PENINSULA COLLEGE GEORGETOWN

UNIVERSITY OF PLYMOUTH

FINAL EXAMINATION

Semester	:	**JANUARY 2025 SEMESTER**
Programme Name	:	**BSC (HONS) MARITIME BUSINESS (LOGISTICS)**
Course Code & Name	:	**MAL2041 MARITIME MANAGEMENT AND OPERATIONS**
Duration	:	**3 HOURS**

INSTRUCTIONS TO CANDIDATES:

1. Please read the instructions given in the question paper **CAREFULLY.**
2. Answer **ONE (1)** question from SECTION A and **TWO (2)** question from SECTION B.
3. Answers to the questions are to be written into the examination booklet.
4. Electronic dictionaries, lecture notes, files or any unauthorised materials except writing equipment are strictly prohibited.

This question paper must be submitted along with all used and/or unused rough papers and/ or graph papers (if any). Candidates are **NOT ALLOWED** to take any examination paper(s) used or unused out of the examination hall.

WARNING:

The Examination Board of Peninsula College Georgetown regards cheating as a very serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in the accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from Peninsula College Georgetown.

(*This booklet contains 3 printed pages including this page*)

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ALLOWED TO DO SO

Answer **ONE** question from SECTION A and **TWO** questions from SECTION B. **[300 marks]**

SECTION A

1. Case Study: Dragging Anchor Leading to Multiple Collisions
   A 2,840 GT general cargo ship (Ship A) was en route from Groveport, England, to Holme Hook anchorage on the River Humber for bunkering. The vessel had recently lost its port anchor due to heavy weather, and a replacement had not been fitted. As a result, the classification society issued a Condition of Class (CoC) requiring the ship to keep its main engine on standby while at anchor.

   Upon arrival at Holme Hook, worsening weather led to the cancellation of the bunkering operation, and Ship A was instructed to anchor at Hawke Anchorage. Before departing, the master noticed that Ship A had dragged anchor but proceeded to Hawke Anchorage, where the ship re-anchored at 23:00. The pilot advised the master to remain vigilant and keep the engine on standby before disembarking.

   However, after the pilot left, the master stopped the engine and handed over the bridge watch to the second officer without specific instructions regarding the anchor watch and weather monitoring. At 02:46, Ship A began dragging anchor again, but the second officer failed to notice until nine minutes later. When corrective actions were being attempted, the ship collided with a nearby research survey ship (Ship B) at 03:12. Shortly after, both entangled vessels drifted into another anchored ship (Ship C), leading to another collision at 03:20.

   The investigation highlighted multiple failures across different levels of defence, including inadequate anchoring procedures, ineffective communication, and poor safety management system (SMS) implementation.
   Using the Swiss Cheese Model of Accident Causation, analyse the accident and demonstrate how different layers of defence failed, leading to this incident.

   (100 marks)
   Total: [100 marks]

2. a) Discuss the common hazards that are likely to cause work-related injuries and death, ill health, diseases and incidents among ship-breaking workers.

   (50 marks)

   b) Analyse the safety measures that might be taken to improve worker safety in the ship-breaking operations. (50 marks)

   Total: [100 marks]

SECTION B

3. MV Peninsula is departing from Tanjung Pelepas Port, Malaysia (UTC +8) on 5th April 2025 at 00:01 LT (Local Time, MYT/UTC +8), bound for Yokohama Port, Japan (UTC +9). The total voyage distance is 4,500 nautical miles (NM), and the vessel's planned constant speed is 18 knots, giving an initial Estimated Time of Arrival (ETA) of 10.5 days from departure.

   While en route, the vessel is expected to transit near the Taiwan Strait, where a Tropical Revolving Storm (TRS) has been detected, moving from the Philippines towards Taiwan. The storm's path is expected to intersect with the ship's planned route on 8th April 2025 at 1800 LT (UTC +8, Malaysia Time).

   To ensure safety, the Master decides to:

i. Reduce speed to 10 knots for 24 hours, from 8th April 1800 LT (UTC +8) to 9th April 1800 LT (UTC +8), allowing the TRS to pass safely.
ii. Increase speed to 19 knots after the storm passes to recover lost time.

Instructions:
As the vessel operator, you are required to: -

a) Explain the factors influencing the Master's decision to alter speed. (15 marks)

b) Explain the impact of reduced speed on ETA and voyage planning. (15 marks)

c) Analyse the risk mitigation measures that should be considered. (20 marks)

d) Calculate the new ETA for the vessel at Yokohama (UTC +9), considering the speed adjustments. (25 marks)

e) Recommend alternative routing and navigation strategies that could be implemented to ensure safe passage. (25 marks)

Total: (100 marks)

4. The MV Cairo, a fully loaded container vessel, has departed from Port Klang, Malaysia, enroute to Chittagong Port, Bangladesh. Shortly after departure, while navigating through the Malacca Strait, the vessel's Master reports that a fire has broken out in one of the containers on deck. The crew promptly activates emergency procedures and successfully deploys the CO_2 fire suppression system to contain and prevent the fire from entering the cargo hold No 3.

During the firefighting operation, however, one crew member sustains an injury due to the improper operation of CO_2 system. The injured crew member requires immediate medical attention, but the vessel is already at sea, with the nearest port still several hours away.

a) i) Describe the medical emergency response options for injured crew members. (10 marks)

ii) Explain the role of the IMDG Code in ensuring the safe carriage of dangerous goods for MV Cairo. (20 marks)

b) Provide the essential safety measures that can be implemented to prevent shipboard fires. (30 marks)

c) i) Describe the different classes of fires. (20 marks)

ii) Discuss the specific extinguishing techniques and firefighting methods to control and extinguish shipboard fires. (20 marks)

Total: (100 marks)

- END OF QUESTIONS -