



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 7 Examination in Engineering: March 2021

Module Number: ME7311

Module Name: Advanced Marine Engineering

[Three Hours]

[Answer all questions, all questions carry equal marks]

Sketches should be clearly labelled

- Q1.** (a) With reference to steering gears explain why multi piston variable stroke pumps (hele shaw) are used rather than rotary positive displacement pumps with controlled recirculation or delivery. [5 Marks]
- (b) Sketch and describe the operation of a Telemotor system used in a steering gear system. [5 Marks]
- (c) Distinguish clearly the operation between follow up and non-follow up steering gear systems. [2 Marks]
- Q2.** (a) Distinguish clearly the difference between bracket floor and solid floor giving suitable sketches. [4 Marks]
- (b) With reference to structural sub-assemblies, sketch an arrangement of a General Cargo Ship showing brackets, stiffeners, scallops, cutouts, floors, lightening holes, struts, bracket floors, solid floors, etc [4 Marks]
- (c) State the type of bulkheads used for ship construction. Draw a sketch of a wash bulkhead. [4 Marks]
- Q3.** (a) Sketch and describe an automatic sprinkler system for combating fire in passenger spaces on a ship. [5 Marks]

- (b) Sketch a Soda-Acid type portable fire extinguisher and explain its operation indicating operating time, chemical reaction, area of coverage and recharging after use. [4Marks]
- (c) List the reasons that could cause a fire onboard ship. [3 Marks]
- Q4. (a) State processes of expelling of exhaust gases from cylinder (scavenging) to provide space for incoming charge and explain those giving suitable sketches. [4 Marks]
- (b) Prepare a list of Causes for Crank Shaft deflection [3 Marks]
- (c) Explain the procedure employed to check Deflection of a crank shaft. [5 Marks]
- Q5. With reference to Ship's refrigeration
- (a) Explain the Vapour Compression cycle with aid of a diagram [6 Marks]
- (b) Explain the Methods of cooling giving suitable sketches. [4 Marks]
- (c) State methods of defrosting used with Marine refrigeration Systems [2 Marks]

