



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN MARINE ENGINEERING

EMR 2122: MOTOR ENGINEERING KNOWLEDGE II

SUPPLEMENTARY/SPECIAL EXAMINATIONS

SERIES: Select series2017

TIME: 2HOURS

DATE: Pick DateSep2017

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, drawing instruments, examination pass and student ID

This paper consists of **FIVE** questions. Attempt any **THREE** questions.

Do not write on the question paper.

QUESTION ONE

With reference to trunk piston, medium speed engines:

- a) explain why multiple air inlet and exhaust valves are often fitted; (5 marks)
- b) explain why exhaust valve rotation is employed; (5 marks)
- c) explain how effective cylinder lubrication is obtained; (5 marks)
- d) describe how piston cooling is achieved. (5 marks)

QUESTION TWO

- a) Explain why high and low temperature cooling water systems are used for cooling main and generator diesel engines, stating which systems are cooled by the high and low temperature circuits. (8 marks)
- b) Sketch the fresh water cooling systems for a main diesel engine, naming the main parts and describing how the temperature is controlled automatically. (12 marks)

QUESTION THREE

- a) Identify, with reasons, the causes and effects of misalignment in large, slow-speed, engine crankshafts. (8 marks)
- b) Describe how alignment is checked. (6 marks)
- c) State how the measurement are recorded and checked for accuracy. (6 marks)

QUESTION FOUR

- a) Sketch the lubrication systems for a crosshead engine, showing all essential valves and the fluid flow directions. (12 marks)
- b) Describe how engine lubricating oil is maintained in a clean and effective condition. (8 marks)

QUESTION FIVE

The main engine has recently suffered problems related to poor combustion and inspection indicates that a number of injector nozzles are badly worn:

- a) Explain the possible causes of the problem and how they may be detected.(12 marks)
- b) State how future problems of similar nature can be minimized. (8 marks)