UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF MARINE ENGINEERING TECHNOLOGY

FINAL EXAMINATION
JANUARY 2017 SEMESTER

COURSE CODE	:	LMB10203
COURSE NAME	:	NAVAL ARCHITECTURE FOR MARINE ENGINEERS
PROGRAMME NAME (FOR MPU: PROGRAMME LEVEL)	:	BACHELOR OF ENGINEERING TECHNOLOGY (HONS) IN MARINE ENGINEERING
DATE	:	05/07/2017 WED
TIME	:	9.00 AM - 12.00 PM
DURATION	:	2 HOURS 30 MINUTES

INSTRUCTIONS TO CANDIDATES

1. Please read CAREFULLY the instructions given in the question paper.

2. This question paper has information printed on both sides.

3. This question paper consists of TWO (2) sections; Section A and Section B. Answer ALL questions in Section A and THREE (3) questions from Section B.

4. Please write yours answers on the answer booklet provided.

5. Write your answers only in BLACK or BLUE ink.

6. Answer all questions in English.

THERE ARE 6 PAGES OF QUESTIONS, INCLUDING THIS PAGE.

SECTION A (Total: 40 marks)

INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

Question 1

(a)   List eight types of ship according to their functions

(8 marks)

(b)   Why does a ship float?

(6 marks)

(c)   How does density effect the buoyancy force acting on a ship?

(6 marks)

Question 2

(a)   A fishing vessel that have been completed and tested have the following principal charactersistics:

Length Waterline = 14.251 m

Breadth = 4.52m

Draft mean = 1.908 m

Displacement = 58.536 m³

Area midship A_M = 6.855 m2

Area waterplane A_W = 47.595 m²

Calculate the following coefficients of form:

i)   Block coefficient C_B

ii)   Coefficient of waterplane Area

iii)   Coefficient of midship section C_M

iv)   Prismatic coefficient C_P

(10 marks)

(b) A waterplane ordinates for a 120 m LBP ship has the following offsets:

Station	0	¼	½	¾	1	2	3	4	5	5½	6
½ Ord	0.6	2.8	4.0	5.2	6.2	9.0	9.8	8.4	4.8	2.2	0

Find the waterplane area, waterplane coefficient and TPC for the waterplane.

(10 marks)

SECTION B (Total: 60 marks)

INSTRUCTION: Answer only THREE questions.

Please use the answer booklet provided.

Question 3

(a)   Explain what is a ship's metacentre and how is it determined?

(5 marks)

(b)   A feeder container ship of 8,000 tonnes displacement has KM = 8.7 m and KG = 7.6 m The following weights are then loaded and discharged:

*   Load 250 tonnes cargo KG 6.1 m and centre of gravity 7.6 m to starboard of the centre line.
*   Load 300 tonnes fuel oil KG 0.6 m and centre of gravity 6.1 m to port of the centre line.
*   Discharge 50 tonnes of ballast KG 1.2 m and centre of gravity 4.6 m to port of the centre line.

Find the final list.

(15 marks)

Question 4

A passenger ferry has length of 150m, 18m breadth, and an MCT 1 cm of150 tonnes-meter. The vessel also has a TPC of 25. The initial draft of the vessel at its perpendicular is 6.35m Fwd and 6.65m Aft. The ship then performs the loading and unloading operations:

230 tonnes in No.1 Hold	50m forward of LCF
800 tonnes in No 3 Hold	20m forward of LCF
500 tonnes in No.4 Hold	21m Aft of LCF
Removes 200 tonnes fr No.2 Hold	36m Forward of LCF
Removes 105 tonnes fr F.P Tank	60m forward of LCF

The longitudinal center of floatation is 5 m aft amidship. Calculate her final drafts.

(20 marks)

Question 5

(a)   With the aid of appropriate sketch explain what is curve of statical stability.

(5 marks)

(b)   Sketch the curve of statical stability change under thwe following conditions:
   i)   High freeboard
   ii)   Medium freeboard
   iii) Lesser freeboard.

(7 marks)

(c)   Based on the curve of statical stability that you you have drawn in (b), list the effect to the ship stability.

(8 marks)

Question 6

a)   Sketch a typical ship propulsion system (drive train) and identify all its
      components. Identify also the following powers that is available within the drive
      train.

      i)   Brake Horse power

      ii)   Shaft Horse Power

      iii)   Effective Horse Power

                                                                            (15 marks)

(b)   Based on the sketch that you have provided show the relationship between the
      powers available to finally derived the propeller efficiency

                                                                            (5 marks)

END OF EXAMINATION PAPER