



UNIVERSITI KUALA LUMPUR  
MALAYSIAN INSTITUTE OF MARINE ENGINEERING TECHNOLOGY

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**FINAL EXAMINATION**  
**MARCH 2025 SEMESTER**

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COURSE CODE : LKB30303  
COURSE TITLE : OFFSHORE STRUCTURE  
PROGRAMME NAME : BACHELOR OF ENGINEERING TECHNOLOGY (OFFSHORE) WITH HONOURS  
DATE : 26 JUNE 2025  
TIME : 2:00PM - 5:00PM  
DURATION : 3 HOURS

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**INSTRUCTIONS TO CANDIDATES**

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1. Please read the instructions given in the question paper **CAREFULLY**.
2. This question paper is printed on both sides of the paper.
3. This question paper consist of **ONE** sections.
4. Section A consist of five questions. Answer **FOUR (4)** questions only.
5. Please write your answer on the answer booklet provided.
6. Please answer all questions in English only.
7. Refer to the attached Formula/ Appendies.  *Tick if applicable*

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THERE ARE 3 PAGES OF QUESTIONS INCLUDING THIS PAGE

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**SECTION A (Total: 100 marks)**

**Answer FOUR (4) questions.**

**Please use the answer booklet provided.**

**Question 1**

In brief, explain the definitions and functions of offshore structures in detail. You are required to list and sketch **THREE (3)** types of offshore structures to be installed according to the water depth of the ocean.

(25 marks)

**Question 2**

An offshore structure is defined as any structure that is fixed in position and extends above or below the sea's surface. Offshore structures have three parts: the topside, the mooring anchor, and the riser. Describe and sketch every part.

(25 marks)

**Question 3**

The offshore structures are typically designed for a design life of 20 or 25 years and therefore must withstand all environmental conditions that can reasonably be expected during this time. Jacket structure shall be modelled as a 3D space frame. All primary and secondary tubular members shall be modelled. Explain the computer model preparation of jacket structure based on five parts.

- i. Riser and Caissons
- ii. Conductors
- iii. Boat landing
- iv. Jacket Appurtenances
- v. Grouted pile sleeves

(25 marks)

**Question 4**

Loads on offshore structures are gravity loads and environmental loads. Gravity loads arise from dead weight of structure and facilities either permanent or temporary. Determine **FIVE (5)** loads for the offshore platform permanent condition.

(25 marks)

**Question 5**

Topside facilities frequently have three decks: a drilling deck, a well head/production deck, and a cellar deck. The decks are supported by a gridwork of girders, trusses, and columns. Explain the main function and operation of the topside and add sketch with labels of topside.

(25 marks)

**END OF EXAMINATION PAPER**