



TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF MEDICAL ENGINEERING

DIPLOMA IN MEDICAL ENGINEERING (DME 14)

EHL 2103: REFRIGERATION & AIR CONDITIONING I

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: FEBRUARY 2015

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE (Compulsory)** and any other **TWO** questions
Maximum marks for each part of a question are as shown

This paper consist of **TWO** printed pages

Question One (Compulsory)

- a) (i) Describe Halogenated refrigerants.
(ii) Describe the **THREE** groups of the Halogenated refrigerants **(8 marks)**
- b) Sketch to describe the function of the following elements in a refrigeration system:
(i) A liquid receiver
(ii) An accumulator **(8 marks)**
- c) Describe the following in respect to refrigeration and air conditioning:
(i) Ton refrigeration
(ii) Specific heat capacity
(iii) Sub cool temperature
(iv) BTU **(8 marks)**
- d) Graphically show the following status in/an evaporator **(6 marks)**
(i) Starved evaporator (too much super heat)
(ii) Flooded evaporator (no super heat)
(iii) Correct set evaporator (4°F superheat)

Question Two

- a) With the aid of a block diagram, show components layout of a domestic refrigeration unit, indicating refrigerant state at each block input and output **(12 marks)**
- b) Describe any **FOUR** refrigeration and air conditioning instruments equipment **(8 marks)**

Question Three

- a) Sketch the atomical structures giving the chemical formular and names for the following halogenated refrigerants:
(i) R 114
(ii) R 124
(iii) R 134
(iv) R 123
(v) R 11
- b) Describe any **FIVE** adverse effects to the Globe due to the depletion of the ozone layer **(10 marks)**

Question Four

- a) Sketch to show the interconnections of a refrigeration system analyzer including the colour coded hoses **(8 marks)**
- b) Sketch to show the **THREE** types of flames on an oxy-acetylene touch **(6 marks)**
- c) Sketch to distinguish between a refrigerant liquid receiver and an accumulator **(6 marks)**

Question Five

A refrigerator was brought to your working for fixing with the remarks “the compressor is not working” Describe all the procedures you under take from the time you receive the refrigerator to the time you release the unit to the owner for use. **(20 marks)**