



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology

DEPARTMENT OF MECHANICAL AND AUTOMOTIVE ENGINEERING

DIPLOMA IN MARINE ENGINEERING (DMAE 2)

EMR 2104 NAVAL ARCHITECTURE & SHIP CONSTRUCTION II

END OF SEMESTER EXAMINATIONS

YEAR 1 SEMESTER 2

SERIES: DECEMBER, 2013

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. You should have the following for this examination:
 - Answer Booklet
 - Non-programmable Scientific Calculator
2. This paper consists of **FIVE** Questions.
3. Answer **ANY THREE** Questions.
4. All Questions carry equal marks.
5. **This paper consists of THREE printed pages.**

Question ONE

A vessel MV “CARNEN EXPRESS” owned by MSC with a displacement of 3000tonne has 500 tonne of cargo on board. This cargo is lowered 3m and an additional 500 tonne of cargo is taken on board 3m vertically above the original position of the centre of gravity. Determine the alternation in position of the centre of gravity. **(20 marks)**

Question TWO

Define the following:

- (a) Relative density **(5 marks)**
- (b) Reserve Buoyancy **(5 marks)**
- (c) Centre of Buoyancy **(5 marks)**
- (d) A vessel of triangular form length 100m, beam 12m, depth 6m is displacing 3030 tonnes in water relative density 1.010. What is her reserve buoyancy? **(5 marks)**

Question THREE

With the aid of transverse view on side view profile, show the following:

- (a) Collision bulkhead **(5 marks)**
- (b) Engine Room forward Bulkhead **(5 marks)**
- (c) Aft peak Bulkhead **(5 marks)**
- (d) Stern tube **(5 marks)**

Question FOUR

What the aid of a profile of a general cargo ship, illustrate the following:

- (a)
 - (i) Bridge Deck
 - (ii) Boat Deck
 - (iii) Navigating Bridge Deck
 - (iv) Wheelhouse Top
 - (v) Tween Deck**(5 marks)**
- (b)
 - (i) After peak tank
 - (ii) Fore peak tank
 - (iii) Double bottoms
 - (iv) Chain locker**(8 marks)**
- (c) State the difference between the peak tanks and double bottoms. **(2 marks)**

- (d) (i) Hold No. 1 to Hold No. 4.
(ii) Machinery space

(5 marks)

Question FIVE

- (a) Define the following terms:

- (i) Panting
(ii) Pounding

- (b) With aid of a sketch define, the **SIX** degrees of motion of a ship

(20 marks)