



# JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

UNIVERSITY EXAMINATIONS 2012/13 ACADEMIC YEAR

1<sup>ST</sup> YEAR 1<sup>ST</sup> SEMESTER EXAMINATION FOR THE DIPLOMA IN  
BUILDING AND CIVIL ENGINEERING

COURSE CODE: TBC 2212

COURSE TITLE: SURVEYING I

DATE: 16/4/2013 11.00-13.00PM

DURATION: 2 HOURS

## INSTRUCTIONS

1. This paper consists of 5 questions
2. Answer question ONE and any other two questions
3. Answer on the answer booklets provided

## QUESTION ONE

- i. Define what you understand by engineering survey (MARKS 2)
- ii. List any four types of measurements which one may use either singly or in a combination to fix a relative position of a point on , below or above the earth's surface by use of survey (MARKS 4)
- iii. List any five objectives which may be the origin of a survey activity (MARKS 10)
- iv. Mention any four qualities of a good surveyor (MARKS 6)
- v. Surveying can be broadly classified into three categories. List the three considerations under which the classifications are based (MARKS 3)
- vi. Based on the considerations you have mentioned in (v) above, mention two types /categories of survey which fall under each (MARKS 5)

## QUESTION TWO

- i. Clearly distinguish amongst the following units of measurement giving also the symbols used for each
  - a) Radian (MARKS 4)
  - b) Sexagesimal (MARKS 3)
  - c) Centesimal (MARKS 3)
  - d) Hour (MARKS 3)
  - e) Artillery (MARKS 2)
- ii. Given a measurement in Sexagesimal as  $90^{\circ} 30' 15''$ 
  - a) Convert as a decimal in the same Sexagesimal system (ie  $90.xyz^{\circ}$ ) (MARKS  $2\frac{1}{2}$ )
  - b) Convert into centesimal system (MARKS  $2\frac{1}{2}$ )

## QUESTION THREE

Four main principles of survey were discussed in class during the lecture sessions

- i. Mention the importance of these principles in the surveying profession (MARKS 3)
- ii. Mention the four principles of survey as discussed in class (MARKS 4)
- iii. Briefly discuss each of the four principles mentioned above (MARKS 13)

## QUESTION FOUR

- i. Differentiate between a map and a plan (MARKS 3)
- ii. Define a scale of a map/plan (MARKS 2)
- iii. What factors do you think may be considered in deciding a scale of a map/plan? (MARKS 4)
- iv. Briefly explain the different methods of representing a scale on a map/plan (MARKS 7)
- v. It has been observed that a particular map has shrunk due to environmental factors. If the shrinkage factor(ratio) has been computed as 0.95
  - a) Determine the correct length for a measured length of 50.532m (MARKS 2)

- b) Determine the correct area for a measured area of  $2553.483\text{m}^2$   
(MARKS 2)

### QUESTION FIVE

- i. Construct a chord scale and use it to construct an angle of  $50^\circ$  (MARKS 10)
- ii. Name the three broad categories under which a surveyor's work may be grouped (MARKS 3)
- iii. A resident engineer at a construction site in JOOUST, Bondo campus wanted to verify a certain height on the roof of a building under construction. He set a theodolite at a horizontal distance of 15m from a point vertically below the point of interest. The horizontal line of sight of the instrument was set at 1.5m above the ground level. Using the instrument, the engineer found out that the point of interest was  $62^\circ 30' 15''$  from the horizontal line of sight of the instrument

Determine the elevation of the point from the ground (MARKS 7)