FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SCHOOL OF ENVIRONMENTAL TECHNOLOGY

DEPARTMENT OF SURVEYING AND GEOINFORMATICS

SECOND SEMESTER EXAMINATION

COURSE: SVG 223 (INTRODUCTION TO FIELD ASTRONOMY)   UNIT: 2

SESSION: 2018/2019   LEVEL: 200   DATE OF EXAM: 12/10/2019

TIME ALLOWED: 2 HOURS

INSTRUCTION: ANSWER FOUR QUESTIONS IN ALL

Q1a. With the aid of a well labeled diagram, describe astronomical triangle and state its relevance in field astronomy.

1b. Using Napier's rules derive the formula for calculating the hour angle (h) and altitude (a) of a celestial object at the prime vertical. Hence, calculate the hour angle and altitude of the object if its declination and latitude are 29^0 15' 10" and 9^0 20' respectively.

Q2a. Write short note on the following coordinate systems as used in field astronomy

(i) Horizon system (ii) Right ascension system

2b. Calculate the coordinates of a star in the horizon system from the following data:

latitude of observer (ϕ) = 48^0 N, declination of star (δ) =18^0 20'N, hour angle of star (h)= 43^0

Q3. Find the azimuth and altitude of a star from the following data

Latitude (ϕ) = 46^0 N, Hour angle (h) = 20 ^{0}40', Declination (δ) = 18 ^{0} 38' S

Q4a. Write short note on the following:

(i)   culmination (ii) altitude (iii) latitude (iv) circumpolar star (v) declination

b. Explain the corrections to be applied to observed altitude of a celestial object

Q5a. Explain the relevance of field astronomy to Surveying.

b. State and explain Kepler's laws of planetary motion