



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

**UNIVERSITY EXAMINATION FOR:**

**DIPLOMA IN MARINE ENGINEERING**

**EMR 2312: MOTOR AND STEAM ENGINEERING KNOWLEDGE II**

**END OF SEMESTER EXAMINATION**

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE:** Pick Date Select Month Pick Year

## 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 question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

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## Question ONE (COMPULSORY)

- a) Define the term engineering watch as applicable to watch keeping. (2mks)
- b) Define the following type of survey as applicable to marine engineering
- i. Statutory survey
  - ii. Dry docking survey (2mks)
- c) Outline what **MUST** be taken into account when determining the composition of the engineering watch at sea. (7mks)
- d) Describe the procedure of taking over watch at sea (9mks)

## Question TWO

- a) Define the term blower surge as applicable to gas turbine. (2mks)
- b) Outline any six visual checks that are performed while a gas turbine is operating. (3mks)

- c) With the aid of a labeled diagram, show the layout of a simple cycle gas turbine fitted with a reheating and hence explain its purpose. *(15mks)*

**Question THREE**

- a) Outline any **FOUR** characteristics of wind energy. *(4mks)*
- b) Explain the six problems that are associated with operating large wind power generators *(6mks)*
- c) With the aid of a labelled diagram, describe the horizontal axis wind turbine(HAWTS) *(10mks)*

**Question FOUR**

- a) Outline **FOUR** purposes for which lubrication is required *(2mks)*
- b) Describe the following hydraulic systems usage as applicable on board ships
- i. Automation and control systems
  - ii. Operation of deck machineries
  - iii. Steering gears
  - iv. Ship stability *(8mks)*
- c) With the aid of sketch, explain the lubrication oil pipeline system for sump to sump *(10mks)*

**Question FIVE**

- a) State the routine duties undertaken during a watch *(5mks)*
- b) Describe how to maintain seaworthiness of a ship *(15mks)*