

UNIVERSITY OF ESWATINI
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING

MAIN EXAMINATION – NOVEMBER 2021

M.Sc.

TITLE OF PAPER : LAND AND WATER RESOURCES PLANNING AND MANAGEMENT

COURSE NUMBER : GEP604

TIME ALLOWED : THREE (3) HOURS

INSTRUCTIONS : ANSWER ONE QUESTION FROM EACH SECTION. ILLUSTRATE YOUR ANSWERS WITH APPROPRIATE DIAGRAMS AND SHOW YOUR WORKING IN ALL CALCULATIONS. EACH QUESTION IS TO BE ANSWERED IN A SEPARATE ANSWER BOOK.

MARKS ALLOCATED : EACH QUESTION CARRIES 50 MARKS

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR. THE PAPER CONSISTS OF TWO PAGES.

GEP604: LAND AND WATER RESOURCES PLANNING AND MANAGEMENT (NOVEMBER, 2021)

SECTION A: ANSWER ONE QUESTION

QUESTION 1

Discuss the full process of water resources planning.

(50 Marks)

QUESTION 2

Consider three alternative water resource projects, A, B and C. Project A, with a life cycle of 15 years, will cost E10 000 000.00 at the first year and will return E8 000 000.00 at the end of 5,10 and 15 years. Project B, with a life cycle of 20 years, will cost E18 000 000.00 at the first year and will return E9 000 000.00 at the end of 5 and 10 years, and another E18 000 000.00 at the end of 15 and 20 years. Project C, with a life cycle of 10 years, will cost E6 500 000.00 at the first year and will return E225 000.00 from 2 to 10 years. Evaluate which project is the best by the Present Value Method. Assume an interest rate of 0,1 (10%) per year.

(50 Marks)

SECTION B: ANSWER ONE QUESTION

QUESTION 3

EITHER:

- a) There is much pressure being brought to bear on car manufacturers to abandon the use of the internal combustion engine in favour of electric motors. Evaluate this concept in the context of arguments of sustainability. **(50 Marks)**

OR:

- b) Discuss the rehabilitation method shown below and explain the nature of the problem(s) evident. Suggest in some detail how else the erosion form shown could have been rehabilitated.

(50 Marks)



QUESTION 4

Evaluate the application of the technique of **land suitability classification**, and explain in detail what this technique involves, and how it supports the ideals of sustainability.

(50 Marks)

* * * * *