



UNIVERSITY OF RUHUNA

Faculty of Engineering

Mid - Semester 5 Examination in Engineering: June 2014

Module Number: ME 5326

Module Name: Marine Engineering Knowledge

[Two Hours]

[Answer all questions, each question carries *five* marks.]

[Use marine colour codes as applicable.]

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- Q1. (a) Sketch and describe a double effect boiling type evaporator used in ship's fresh water generating system. [2 Marks]
- (b) With reference to RO plant explain following with suitable sketches where appropriate.
- (i) Osmosis process and osmotic pressure. [1 Mark]
- (ii) Reverse osmosis process. [1 Mark]
- (iii) Product water and Concentration polarization. [1 Mark]
- Q2. (a) Sketch and describe a Turbo oily water separator used onboard ships. [2.5 Marks]
- (b) Explain automatic operation of the plant designed to control oil and water discharged from the plant. [1.5 Marks]
- (c) Prepare a list of mountings fitted to an oily water separator. [1 Mark]
- Q3. (a) Describe the construction and operation of a double pass composite Cochran boiler. [2 Marks]
- (b) Explain the operation of a steam plant fitted on a motorship. [1.5 Marks]
- (c) Sketch and describe a tubular type water level gauge glass and state the gauge glass blow down procedure. [1.5 Marks]

Q4. (a) Sketch and describe the operation of a Double screw type positive displacement pump suitable for pumping high viscous fuel stored in double bottom tanks.

[2 Marks]

(b) Sketch a simple cross section through a single stage centrifugal pump with a fully shrouded double entry impeller; name the components of the pump and indicate the direction of fluid flow and explain its operation.

[2 Marks]

(c) Describe:

- (i) The function of the impeller and how suction is created by it.
- (ii) The function of the volute casing.
- (iii) State the material of each component of the pump.

[1 Mark]