DEPARTMENT OF SURVEYING AND GEOINFORMATICS
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
FEDERAL UNIVERSITY OF TECHNOLOGY MINNA
FIRST SEMESTER EXAMINATION FOR 2019/2020 SESSION
COURSE CODE/TITLE: SVG 312 (SPHERICAL AND FIELD ASTRONOMY)

**IINSTRUCTION: Answer question 1 and any other two questions**
**Time allowed: 2 Hours**

**1a.** List four astronomic methods of determining the azimuth of a survey line and explain one
**b.** In an extra-meridian observation of a star for determining azimuth of a reference mark, the following data was recorded:

Mean apparent altitude= 39°41'26"
Declination of star= 30°29'15"
Latitude= 65°30'27"
Horizontal angle between reference mark and star= 75°29'50"

Determine the azimuth of the reference mark?
(**Note: Apply refractive correction**)

**2a.** what is the significance of time determination in field astronomy
**b**(i). The Local Mean Time at a place in longitude 69° 30'E is 8°20'16". Find the standard time if the place in a region whose standard meridian is 82°30' E.
(ii) If the longitude of the place is 69°30'W, what will be the standard time?

**3a**. Write short note on the following:

i. Sidereal time
ii. Mean solar time
iii. Standard time
iv. Equation of time

**b**. State two reasons for the variation in the length of solar days

**4**.With relevant diagrams and formula explain the various astronomical corrections to observe altitude of the sun or star

**5a.** Write short note on the following:

i. Circumpolar star
ii. Star at elongation
iii. Culmination
iv. Star on the prime vertical

**b.** Calculate the azimuth of a star at eastern elongation if the declination of the star and latitude of place of observation are 72°17'21"N and 43°53'53"N respectively.