Semester 1 Examinations 2007/08

School: National Maritime College of Ireland

Programme Title: Bachelor of Engineering in Marine & Plant Engineering

Programme Code: EMARE 7 Y 1

Module Title: Marine Engineering Practice

Module Code: MAR 1 6006

External Examiner(s): Mr N O Shaughnessy, Mr D Taylor
Internal Examiner(s): Mr G Horan

Instructions: Attempt 5 Questions only. All questions carry equal marks

Duration: 2 Hours

Sitting: Autumn 2008

Requirements for this examination:

Note to Candidates: Please check the Programme Title and the Module Title to ensure that you are attempting the correct examination.
If in doubt please contact an Invigilator.
1. With reference to machinery installations found on merchant vessels today:
   (a) Name the three main types of installation.                      (6)
   (b) By means of drawings, show the basic layout of each system     (6)
   (c) Give two (2) examples of ship used with each type of installation mentioned in (a) above.                  (4)
   (d) State, giving reasons, which installation type(s) require a gearbox.                                     (4)

2. Sketch, in section, a two stroke, cross-head, valved, uniflow, slow speed diesel engine. Label all major parts. (20)

3. (a) With reference to Engine Cycles, describe the cycle of operation and timing diagram of a large 4-Stroke Engine. (10)
   (b) Explain how this differs from the cycle of a 2-Stoke Engine   (5)
   (c) State and explain where power takes place in the cycle.       (5)
4. (a) Describe, with the aid of sketches, what is meant by each of the following terms:

(i) Loop Scavenge
(ii) Cross Scavenge
(iii) Uniflow Scavenge

(b) State with reasons, which method of scavenge is the most efficient

5. (a) Explain the conditions which could give rise to a ‘Scavenge Fire’

(b) How can scavenge fires be avoided?

(c) What personal precautions should be undertaken by an affected vessel’s engineering staff and crew members?

6. With reference to Marine Boilers of the water-tube type:

(a) List the mountings to be found on such a boiler.

(b) State why is it necessary to have these fittings on the boiler.

(c) State the purpose of the safety valve on a boiler.

7. Describe with the aid of a sketch a refrigeration plant of the vapour compression type. Label all components.