TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN NAUTICAL SCIENCE

ANS 2202 : CELESTIAL NAVIGATION I

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Dec 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt any THREE questions.

Do not write on the question paper.

Question ONE

a) Define the following terms:

i. North celestial pole **(2 Marks)**

ii. South celestial pole **(2 Marks)**

iii. Celestial equator: **(2 Marks)**

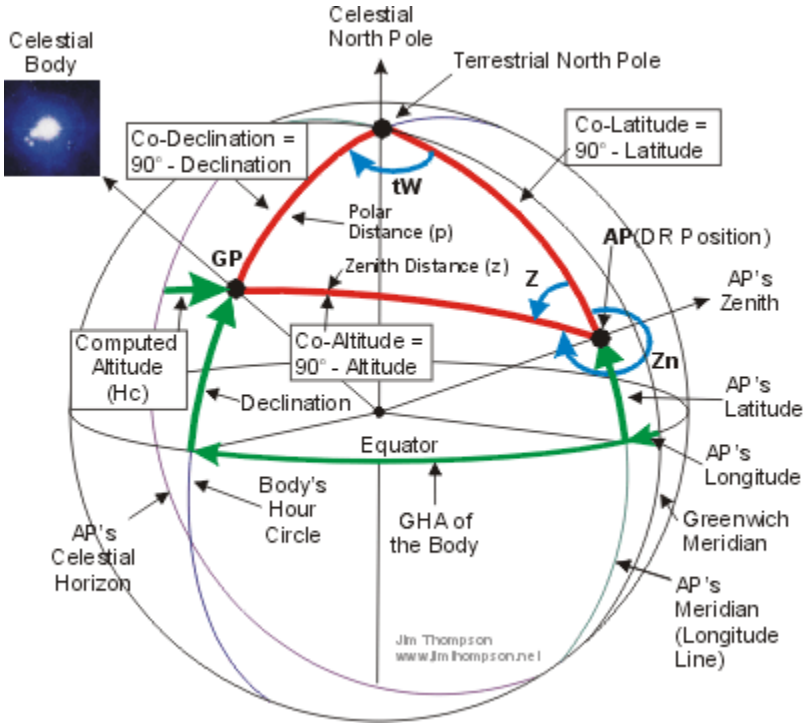
iv. Ecliptic **(2 Marks)**

v. Declination **(2 Marks)**

b) Using an appropriate diagram, illustrate the terminologies above in **QUESTION ONE (a)** **(10 Marks)**

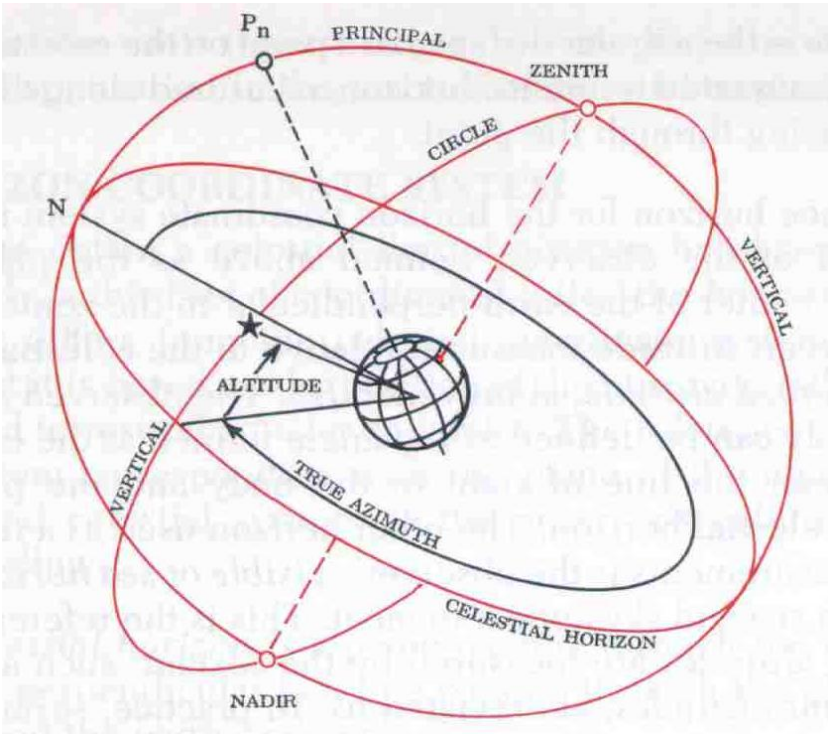
Question TWO

Using the diagram, discuss position fixing and spherical trigonometry of the position of the Celestial body to the observer. **(20 Marks)**



Question THREE

Using the illustration below discuss the horizon coordinate system as based on the observer's position **(20 Marks)**



Question FOUR

Discuss the following components for plotting a celestial fix

i. Observed altitude of the Body **(5 Marks)**
ii. Latitude and longitude of your assumed position (AP). **(5 Marks)**
iii. Precise time of the sextant altitude measurement **(5 Marks)**
iv. Bearing of the Body (azimuth). **(5 Marks)**

Question FIVE

Using the diagram below describe;

a) GHA **(8 Marks)**
b) LHA **(8 Marks)**
c) The relationship between GHA and LHA in defining the SHA **(4 Marks)**