MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2015/2016

SECOND YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN GEOSPATIAL INFORMATION SCIENCE WITH INFORMATION TECHNOLOGY

CITY CAMPUS - REGULAR

PGS 214: GPS PRINCIPLES AND APPLICATION IN GIS

Date: 10th December, 2015 Time: 9.00 - 11.00 am

INSTRUCTIONS:

- Answer question ONE and any other TWO questions.

PGS 214: GPS PRINCIPLES AND APPLICATION IN GIS

(KISUMU CAMPUS)

Answer question one and any other two

1. i)Explain 5 GPS characteristics. (5 marks)

   ii)Identify 4 basic functions of the GPS.(4 marks)

   iii)Explain Navigation message and what types of messages are carried. (4 marks)

   iv)By use of diagram, differentiate between Eastings and Northings (2 Marks)

   v)Alice walked from 520,000 mN to 525,000 mN without changing her easting, what distance did she cover? (2 marks)

   vi)Explain 5 basic components of Location Based Services. (5 marks)

   vii)Describe the Space Vehicle giving its uses and what it's made of. (8 marks)

2.a. Identify any 5 errors that occur in the GPS operations. (10 marks)

b: Using a diagram explain the Geometric Dilution of Precision (GDOP) in GPS (10 marks)

3.a: Giving examples explain 5 applications of GPS in Kenya. (10 Marks)

b: Using diagrams, explain Differential Correction in the GPS. (10 marks)

4.a. Briefly, discuss the basic principle applied in circulation of position of a point by the GPS, showing that at least four satellites are needed in order to determine a three-dimensional position of a point. (6 marks)

b. Describe the various GPS segments (8 marks)

c. Write brief notes on the following:

I. Code phases measurement (3 marks)

II. Carrier phases measurement (3 marks)

5.a. Give the fundamental equation of satellite positioning and explain each parameter. (8 marks)

b. Briefly explain the operational techniques when the following observables are used in the satellite positioning:

I. Satellite ranges (6 marks)

II. Time delay of signals from radio stars (6 marks)

6. a. Discuss the various methods applied when applying Differential Correction in the GPS (6 marks)

b. By using the Location Based Services (LBS) technical Kenya is becoming a competitive country in the world. Giving examples, explain the various sectors LBS is applied. (10 marks)

c. Briefly explain the following:

I. Pseudo range (2 marks)

II. Ephemeris data (2 marks)