



UNIVERSITY OF RUHUNA

Faculty of Engineering

Mid-Semester 7 Examination in Engineering: June 2015

Module Number: ME 7333

Module Name: Advanced Marine Engineering (TE)

[Two Hours]

[Answer all questions, each question carries five marks]

- Q1. a) With reference to steering gear systems state the difference between follow up and non follow up systems. [1.0 Marks]
- b) Sketch and describe the operation of a Telemotor system used with steering gears [2.0 Marks]
- c) Explain the operation of Four ram steering gear system with help of a sketch. [2.0 Marks]
- Q2. a) Name the components of a transmission line of a ship's propeller. [1.0 Marks]
- b) State with reasons why the shaft line of a propeller is angled downwards? [1.0 Marks]
- c) Draw a lay out of a typical shaft line as in (b) above and all member components attached to it. [1.5 Marks]
- d) Why lub oil tank is left open to the stern tube? [1.5 Marks]
- Q3. a) Sketch and describe a single duct air conditioning system fitted to a dry cargo ship. [2.0 Marks]
- b) State the influence of processes;
- Heating
 - Cooling
 - Ventilating
 - Humidifying and Dehumidifying
- during hot and cold climates. [0.5 Marks]

- c) An accurate heat load or heat gain calculation for any type of room or building is carried out before sizing an air conditioner. Describe steps used in heat load calculation giving necessary formula.

[1.5 Marks]

- d) Any changes in the condition of the atmosphere, can be represented by the movement of the state point on the psychometric chart. Draw a diagram to show dry desiccant dehumidification including common processes of air conditioning.

[1.0 Marks]

- Q4. a) All the shafts from engine crankshaft to the propeller shaft are subjected to steady stresses due to thrust and torsion. Show in a sketch type of stresses that respective shafts are subjected to.

[1.0 Marks]

- b) Describe the function and construction of the following components in a shaft line.

- i) Thrust block
- ii) Plummer block.
- iii) Shaft Locking Gear
- iv) Bulkhead Gland

[1.0 Marks]

- c) Explain with sketches the function of the following devices in steering gear systems.

- i) Shock and bypass valve
- ii) Hunting gear
- iii) Rudder quadrant

[3.0 Marks]