

UNIVERSITY OF ESWATINI  
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND  
PLANNING

RESIT EXAMINATION-JUNE 2021

BA HUM., BASS, B.Ed. & B.Sc.

TITLE OF PAPER: HAZARDS, RISKS AND VULNERABILITY ANALYSES

COURSE CODE: GEP 419

TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS:

1. ANSWER THREE (3) QUESTIONS
2. QUESTION 1 IS COMPULSORY
3. ANSWER ANY TWO QUESTIONS FROM SECTION B
4. WHERE APPROPRIATE, ILLUSTRATE YOUR ANSWER WITH DIAGRAMS AND EXAMPLES

MARKS ALLOCATION: QUESTION ONE (1) CARRIES 40 MARKS AND THE REST OF THE QUESTIONS CARRY 30 MARKS EACH.

THIS QUESTION PAPER SHOULD NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR

**GEP 419 HAZARDS, RISKS AND VULNERABILITY ANALYSES DEC 2020****SECTION A: COMPULSORY****QUESTION 1**

- a) Define the following terms:
- i) Biological effect. (2 marks)
  - ii) Permissible exposure (Rfd) (2 marks)
  - iii) Risk characterization (2 marks)
  - iv) Intrinsic vulnerability (2 marks)
  - v) Risk transfer (2 marks)
- b) i) Vulnerability varies significantly within a community and over time. Discuss any four types of community vulnerability. (20 marks)
- ii) What is differential vulnerability? (10 marks)
- (40 Marks)**

**SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION****QUESTION 2**

- a) With the aid of a diagram, discuss how the layers of protection differ for two exposed objects which are located at the same distance from the hazard location where one object is movable and the other immovable. (20 marks)
- b) Explain how the probability of consequences of damage or death ( $P_d$ ) is a result of receptor distance and receptor density. (10 marks)
- (30 Marks)**

**QUESTION 3**

- a) State any three different scenarios of liquid release from a pressurized storage tank and discuss the associated environmental consequences. (15 marks)
- b) A pressurized storage tank containing petrol in a city filling station had been leaking through a one (1.5) cm hole. Calculate the fluid flow through the hole and the amount of petrol that had leaked from the tank with a constant pressure if the petrol leaves the hole with a velocity of 1.7 m/s and it had been leaking for 12 hours. (15 marks)
- (30 Marks)**

**QUESTION 4**

a) Discuss the following:

i) Hazard and Operability study (HAZOP)

(15 marks)

ii) Fault Tree Analyses (FTA)

(15 marks)

**(30 Marks)**

**QUESTION 5**

Discuss the phases involved in a disaster risk management exercise.

**(30 Marks)**