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(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER EXAMINATIONS

MAIN EXAMINATION

FOR THE DEGREE OF
BACHELOR OF SCIENCE IN GEOSPATIAL INFORMATION SCIENCE

COURSE CODE: DPG 102

COURSE TITLE: INTRODUCTION TO GEOSPATIAL INFORMATION SCIENCE

DATE: 14/4/2023 **TIME: 3-5 PM**

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

SECTION I: COMPULSORY (30 MARKS)

Question One

a) State what you understand by the following terms:

i. Geographical information system **(2marks)**

ii. Remote sensing **(2marks)**

iii. Irradiance **(2marks)**

b) Enumerate the application of remote sensing and geographical Information System in land use and land cover management **(9marks)**

c) Briefly describe exhaustively the components that make up a Geographical Information System **(15marks)**

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

Question Two

a) Briefly outline two categories into which GIS software can be classified **(4marks)**

b) List the various data sources in Geographical Information System **(3marks)**

c) Briefly explain spatial and non-spatial data with reference Geographical Information System **(4marks)**

d) Discuss sources of data errors in Geographical Information System **(9marks)**

Question Three

a) Distinguish between active and passive remote sensing sensors **(4marks)**

b) Briefly explain the sensors platforms **(6marks)**

c) Using illustration, describe the basic principle of remote sensing **(10marks)**

Question Four

a) Illustrate the electromagnetic spectrum and its characteristics **(10marks)**

b) Explain the application of remote sensing and geographical Information System in the following.

i. Urban planning **(5marks)**

ii. Road accident analysis **(5marks)**

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MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR

THIRD YEAR SECOND SEMESTER EXAMINATIONS

MAIN EXAMINATION

FOR THE DEGREE OF

BACHELOR OF SCIENCE IN GEOSPATIAL INFORMATION SCIENCE

COURSE CODE: DPG 311

COURSE TITLE: MICROWAVE REMOTE SENSING

DATE: 21/4/2023 **TIME: 12-2 PM**

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) Distinguish between passive microwave remote sensing and active microwave remote sensing giving two examples of sensors in each case. **(6 Marks)**

b) Discuss the causes of distortions in radar imagery **(12 Marks)**

c) Define the term polarization as used in microwave remote sensing and state the different combinations of polarizations. **(5 Marks)**

d) Explain how SAR accomplishes and affects long antenna from a physically short antenna. **(7 Marks)**

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

Question TWO

a) Highlight any five (5) parameters that influence the retrieval of soil moisture content from a microwave remote sensing image **(10 Marks)**

b) State the advantages of microwave remote sensing over visible and infrared remote sensing. **(5 Marks)**

c) Differentiate between extinction and emission as applied in microwave radiation. **(5 Marks)**

Question THREE

a) Discuss the use of microwave remote sensing in vegetation monitoring **(10 Marks)**

b) Using an illustrative diagram, explain the principles of radar **(6 Marks)**

c) State the radiative transfer theory and explain its importance in microwave radiation. **(4 Marks)**

Question FOUR

a) Explain the three (3) main types of atmospheric scattering **(10 Marks)**

b) State any four (4) uses of radio Astronomy **(4 Marks)**

c) Outline the basic working principles of side-looking airborne radar (SLR) **(6 Marks)**