



*(University of Choice)*

# **MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)**

**(Main Campus)**

**UNIVERSITY EXAMINATIONS**

**2021/2022 ACADEMIC YEAR**

**SUPP/SPECIAL EXAMINATION**

**THIRD YEAR SECOND SEMESTER EXAMINATIONS**

**FOR THE DEGREE OF**

**BACHELOR OF SCIENCE IN DISASTER PREPAREDNESS AND  
ENGINEERING MANAGEMENT DISASTER MITIGATION AND  
SUSTAINABLE DEVELOPMENT**

**COURSE CODE: DPE 309**

**COURSE TITLE: SIMULATION AND MODELLING IN DISASTER  
PREPAREDNESS**

**DATE: 02/08/2022**

**TIME: 11 – 1 PM**

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**Instructions to Candidates**

- This paper contains FOUR (4) questions
- Answer ALL questions in Section A and ANY TWO in Section B

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over →

**SECTION A: Answer ALL questions [30 Marks]**

**Question ONE**

- a) Outline the hydrologic application of the DEM in disaster preparedness. [5 Marks]
- b) Briefly describe the application of GIS and remote sensing in disaster management. [5 marks]
- c) Briefly discuss EMWIN as one of early warning system technologies. [10 marks]
- d) Outline the components of a disaster mitigation information database. [5 marks]
- e) Discuss the importance of ICT in disaster management. (5 Marks)

**SECTION B: Answer ANY TWO questions [40 Marks]**

**Question Two**

With an aid of diagram, describe operation aspects of an early warning system. [20 Marks]

**Question THREE**

- a) With an aid of a sketch, briefly discuss incident management systems in emergency management. [10 Marks]
- b) Discuss the goals of technology in emergency management. (10 Marks)

**Question FOUR**

- a) Briefly discuss how responders' safety can be enhanced in disaster response phase. (10 Marks)
- b) Discuss web-based response tool sets. (10 Marks)