

Indian Maritime University
(A Central University, Govt. Of India)
End Semester Examination Dec-2019/Jan-2020
B. Tech(Marine Engineering)
Semester –VI
Marine Internal Combustion Engine II
(UG11T1602/2602)

Date: 02-01-2020
Time: 3 Hrs

Max Marks: **70**
Pass Marks: **35**

Part – A (compulsory)
Answer the following (10x2=20 Marks)

1. Briefly explain the direction of forces that act on a cross-head of a 2-stroke engine, while in operation.
2. Name 3-types of vibration that occur in an engine.
3. Explain briefly: Idle stroke, effective stroke, total stroke of a Bosch fuel pump.
4. Name and sketch 4-types of indicator diagrams taken on a 2-stroke engine.
5. What are the differences in the Cylinder oil and crankcase oils of a 2-stroke engine burning residual fuel?
6. Why is tappet clearance necessary in a 4-stroke trunk type engine?
7. What are the contaminants found in residual fuel, used for Marine Diesel Engine?
8. What material are exhaust and inlet valves, and their seats, commonly made of?
9. What causes "hunting" in a Governor?
10. Why is the FQS arrangement provided in a VIT fuel injection system?

Part – B
Answer any 5 out of 7 questions (5 x 10= 50 marks)

11. a) Sketch and describe a simple torsional vibration damper used on a large Marine Diesel Engine. (6)
b) Briefly explain "critical speed" of an engine. (2)
c) Why must engines not be allowed to run at this speed for long periods? (2)
12. a) In a fuel injection system, state four essential functions that need be satisfied. (6)
b) Why must 'Atomisation' & 'Penetration' have a balance between them? (2)
c) What is the purpose of 'turbulence' in the combustion chamber? (2)
13. a) Sketch and describe a starting and reversing system of a large diesel engine showing safety features. (6)
b) Name four safety features provided. (2)
c) What three important steps will you take to prevent air starting line explosion? (2)

14. a) Explain how :
1) Indicator card (power card)
2) Draw Card (out of phase diagram) are taken. (3+3)
- b) Briefly explain the power calculation of one unit of the engine through the power card. (2)
- c) Why can't high speed engines have out of phase diagrams made? (2)
15. a) What causes cylinder liner wear? (6)
- b) What preventive measures can be taken to reduce such wear? (2)
- c) What material are cylinder liners made of and why? (2)
16. a) Sketch a sectional view of a 4-stroke trunk type of a piston assembly , and explain the function of each of the components. (6)
- b) Why are such pistons made of aluminum alloy ? (2)
- c) How is the gudgeon pin lubricated. (2)
17. a) What are the contaminants found in the crankcase lubricating oil of a large bore engine? (6)
- b) What checks will you make during a routine crankcase inspection? (2)
- c) State five precautions you will take before entering the crank case? (2)