



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF SPATIAL PLANNING**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF ARTS IN**  
**SPATIAL PLANNING**

**SEMESTER 2018/2019 ACADEMIC YEAR**

**CENTRE: MAIN CAMPUS**

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**COURSE CODE: PSP 3122**

**COURSE TITLE: SURVEYING**

**EXAM VENUE:**

**STREAM: SPATIAL PLANNING**

**DATE: 29/4/19**

**EXAM SESSION: 9.00 – 11.00AM**

**TIME: 2 HOURS**

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**Instructions:**

- 1. Answer question 1 ( compulsory ) and ANY other 2 questions.**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

## QUESTIONS ONE

- a) Define the following terms in relation to surveying.
- i) Geodetic surveying *[2 marks]*
  - ii) Plain tabling *[2 marks]*
  - iii) Tape and offset surveying *[2 marks]*
  - iv) Tacheometric surveying *[2 marks]*
  - v) Trigonometric heighting *[2 marks]*
- b) Given that the reduced level at A is 1978.04m above mean sea level, while staff readings at A and B is 2.150 and 1.385 respectively. By use of a sketch, determine height of point B *[6 marks]*
- c) Explain how horizontal distance is achieved in electromagnetic distance measurement. *[8 marks]*
- d) Describe the basic principles to be observed during any surveying measurement assignments. *[6 marks]*

## QUESTION TWO

- a) With the use of sketches, differentiate between horizontal and vertical angles *[6 marks]*
- b) An open traverse was run between points X and Y to control setting up of a road section as per the table below

Line	WCB	Distance (m)
X-S1	65 00 00	25.707
S1-S2	338 15 50	22.861
S2-Y	72 47 00	53.221

Given the coordinate of X is 500.000mE and 500.000mN. Calculate the coordinate of S1, S2 and Y *[14 marks]*

## QUESTION THREE

- a) Describe the following terminologies as used in leveling
- i. Level line *[2 marks]*
  - ii. Height of collimation *[2 marks]*

- iii. Bench mark *[2 marks]*  
 iv. Backsight *[2 marks]*
- b) The below table shows the level field notes for profile leveling along a centerline of a waterline. Determine the reduced level using Rise and Fall Method, carrying out all necessary calculations and checks. Take reduced level of A as 2000.00m amsl. *[12 marks]*

B.S.	I.S	F.S	Reduced Level	Distance	Remarks
1.360			2000.000	0.00	A
	1.720			20.00	P1
0.345		3.090		40.00	P2
	0.670			60.00	P3
	1.870			80.00	P4
0.680		2.380		100.00	P5
	1.320			120.00	P6
	1.765			140.00	P7
		2.170		160.00	B

#### QUESTION FOUR

- a) Briefly describe the contribution of Surveying and Geomatics to Kenyan development. *[8 marks]*
- b) Explain techniques of measuring area of an irregular shaped parcel of land allocated for dam construction. *[12 marks]*

#### QUESTION FIVE

- a) Outline different ways of achieving offset (right angle) during tape and offset surveying fieldwork. *[8 marks]*
- b) Explain how distance measurement under the following conditions can be achieved.
- i) Level ground *[4 marks]*
  - ii) Gently sloping ground *[4 marks]*
  - iii) Uneven ground *[4 marks]*