



TECHNICAL UNIVERSITY OF MOMBASA

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.

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 convention in relation to air pollution prevention (3mks)
- d) With aid of sketch, explain the operation of an alternator (12mks)