UNIVERSITI KUALA LUMPUR
Malaysian Institute of Marine Engineering Technology

FINAL EXAMINATION

FEBRUARY 2025 SEMESTER SESSION

SUBJECT CODE	:	**LMD25603**
SUBJECT TITLE	:	**MARINE AUXILIARIES**
PROGRAMME NAME (FOR MPU: PROGRAMME LEVEL)	:	**DIPLOMA OF ENGINEERING TECHNOLOGY IN MARINE ENGINEERING**
TIME / DURATION	:	**09.00AM - 11.30AM (2 HOURS 30 MINUTES)**
DATE	:	**24 JUNE 2025**

INSTRUCTIONS TO CANDIDATES

1. Please read **CAREFULLY** the instructions given in the question paper.
2. This question paper has information printed on both sides of the paper.
3. This question paper consists of **TWO (2)** sections; Section A and Section B.
4. Answer **ALL** question in Section A, and **TWO (2)** questions ONLY in Section B.
5. Please write your answers on this answer booklet provided.
6. Answer **ALL** questions in English language **ONLY**.

THERE ARE 3 PAGES OF QUESTIONS, INCLUDING THIS PAGE.

SECTION A (Total: 60 marks)

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

With reference to marine air conditioning system

a) Describe marine air-conditioning and refrigeration system

(2 marks)

b) Sketch and label air conditioning system with air handling unit (AHU)

(10 marks)

c) State FOUR (4) components in AHU system and its function.

(8 marks)

Question 2

With reference to oil purifier onboard ship:

(a) State the purpose of oil purifier.

(2 marks)

(b) Sketch a typical oil purification system onboard a ship.

(12 marks)

(c) Based on your sketch in (b). Discuss problem might occur if:

i. The heater was malfunctioning
ii. Operating water tank was empty

(6 marks)

Question 3

With reference to Oily Water Separator:

(a) Sketch a typical process flow diagram (PFD) of oily water separator and label any FOUR (4) components.

(12 marks)

(b) Describe fundamental operation of the Oil Content Monitor (OCM)

(4 marks)

(c) State any FOUR (4) requirements before ship can discharge treated water overboard

(4 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer ONLY TWO (2) questions.

Please use the answer booklet provided.

Question 4

With reference to marine pumps

a) Describe kinetic and positive displacement pump.

(4 marks)

b) Sketch and label Volute Type Centrifugal Pump

(8 marks)

c) Describe "Gas Bound" phenomenon in pump and method to prevent it.

(4 marks)

d) Sketch any TWO (2) types of impellers used in centrifugal pump.

(4 marks)

Question 5

With reference to heat exchangers:

(a) Sketch and label any FOUR (4) components of double pass heat exchanger.

(8 marks)

(b) Explain FOUR (4) maintenance/ inspection to be done during servicing of the heat exchanger.

(8 marks)

(c) State FOUR (4) system onboard ship that consists of a heat exchanger.

(4 marks)

Question 6

With reference to shipboard Fresh Water Generator (FWG):

(a) Sketch and label a 'Two-Stage Flash Evaporator Plant'.

(12 marks)

(b) Describe the operating principle of your sketch in (a).

(8 marks)

END OF EXAMINATION PAPER