



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN MARINE ENGINEERING

EMR 2120 : MARINE ENGINEERING KNOWLEDGE II (PP2)

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date Select Month Pick Year

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) Explain any **FOUR** criteria used to classify refrigeration systems (8 marks)
- b) Using sketches, explain the working principles of the following air conditioning systems;
 - i. Closed loop
 - ii. Open loop
 - iii. Hybrid (12 marks)

Question TWO

- a) Sketch a typical piston-cylinder-crankshaft assembly showing all the components and explain its working principles. (10 marks)
- b) Explain any **FIVE** factors to be considered when selecting an engine for a marine vessel (10 marks)

Question THREE

- a) Explain any FIVE factors to consider when selecting a pump for a pumping system. (10 marks)
- b) Sketch and explain a schematic diagram for a typical fresh water pumping system for marine engine cooling (10 marks)

Question FOUR

- a) Explain any FIVE causes of fire and their extinguishing agents. (10 marks)
- b) Sketch a schematic diagram of a typical fire fighting system in the kitchen of a passenger liner (10 marks)

Question FIVE

- a) State any TEN safety procedures to be undertaken before performing any repairs on a steam plant system of a marine vessel (10 marks)
- b) Using sketches, explain the working principles of the following boilers.
 - i. Electric heater type
 - ii. Fire tube type (10 marks)