



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology
Department of Mechanical & Automotive Engineering
UNIVERSITY EXAMINATION FOR:
Diploma Marine Engineering
EMR 2202 : GENERAL ENGINEERING KNOWLEDGE
END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2016
TIME: 2 HOURS
DATE: Pick Date Dec 2016

Instruction to Candidates:

You should have the following for this examination

- *Answer booklet*
- *Non-Programmable scientific calculator*

This paper consists of **FIVE** questions. Attempt **ANY THREE** questions.
Maximum marks for each part of a question are as shown.

Do not write on the question paper.

Question ONE

- a) Briefly explain how Waste Water evaporators work. **6 marks**
- b) State and explain the physical properties that influence the selection of an evaporator. **14 marks**

Question TWO

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

16 marks

Question THREE

- a) Name any TEN parts of a reciprocating compressor. **5 marks**
- b) State any SIX processes that can only be carried out by compressed gases. **6 marks**
- c) What is the importance of removing water vapour from compressor air? **9 marks**

Question FOUR

- a) What are the TWO main objectives of all evaporation systems? **4 marks**
- b) Explain how a Mult-effect Evaporator works. **8 marks**
- c) State EIGHT qualities that a good boiler should possess. **8 marks**

Question FIVE

- a) State any FOUR advantages and any FOUR disadvantages of Water Tube Boilers. **8 marks**
- b) State EIGHT requirements that a boiler should fulfill. **12 marks**