



**FACULTY OF ENGINEERING AND THE ENVIRONMENT
BACHELOR OF SCIENCE (HONORS) DEGREE IN GEOMATICS AND
SURVEYING**

HYDROGRAPHIC SURVEYING

MODULE CODE: EGS 3111

FINAL EXAMINATIONS: SEPTEMBER/ OCTOBER 2023

DURATION : 3 HOURS

TOTAL MARKS : 100

EXAMINER'S NAME : O. MUROMO

INSTRUCTIONS

1. Answer **ALL** questions
2. Scientific calculators may be used

1			INTRODUCTION TO HYDROGRAPHIC SURVEYING (TOTAL 25 MARKS)	
	a)	(i)	Outline the significance of carrying out hydrographic surveys.	8
		(ii)	Give a detailed procedure followed when carrying out hydrographic surveys	7
	b)		Describe and explain any FIVE key aspects of the IHO S-44 Standards for Hydrographic Surveys.	10
2			HYDROGRAPHIC SURVEY METHODS (TOTAL 25 MARKS)	
	a)		With the aid of a well labelled diagram, describe the stadia method for horizontal sights	10
	b)		The strength of figure in a triangulation network depends on a number of factors. What are these factors and why is it necessary to determine the strength of figure in hydrographic survey work.	6
	c)		What are some of the challenges encountered when carrying out hydrographic surveys and how can they be addressed to ensure accurate and reliable data collection?	9
3			SOUNDING (TOTAL 25 MARKS)	
	a)		Describe the following methods of locating soundings in hydrographic Surveying:	
		(i)	Sounding by Conning the Survey Vessel	2
		(ii)	Sounding by Observations with Theodolite or Sextant	3
	b)		How would you calibrate an echosounder using the following methods:	
		(i)	The standard target	5
		(ii)	The reference natural area	5
	c)		Points A and B are on a shore line and are 1450m apart. The bearing of line AB is $10^{\circ}40'$. The horizontal angles at points A and B at the time of taking sounding at P are $48^{\circ}40'40''$ and $57^{\circ}20'40''$ respectively. Calculate the coordinates of P if the that of A are (236.14m, 88096m).	10

4			TIDES AND CURRENTS (TOTAL 25 MARKS)	
	a)	(i)	What are the two main components of currents?	2
		(ii)	Use illustrations to differentiate between Spring tides and Neap tides	8
	b)		Discuss the impact of ocean tides and sea level variations on the accuracy of hydrographic surveys	15

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