



UNIVERSITY OF RUHUNA

Faculty of Engineering

End- Semester 5 Examination in Engineering: August 2014

Module Number: ME5326

Module Name: Marine Engineering Knowledge

[Three Hours]

[Answer all questions, each question carries 10 marks]

NOTE : Provide sketches and diagrams where appropriate.

- Q1. a) Describe the operation of a plate type heat exchanger with suitable sketches. [4 Marks]
- b) Explain the back flushing system applied to regular maintenance of plate heat exchangers. [4 Marks]
- c) Give line diagrams to demonstrate the flow of liquids for;
(i) Single and multi pass arrangement.
(ii) Single and multi- multi pass arrangement. [2 Marks]
- Q2. a) How do you check the oil level in tanks during bunkering? [4 Marks]
- b) State precautions to be taken before and during Bunkering Operation. [4 Marks]
- c) Explain Ullage method used to measure the level of a tank. [2 Marks]
- Q3. a) Classify the tanks depending on the type of fluid it contains and the purpose for which the tank is used. [4 Marks]
- b) Prepare a list of audio visual alarms fitted to an automatic desludging purifier. [3 Marks]
- c) Describe methods of cooling using refrigeration systems with suitable diagrams. [3 Marks]

- Q4. a) Distinguish the difference between Clarifier and Purifier. [1 Mark]
- b) Explain the operation of a purifier giving a suitable sketch. [4 Marks]
- c) With reference to centrifugal separators, explain
- (i) With reasons, the conditions which determine whether an oil centrifuge functions as either a purifier or a clarifier.
 - (ii) The establishment of the interface between two fluids and adverse effects caused to operation in failure in establishing so. [5 Marks]
- Q5. a) Sketch and describe a Typical Provision Room Circuit used in ship application. [4 Marks]
- b) Explain methods of defrosting used with Marine refrigeration Systems. [3 Marks]
- c) Explain the operation of following devices in a refrigeration system.
- (i) Thermostatic expansion valve.
 - (ii) High pressure cutout.
 - (iii) Carbon dioxide analyser. [3 Marks]