UNIVERSITY OF SWAZILAND
Faculty of Health Sciences
Department of Environmental Health Science

BSc. IN WATER RESOURCES AND ENVIRONMENTAL
HEALTH MANAGEMENT

MAIN EXAMINATION PAPER NOVEMBER, 2019

TITLE OF PAPER          :          WATER QUALITY MANAGEMENT II

COURSE CODE          :          EHS 421 / EHM 421

DURATION          :          2 HOURS

MARKS          :          100

INSTRUCTIONS          :          READ THE QUESTIONS & INSTRUCTIONS
CAREFULLY

          :          ANSWER **ANY FOUR** QUESTIONS

          :          EACH QUESTION **CARRIES 25** MARKS.

          :          WRITE NEATLY & CLEARLY

          :          NO PAPER SHOULD BE BROUGHT INTO OR
OUT OF THE EXAMINATION ROOM.

          :          BEGIN EACH QUESTION ON A SEPARATE
SHEET OF PAPER.

DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY
THE INVIGILATOR.

## QUESTION 1

Discuss the key basis for setting water standards                    **25 MARKS**

## QUESTION 2

There are different approaches to Water Pollution Control. Describe the following approaches, stating their advantages and disadvantages.

    i)   Uniform Effluent Standard (UES) approach                **(15)**

    ii)  Receiving Water Quality Objective (RWQO) approach        **(10)**

                                                    **25 MARKS**

## QUESTION 3

    A)  Describe point-source of pollution                        **(5)**

    B)  Discuss the following types of industrial effluent:

    i)   General Manufacturing Effluent                        **(5)**

    ii)  Specific Effluent                                        **(5)**

    iii) General Service Effluent                                **(5)**

    iv) Intermittent Effluent                                    **(5)**

                                                    **25 MARKS**

## QUESTION 4

In the Swaziland Water Act, 2003, The Department of Water Affairs was established!!

As a Director of the new Department under this Act, Outline how you would develop Capacity Building for Water Pollution Control within the Department?

**25 MARKS**

## QUESTION 5

With regard to the Water Qualities Prediction and Simulation approach adopted in Water Quality Management, water quality models can also be classified as mathematical model representation.

i)   Describe and give the differences between empirical and deterministic
     models.                                                                   **(15)**

ii)  You are given the Streeter-Phelps equation and its integration. Analyse the
     different processes involved and draw the corresponding curves.           **(5)**

iii) Name and explain the parameters involved.                                 **(5)**

**TOTAL 25 MARKS**