



GWANDA STATE UNIVERSITY

FACULTY OF ENGINEERING AND ENVIRONMENT

DEPARTMENT OF GEOMATICS AND SURVEYING

GLOBAL POSITIONING SYSTEM (GPS)

EGS 3103

Final Examination Paper

August 2021

This examination paper consists of 2 pages

Time Allowed : 3 hours

Total Marks : 100

Examiner's Name : Miss B. Mwabvu

INSTRUCTIONS

1. Answer ALL 4 questions
2. Each question carries 25 marks
3. Use of calculators is permissible, but programmable calculators are not allowed in the exam

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QUESTION 1: 25 marks			
1	a)		Define the following terms in relation to GPS.
		i)	Ephemeris
		ii)	Dilution of precision (DOP)
		iii)	Loss of lock
		iv)	Anti-spoofing
		v)	Sidereal hour
	b)		You are required to describe the main components of a GPS receiver to a group of surveyors. Write an essay of the presentation outlining the parameters one would need to consider in choosing the best receiver to buy for their organization.
	c)		Differentiate between the two GPS observables, pseudo-ranging and carrier phase ranging.

QUESTION 2: 25 marks			
2			Describe the following terms and outline what role they play in GPS measurement.
	a)		The Control segment
	b)		The Keplerian Laws
	c)		Describe the following GPS surveying methods highlighting the advantages and disadvantages of each method:
		i)	Static
		ii)	Kinematic
		iii)	Rapid static
		iv)	On-the-fly (OTF)
		v)	Pseudo-kinematic

QUESTION 3: 25marks			
3			The management of errors is indispensable for finding the true geometric range p from either a pseudo-range or a carrier phase observation. Discuss various GPS biases and solutions.

QUESTION 4: 25 marks			
4	a)		What is Doppler effect? How does it affect GPS signal?
	b)		Compare and contrast GPS system and GLONASS system

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