



(University of Choice)

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

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2023/2024 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER EXAMINATIONS

MAIN EXAMINATION

**FOR THE DEGREE OF
BACHELOR OF SCIENCE IN GEOSPATIAL INFORMATION SCIENCE**

COURSE CODE: DPG 302

**COURSE TITLE: DIGITAL MAPPING & ENVIRONMENTAL
APPLICATION**

DATE: 05/12/2023

TIME: 3-5PM

INSTRUCTIONS TO CANDIDATES

This paper contains **FOUR (4)** questions

Question **one (1)** is compulsory {total = 30 Marks}

Attempt **any other two (2)** {total = 40 Marks} from the remaining questions

Be brief and to the point

TIME: 2 Hours

MMUST observes **ZERO** tolerance to examination cheating

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

SECTION I: COMPULSORY (30 MARKS)

Question One

- a) With reference to digital mapping, distinguish between DEM and DSM. (4 marks)
- b) Explain the need for adopting digital mapping techniques in organizations (6 marks)
- c) Discuss different methods of acquiring data for Digital Mapping (10 marks)
- d) Explain the following terms as used in digital mapping.
 - i. Pattern recognition (2 marks)
 - ii. Digitizing (2 marks)
 - iii. Scanning (2 marks)
 - iv. Geo-referencing (2 marks)
 - v. Feature extraction (2 marks)

SECTION II: ATTEMPT ANY OTHER TWO (2) QUESTIONS (40 MARKS)

Question Two

- a) Explain the procedure to be adopted for Digital data processing (14 marks)
- b) Discuss the types of digital data models in any spatial data system (6 marks)

Question Three

- a) State the advantages of scanned digital image over analogue photography for mapping. (6 marks)
- b) Define the term feature extraction and state its importance in digital mapping (6 marks)
- c) Compare and contrast the mechanical based digitizer against the tablet digitizer (8 marks)

Question Four

- a) Discuss the difference between scanning and photography, stating their advantages and disadvantages (8 marks)
- b) Explain the term batch conversion as applied in scanning process (4 marks)
- c) Discuss the application of DTM in the following disciplines:
 - i. Military (4 marks)
 - ii. Civil engineering (4 marks)