taken? (5)
- c) How could you measure the general “activity” of aquatic bacteria? (5)

TOTAL 25 MARKS

QUESTION 5.

Groundwater entering a reservoir through a drilled well has been contaminated with very high level of *Escherichia coli* from local agricultural activities.

- a) What does this mean in terms of potential or actual safety concerns? (10)
- b) What precautions would you take to ensure a safe drinking water supply? (5)
- c) How would you check the groundwater supply to ensure that it is safe to drink? (5)
- d) Would you advise the residents to drink the water after it has been declared safe and why? (5)

TOTAL 25 MARKS