

# Indian Maritime University

( A Central University, Govt of India)

May-June 2018 End Semester Examinations

## B. Tech (Marine Engineering)

Semester-V

### MARINE INTERNAL COMBUSTION ENGINE-I (UG11T2503/ T1503)

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Date: 06.07.2018

Max Marks:100 Marks

Time: 3 Hrs

Pass Marks:50 Marks

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#### PART – A

Marks: 10 x 3 =30

(All Questions are compulsory)

1.

- (a) Explain Ignition Delay in a Marine IC Engine
- (b) What are the constraints to increase the engine mean piston speed?
- (c) Explain why a two stroke cross head engine is fitted with guide shoe
- (d) Explain the various types of scavenging system used for a 2 stroke diesel engine & name the best type with justification.
- (e) What is pulse and constant pressure turbo charging system?
- (f) Why nozzle ring is used in Turbo charger?
- (g) Why Chemical Treatment of Marine Diesel Engine Jacket Cooling Water is necessary?
- (h) Draw and label the ship's main engine transverse section bed plate.
- (i) Why both bursting disc and relief valve are fitted in main engine starting air system?
- (j) What are the advantages of a Long-Stroke Marine IC Engines?

#### Part – B

Marks: 5 x 14 =70

(Answer any 5 of the following 7 Questions)

2. a) Draw & Label the Valve Timing Diagram of 2-Stroke Marine Diesel Engine (6 marks)
- b) Draw the P-V diagram of a 2-Stroke Marine Diesel Engine and explain the thermodynamic processes in the Cycle. (8 marks)
3. Explain the following
  - a) Indicated Horse Power (4 marks)
  - b) Break Horse Power (4 marks)
  - c) Frictional Horse Power (3 marks)
  - d) Mechanical Efficiency (3 marks)

4. Explain the working of a hydraulic actuated exhaust valve, fitted on a slow speed 2 stroke crosshead diesel engine, with a neat labelled sketch  
(7+7 = 14 marks)
5. a) Sketch and describe a Turbocharger fitted on Large 2-Stroke Marine Diesel Engine (10 marks)  
b) How bunker fuel oil is prepared onboard for efficient combustion (4 marks)
6. a) Sketch & describe a Fuel Injector fitted on a Marine Diesel Engine (10 marks)  
b) Why compression ratio varies between C.I and S.I engines? (4 marks)
7. a) Sketch a simple line diagram of a main engine Jacket cooling water system with auto temperature control. (10 marks)  
b) Why cooling water treatment is done (4 marks)
8. a) List the various factors which lead to scavenge fire in a cross head type engine. (4 marks)  
b) What are the indications, if a scavenge fire occurs? (3 marks)  
c) How to deal with the fire? (3 marks)  
d) How the incident can be prevented? (4 marks)

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