



# 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**

**EME 2312: MOTOR AND STEAM ENGINEERING KNOWLEDGE**

**SUPPLEMENTARY/SPECIAL EXAMINATION**

**SERIES:** Select series 2016

**TIME:** 2HOURS

**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) Outline any **FOUR** items of survey that are included in annual survey check lists *(2mks)*
- c) Outline what **MUST** be taken into account when determining the composition of the engineering watch at port. *(6mks)*
- d) Describe the procedure of taking over watch at port *(10mks)*

## **Question TWO**

- a) Define the following cycle as applicable to gas turbine.
  - i. Simple cycle
  - ii. Intercooled cycle
  - iii. Reheat cycle *(3mks)*

- b) With the aid of neat diagram describe a closed gas turbine. *(9mks)*
- c) List any FOUR merits and FOUR demerits of a closed cycle gas turbine. *(2mks)*
- d) With the aid of a labeled diagram, describe the following gas turbine plant configurations
- i. Combined gas or gas
  - ii. Combined gas turbine and gas turbine. *(6mks)*

### **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 construction of a wind electric generating power plant *(10mks)*

### **Question FOUR**

- a) Outline any **FOUR** preparations requirements of service air as applicable to pneumatic systems *(4mks)*
- b) With the aid of schematic diagram, describe hydraulic line system *(10mks)*
- c) With the aid of sketches, describe the following type of air dryers
- i. Membrane air dryer
  - ii. Air drying through absorption *(6mks)*

### **Question FIVE**

- a) Outline any SIX data contained in a typical trim and stability booklet *(3mks)*
- b) Outline any FOUR routine pumping operation carried out in the engine room during watch keeping *(2mks)*
- c) Explain MARPOL convection in relation to air pollution prevention *(3mks)*
- d) With aid of sketch, explain the operation of an alternator *(12mks)*