**INDIAN MARITIME UNIVERSITY**
(A Central University, Government of India)

**May/June 2017 End Semester Examinations**
B. Tech (Marine Engineering – Fifth Semester)

**Marine Internal Combustion Engine – I**
**UG11T 2503/UG11T 1503**

Date: 03.07.2017 Maximum Marks : 100
Time: 3 Hrs Pass Marks : 50

**PART – A** 10X3=30 Marks
(All questions are compulsory)

1. (a) Define Mean Piston Speed and List down the constraints for increasing it.

   (b) What is the purpose of Tie Bolts in a large 2 stroke Diesel Engine?

   (c) Why 2 stroke Cross Head Engine is fitted with Guide Shoe?

   (d) Name the various types of scavenging in a 2 Stroke Diesel Engine?

   (e) What is Super Charging of Diesel Engines?

   (f) What is the minimum compression ratio required in a Diesel Engine and why?

   (g) Name the various cooling medium used for cooling the different parts of a Marine Diesel Engine.

   (h) Name the various grades of fuel oil used for Marine Diesel Engines.

   (i) Explain how a primary explosion in a crank case can trigger a secondary explosion.

   (j) What are the implication of Stroke – Bore Ratio in Diesel Engines.

**PART – B** 5X14=70 Marks
(Answer any 5 of the following)

2. (a) Draw and Explain a 4 Stroke Diesel Engine Valve Timing Diagram (crank angle diagram) with respect to Indicator Diagram (PV diagram). (10 Marks)

   (b) State and Explain different Power Ratings used to distinguish Diesel Engines. (4 Marks)

3. (a) Explain the working of a Hydraulically Operated Main Engine Exhaust Valve with a simple diagram (PV diagram. (10 Marks)

(b) Explain the differences between Pulse and Constant Pressure Turbo charging system? (4 Marks)

4. (a) Explain the Turbocharger of Large 2 stroke Diesel Engine with a simple diagram. (10 Marks)

(b) What is the purpose of the Labyrinth Seal in a T/C. (4 Marks)

5. (a) Sketch and describe a Fuel Oil System of a Large Marine Diesel Engine, from Settling Tank to Main Engine Fuel Injectors. (10 Marks)

(b) Explain Ignition Delay and After Burning in a Marine Diesel Engine. (4 Marks)

6. (a) Explain the various means of reducing SOx emission from Marine Diesel Engines. (7 Marks)

(b) Explain the various means of reducing NOx emission from Marine Diesel Engines. (7 Marks)

7. (a) Draw a neat sketch of a Cylinder Liner of a Large 2 Stroke Marine Diesel Engine where bore cooling method is used. (10 Marks)

(b) Explain why Chemical Treatment of Main Engine Jacket Cooling Water is necessary? (4 Marks)

8. (a) Explain how Starting Air Line Explosion can take place in a Large Marine Diesel Engine. (4 Marks)

(b) What are the Safety Devices fitted to prevent a Starting Air Line Explosion? Explain the operating principle of each device. (10 Marks)

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