INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

END SEMESTER EXAMINATIONS –DECEMBER 2018

B. Tech (Marine Engineering)

Semester- V

Marine Internal combustion Engine 1 (UG11T2503)

Date: 31-12-2018 Max Marks: 100 Marks

Time: 3 Hrs Pass Marks: 50 Marks

Part – A

(All Questions are compulsory) Marks: 10×3= 30

1. a) What is the minimum compression ratio of compression ignition (diesel) engine, and explain why?
   b) Explain MCR and CSR.
   c) Write down components of cross head.
   d) What are the differences of constant pressure and pulse type turbo charging?
   e) What is Ignition quality of diesel oil and fuel oil?
   f) What may be the reasons for variation of peak pressure of a diesel engine?
   g) For a large two stroke modern diesel engine how is the piston cooled?
   h) Why modern large diesel engines use bore cooling for a liner?
   i) State the benefits of super long stroke engines over normal stroke engines.
   j) State the stroke/bore ratio for short stroke, long stroke super long stroke engine.

Part – B

(Answer **any 5** of the following 7 questions)

Marks: 5 X 14 = 70

2. a) Explain the 2 stroke and 4 stroke cycles in detail, with the help of timing diagrams. (10)
   b) Give reasons for 'valve overlap' in the 4-stroke cycle. (4)

3. a)Explain the purpose of tie-rods in a large engine and how the combustion gas forces are dealt with, within the structure. (8)
   b)Describe the tightening sequence of such tie rods, with explanations. (6)

4. a) Sketch and describe a hydraulically operated exhaust valve used in a 2- stroke marine diesel engine. (8)
   b) How is the valve spindle lubricated, and how is valve rotation achieved. (6)

5. a) With a sketch describe briefly Scavenge Manifold with Auxiliary Blower arrangement for a large two stroke diesel engine. (7)
   b) Briefly explain with a sketch: turbocharger with plain bearings. (7)

6. a) What are the design aspects of combustion chamber of large two stroke diesel engine? (6)
   b) Show any NOx control mechanism used on the exhaust system externally. (8)

7. a) What treatment is carried out chemically and mechanically on the main engine cooling water system? (8)
   b) Marine auxiliary diesel engine cylinder head – write the components (mountings) on cylinder head and their function. (6)

8. a) How Main Engine uptake fire occurs and what are the indications? (8)
   b) What inspections are to be carried out after a scavenge fire? (6)

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