



TECHNICAL UNIVERSITY OF MOMBASA  
**Faculty of Engineering &  
Technology**

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING  
**DIPLOMA IN MARINE ENGINEERING (DME YI, SII)**

EMR 2125: MARINE ENGINEERING KNOWLEDGE II

**END OF SEMESTER EXAMINATION**

SERIES: APRIL 2014

**TIME ALLOWED: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer booklet*

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

All questions carry equal marks  
Maximum marks for each part of a question are as shown  
This paper consists of **TWO** printed pages

### Question One

- a) State the TWO main types of heat engines, giving THREE examples in each case. **(8 marks)**
- b) With the aid of diagram, explain the working principle of a two stroke cycle marine diesel engine. **(12 marks)**

### Question Two

- a) (i) Give the reasons why a marine diesel engine has to be heated up before starting.
- (ii) Explain how a marine diesel engine is heated up **(6 marks)**
- b) Describe the procedure of preparing a marine diesel engine for starting; giving a step by step account of the operation. **(14 marks)**

### Question Three

- a) Describe the duties and responsibilities of the following personnel:
- (i) Duty Engineer
- (ii) Engine Rating **(10 marks)**
- b) With the aid of diagrams, explain the operation of a typical fuel oil supply system of a ship. **(10 marks)**

### Question Four

- a) State the advantages of two stroke cycle engines over four stroke cycle internal combustion engines. **(8 marks)**
- b) With the aid of a clearly labeled diagram, explain the value timing chart diagram for a marine diesel engine. **(12 marks)**

### Question Five

- a) (i) State the FOUR factors of shaft deflection in relation and ships
- (ii) What do you understand about the term “shaft alignment” **(6 marks)**
- b) Outline the TEN benefits of shaft alignment in relation to ships and other off-shore vehicles. **(10 marks)**
- c) Sketch a power train of a boat showing the following:
- (i) Strut
- (ii) Stuffing box
- (iii) Coupling
- (iv) Shaft **(4 marks)**