



UNIVERSITI KUALA LUMPUR
Malaysian Institute of Marine Engineering Technology

FINAL EXAMINATION
JANUARY 2016 SESSION

SUBJECT CODE : LDD 10102
SUBJECT TITLE : INTRODUCTION TO SHIP TECHNOLOGY
LEVEL : DIPLOMA
DATE :
TIME :
DURATION : 2 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper **CAREFULLY**.
 2. This question paper is printed on both sides of the paper.
 3. Please write your answers on the answer booklet provided.
 4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
 5. This question paper consists of **TWO (2)** sections; Section A and B. Answer all questions in Section A. For Section B, answer **TWO (2)** questions only.
 6. Answer all questions in English.
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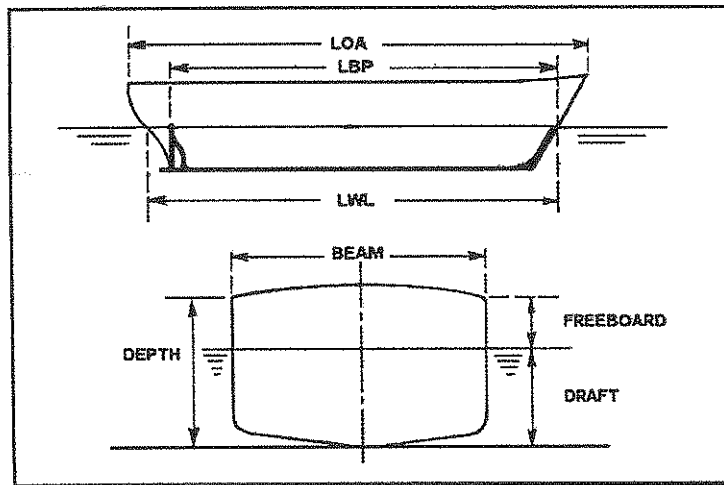
THERE ARE 7 PAGES OF QUESTIONS, INCLUDING THIS PAGE.

SECTION A (Total: 60 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****QUESTION 1**

- a) The terms 'sea waves' is applied to waves generated locally by wind. All deep sea waves follow the same shape regardless of other differences. That shape is called trochoid. Justify the definition of "trochoidal" wave. (2 marks)
- b) In fluid dynamics, wind waves, or wind-generated waves, are surface waves that occur on the free surface of oceans, seas, lakes, rivers, and canals or even on small puddles and ponds. Briefly explain a definition of wind and the effects of strong winds on the ship. (6 marks)
- c) The tide is a flow of a large mass of the sea due to a rise in sea level, which is caused by the gravitational effect of the sun and the moon on the earth. With the aid of sketch briefly explain the spring tides and neap tides process. (6 marks)
- d) The immersed volume of an iceberg is always greater than the volume above the water and increases with the age of the ice. Only 10% of the real size can be seen on the surface of the water and the other part remains under the surface of water. List down three (3) of the effects of iceberg on maritime activity. (6 marks)

QUESTION 2

- a) Tug boat is capable to handle a lot of duties. Define two (2) functions of a tug boat (4 Marks)
- b) With reference to the diagram below, write in full the following legends of the ship's principal dimensions and provide the definitions:
- (i) LOA:
 - (ii) LWL:
 - (iii) LBP:



(6 Marks)

- c) The vessel mission requirements determine the design and shape of the vessel to be constructed. This has results various types of vessels with their own unique features. Briefly explains the basic features and structural characteristics of any **two (2)** of the following merchant ships.

- i.) Bulk Carrier
- ii.) Oil Tanker
- iii.) Trawler
- iv.) Frigate

(5 Marks)

- d) A raw material or feedstock is the basic material used in the production of goods, energy, finished products or intermediate materials that are themselves feedstock for finished products.

- i.) State **two (2)** countries producing iron ore.
- ii.) State **two (2)** countries importing iron ore.

(4 Marks)

QUESTION 3

- a) Regardless of whether the shipyard is to be built from scratch or created by modification of existing yards, there are several things that need to be considered. Justify six (6) of the basic requirement and shipyard facilities that need to be considered before the construction of the shipyard begin.
- (6 Marks)
- b) Shipbuilding has been always in a state of change. Innovations in design, materials, equipment, techniques, propulsion and construction improve and therefore alter the methods used in shipbuilding. Briefly describe the differences between traditional building process and modern building process.
- (6 Marks)
- c) Shipbuilding involves producing boats and ships to the client's specifications. Justify the processes that involved in shipbuilding.
- (4 Marks)
- d) Ceremonial ship launching is the process of transferring a vessel to the water. It is a naval tradition in many cultures, dating back thousands of years. List four (4) other methods of launching a vessel
- (4 Marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer only TWO questions.

Please use the answer booklet provided.

QUESTION 4

- a) Timber is commonly used to fit out pleasure craft and small boats. Apart from its versatility and ease of use it provides an attractive finish. There are three types of timber used in boat building: hardwoods, softwoods and plywood. Briefly describe any two (2) of the following three types of woods:
- (i) Hardwoods
 - (ii) Softwoods
 - (iii) Plywood.

(4 Marks)

b) Timber is commonly used to fit out pleasure craft, small boats and constantly in contact with moisture due to marine environment. There are two types of wood rot, wet rot and dry rot.

- (i) Briefly explains the cause of wet rot and dry rot
- (ii) Justify **three** (3) procedures to prevent wood rot

(6 Marks)

c) Fibreglass is Glass Reinforced Plastic (GRP). This material is widely used in the construction of boat hulls as well as fittings. GRP is replacing timber in ship construction. State **four** (4) the main features of GRP in marine industry.

(4 Marks)

d) Glass reinforced plastic (GRP) has been widely used in the construction of boat hulls. It consists of two components which is a resin and fibre. For marine application, marine resins are water resistant and hardener is added to begin the curing action. Describe **four** (4) stages of set-up the resins.

(4 Marks)

e) Classification Societies have strict rules regarding the grading of materials for marine construction. Four common materials being used for the construction of ship/boat hull are mild steel, aluminium alloy, glass-fibre reinforced polymer/plastic (GRP) and timber. List **two** (2) Classification Societies involved in shipbuilding.

(2 Marks)

QUESTION 5

a) The EOQ model provides a strategy for efficient implementation of the procurement process in a shipyard. This strategy is based on the certain assumptions. State **three** (3) of the assumptions

(6 Marks)

- b) Purchasing is an important feature of Just-In-Time (JIT) methods of inventory control, JIT requires the lead times to be shorter and deliveries to be more reliable and cost effective. List **four** (4) goals of JIT
- (4 Marks)
- c) To implement JIT successfully, purchasing personnel must work closely with suppliers to overcome supplier concerns. Describe **four** (4) of supplier concerns.
- (7 Marks)
- d) In an ideal manufacturing environment the material required for the manufacture of the ship or boat should be purchased and stored in the yard ready for use. Give **two** (2) reasons why it is not always practical to hold stores for anything other than immediate needs.
- (2 Marks)

QUESTION 6

- a) A modern shipyard consists of procurement department, which is also known as ordering or purchasing department. The procurement department is at the center of the shipyard's business organization and it is interface with all the other shipyard departments. List **four** (4) materials that procurement department buy for the construction of ships
- (4 Marks)
- b) State **three** (3) relationships between the design and procurement department
- (6 Marks)
- c) A typical shipyard includes wide-ranging material handling equipment to transport a wide variety of materials ranging from large metallic objects to gas cylinders. Material handling equipment can be classified into the following four broad groups:
- i.) Conveyors
 - ii.) Industrial Trucks
 - iii.) Cranes
 - iv.) Containers

Justify any two (2) of the above material handling equipments.

(6 Marks)

- d) There is no standard checklist for evaluating materials. Each material has a different application and must therefore have a unique checklist prepared for that application.

Justify criteria should be used when selecting for a particular application.

(4 Marks)

END OF QUESTION