



TECHNICAL UNIVERSITY OF MOMBASA
FACULTY OF APPLIED AND HEALTH SCIENCES
DEPARTMENT OF ENVIRONMENT & HEALTH SCIENCES
UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN MARINE RESOURCE MANAGEMENT
BSMR 15S/YEAR 3/ SEMESTER 1
AES 4314: PHYSICAL OCEANOGRAPHY
SPECIAL/ SUPPLEMENTARY EXAMINATIONS
SERIES: SEPTEMBER 2018
TIME: 2 HOURS

Instructions to Candidates

This paper consists of FIVE questions

Answer question ONE (COMPULSORY) and any other TWO questions.

This paper consists of two printed pages.

Mobile phones are NOT allowed in the examination room

QUESTION ONE. (30 MARKS)

- a) State four physical properties of sea water: (4 marks)
- b) Define the following terms (4 marks)
- i) Ekman transport
 - ii) Coriolis force
- c) i) Highlight the apparent cause of El Nino (2 marks)
- ii) State three effects of El Nino on the ocean (3 marks)
- d) Differentiate between wind-driven and abyssal ocean circulation (4 marks)
- e) Outline four ways of measuring temperature in the ocean (4 marks)
- f) List two types of ocean currents and give an example for each in the global oceans (4 marks)
- g) i. What is a tsunami (1marks)

ii. Draw a schematic diagram of a wave showing the wave length and amplitude.

(4 marks)

QUESTION TWO (20 MARKS)

(a) Explain Thermohaline circulation in the context of ocean movement.

(15 marks)

(b) Draw a well labelled diagram illustrating thermohaline circulation.

(5 marks)

QUESTION THREE (20 MARKS)

Describe four types of tides using well labelled diagrams.

QUESTION FOUR (20 MARKS)

Explain how the following factors lead to the formation of Ocean currents

(20 marks)

- i. Wind (5 mks)
- ii. Differences in water temperature (5 mks)
- iii. Shape of the land mass (5 mks)
- iv. Earth's rotation (5 mks)

QUESTION FIVE (20 MARKS)

Using well labelled diagrams, describe the five vertical zones of the Ocean.