



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA MARINE ENGINEERING

EMR 2212: GENERAL ENGINEERING KNOWLEDGE 2

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date **May 2016**

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) Differentiate between:
- i) recuperators and regenerators.
 - ii) direct surface and indirect surface
 - iii) indirect contact heat exchangers and direct contact heat exchanger
 - iv) shell & tube heat exchanger and double pipe heat exchanger **16 marks**
- b) Explain the parallel flow in a heat exchanger. **4 marks**

Question TWO:

- a) Explain the following boiling processes:
- i) Pool boiling
 - ii) Flow boiling **15 marks**
- b) Differentiate between Fire tube boilers and Water tube boilers. **5 marks**

Question THREE:

- a) What is the importance of removing water vapour from compressor air? **10 marks**
- b) Name any EIGHT parts of a reciprocating compressor. **4 marks**
- c) State any SIX processes that can only be carried out by compressed gases. **6 marks**

Question FOUR:

- a) Explain how a Mult-effect Evaporator works. **6 marks**
- b) State and explain the physical properties that influence the selection of an evaporator. **14 marks**

Question FIVE:

- a) Define the term Heat exchanger. **2 marks**
- b) What is the procedure for identifying the most appropriate material for a specific heat exchanger application. **10 marks**
- c) Explain heat exchangers according to the following classification:
 - i) Surface Compactness
 - ii) Number of Fluids **8 marks**