TECHNICAL UNIVERSITY OF MOMBASA
Faculty of Engineering & Technology

DEPARTMENT OF MECHANICAL AND AUTOMOTIVE ENGINEERING

DIPLOMA IN MARINE ENGINEERING

EMR 2220: SHIP CONSTRUCTION & NAUAL ARCHITECTURE

END OF SEMESTER EXAMINATIONS
SERIES: APRIL 2015
TIME: 2 HOURS

INSTRUCTIONS:

– This paper consists of **FIVE** questions.
– Answer any **THREE** questions.
This paper consists of Two printed pages.

QUESTION 1

A large is constructed such that it has 2 profiles. A forward triangular section and an Aft rectangular section, with the following dimensions.

Overall length   6M
Draught (Designed)   1M
Length of the rectangular section : 3m
Maximum beam length   : 2m

The following beam length were recorded from forward to Aft at stations (0,1, 2, 3, 4) AS 0m, 1.5m 3, 4.5, 6m respectively.

Apply Simpson's First Rule to determine the centre of floatation of the large.

(20 marks)

QUESTION 2

A ship of 15,000 tonne displacement has a water plane area of $1950m^2$. It is loaded in river water of 1.00t/m3 and proceeds to sea where density is $1.022t/m^3$. Calculate the change in mean draught.

(20 marks)

QUESTION 3

a) Explain the working principle of propellers.   **(5 marks)**

b) Discuss the operation and features of any of the two types of propellers.   **(5 marks)**

c) Sketch a propeller and show the following features:
    i)   Boss
    ii) Rake
    iii) Shew
    iv) Face
    v)   Back   **(10 marks)**

QUESTION 4

Sketch an outline arrangement of an oil lubricated stern tube and tail shaft.   **(20 marks)**

QUESTION 5

Sketch and describe the arrangement to support sterntube in a twin screwship.   **(20 marks)**