

**UNIVERSITY OF SWAZILAND**  
**Faculty of Health Sciences**

**DEGREE IN ENVIRONMENTAL HEALTH SCIENCES**

**MAIN EXAMINATION PAPER 2012**

TITLE OF PAPER : WATER RESOURCES MANAGEMENT I

COURSE CODE : EHS 580

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 NOR 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 ONE**

- (i) Mention five categories of people involved in water resources management and explain their concern/roles. **(10 marks)**
- (ii) It is said that water resources management is multi disciplinary but its management has three major activities. Describe the three major activities that a water manager ought to observe and should carried out to achieve a satisfactory water resources management. **(15 marks)**

**QUESTION TWO**

- (i) Describe five major components of integrated water recourses management. **(10 Marks)**
- (ii) In consideration of the four major dimensions of integrated water recourses management, describe the five crosscutting policy issues and objectives. **(10 Marks)**
- (iii) Mention the four dimensions of integrated water recourses management and briefly describe one of the dimensions you have mentioned **(5 Marks)**

**QUESTION THREE**

- (i) Describe the main aims of river basin management under the following headings:
  - a. Social benefit
  - b. Income generation and livelihood
  - c. Economic revenue
  - d. Sustainable resource allocation
  - e. Balance between shorter and long term **(10 Marks)**
- (ii) Global water shortage is a recipe for international conflicts. Given an opportunity to work towards harmonizing different interests for the world water uses, what would you do to avoid international conflicts? **(15 Marks)**

**QUESTION FOUR**

- (i) Using the following ten points mentioned below describe the Swaziland's vision on sustainable water resources utilization.
  - 1. pollution,
  - 2. use of rainfall,
  - 3. consequence of water drainage,
  - 4. deforestation,
  - 5. Legal institutions,
  - 6. decision making process,
  - 7. Monitoring performance,
  - 8. Monitoring of activities

9. Farming activities  
10. Industrial activity **(20 Marks)**
- (ii)** What do you understand by sustainable development?  
**(5 Marks)**

**QUESTION FIVE**

- (i)** In the past, there was a strong bias in WRP to **optimization** (linear programming, dynamic programming, etc.) Nowadays, it is widely recognized that optimization techniques serve a limited purpose. The reason for this lies in three key elements of planning, which together are largely responsible for the complexity of WRP:

- a. Uncertainty of scenarios
- b. Political reality

Explain these elements as to how they affect planning for water resources management. **(10 Marks)**

- (ii)** Explain the statement that says planning methodology for water resources management should be integrated, systematic, flexible, interactive with due regard for stakeholder participation and cyclic. **(15 Marks)**