

## 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:

North coloctial pole

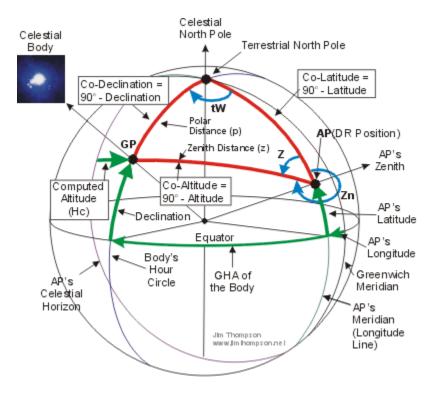
1.	North Celestial pole	(2 Maiks)
ii.	South celestial pole	(2 Marks)
iii.	Celestial equator:	(2 Marks)
iv.	Ecliptic	(2 Marks)
v.	Declination	(2 Marks)

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

(2 Morks)

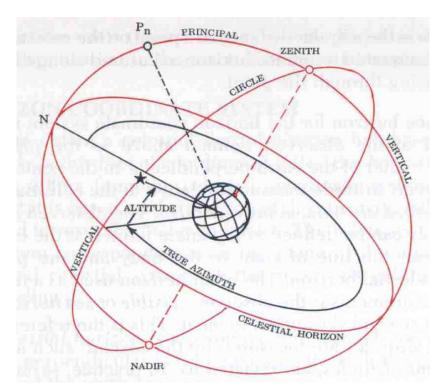
## **Question TWO**

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

