CONFIDENTIAL

UNIVERSITI KUALA LUMPUR
Malaysian Institute of Marine Engineering Technology

FINAL EXAMINATION

FEBRUARY 2025 SEMESTER SESSION

SUBJECT CODE	:	**LMB30903**
SUBJECT TITLE	:	**MARINE DIESEL ENGINE 2**
PROGRAMME NAME (FOR MPU: PROGRAMME LEVEL)	:	**BACHELOR OF MARINE ENGINEERING TECHNOLOGY WITH HONOURS**
TIME / DURATION	:	**09.00 AM - 11.30 AM (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)** section. Section A and section B.
4. Answer **ALL** in questions section A. Section B only **THREE (3)** question **ONLY.**
5. Please write your answers on this answer booklet provided.
6. Answer **ALL** questions in English language **ONLY.**

THERE ARE 5 PAGES OF QUESTIONS, INCLUDING THIS PAGE.

INSTRUCTION: Section A consists of TWO (2) QUESTION

Answer ALL QUESTION **(Total: 40 marks)**

Please use the answer booklet provided.

Question 1

With reference to the engine components and structures of a large two-stroke marine diesel engine:

(a) Explain the application of the centrifugal casting method to manufacturing a cylinder liner and the equipment used.

(12 marks)

(b) Explain FOUR (4) requirements for manufacturing a cylinder liner with the centrifugal casting. method.

(4 marks)

(c) Determine FOUR (4) advantages of centrifugal casting cylinder liners.

(4 marks)

Question 2

With reference to four stroke marine diesel engine turbocharger exhaust system.

(a) Sketch and label FOUR (4) a installation of four stroke engine turbocharger.

(7 marks)

(b) Explain the application of turbocharger to improved engine performance and the relevant engine performance issues.

(7 marks)

(c) Explain the applicable industry standards for installation of a turbocharger.

(6 marks)

Section B consists of FOUR (4) QUESTION

Answer THREE (3) QUESTION (Total: 60 marks)

Question 3

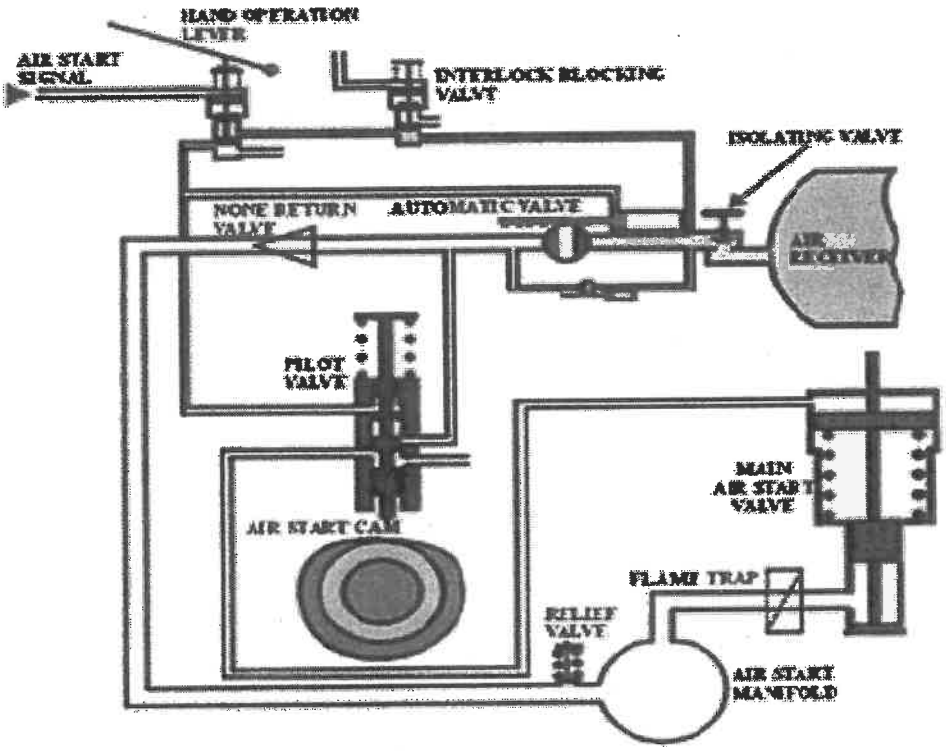

Figure A

With reference to the starting and reversing systems of a two-stroke diesel engine shown in Figure A.

(a) Analyze the operational relationship between the starting and reversing systems in a two-stroke marine diesel engine and standard operating procedures to prevent engine malfunction.

(12 marks)

(b) Describe the reversible two-stroke diesel engine and nonreversible four-stroke diesel engine start air receiver requirement.

(4 marks)

(c) Describe the capacity of air bottles according to the swept volume cylinder of engine.

(4 marks)

(4 marks)

Question 4

The shrink fit process is included in the manufacture of the semi-built crankshaft.

(a) Analyze the possible causes of the crack initiation and propagation in the crankshaft.

(10 marks)

(b) Propose engineering solutions to prevent such failures in future crankshaft designs.

(4 marks)

(c) Explain interference fit failure after manufacturing process.

(6 marks)

Question 5

With reference to injector on modern two stroke MAN B&W MC engine.

(a) Sketch and labels FOUR (4) the fuel injector.

(7 marks)

(b) Analyze the operation of the fuel injector and the consequences of injector malfunction in relation to fuel combustion standards and engine performance.

(10 marks)

(c) Identify THREE (3) reasons of diesel engine poor combustion.

(3 marks)

Question 6

With reference to large marine two stroke crosshead diesel engine lubrication oil system.

(a) Analyze the design and operation of the lubrication system.

(8 marks)

(b) Analyze the technical and operational reasons for separating system oil and cylinder oil.

(6 marks)

(c) Describe the impact of varying operating conditions, such as engine load, speed, and fuel type on the performance and effectiveness of the lubrication system in a marine diesel engine.

(6 marks)

END OF EXAMINATION PAPER