

INDIAN MARITIME UNIVERSITY
Time Bound Assignment
B Tech (ME) Arrear Examinations
September/October 2020
UG11T3503
MARINE INTERNAL COMBUSTION ENGINES I

Date: 11/09/2020
Duration: 3 Hrs

Max Marks: 70
Pass Marks: 35

Part – A (compulsory)

Answer the following (10x2=20 Marks)

1. State the classification of engines based on operating cycles.
2. Define and state the formula for i) IHP ii) BHP
3. State the types of crank shafts currently in use.
4. What are the components that are housed in a diesel engine cylinder cover?
5. Why we need air coolers in a scavenge system?
6. What is an auxiliary blower and state its use?
7. State the Methods of cleaning turbocharger air side and gas side.
8. What is surging of a turbocharger?
9. What are the three factors that affect combustion of marine diesel fuels?
10. What do you understand by Cetane Number and Cetane Index with respect to Marine Fuels?

Part – B

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

11. With a neat sketch describe the timing diagrams of a 2 stroke and 4 stroke internal combustion engines. Enter approximate duration in degrees of crank angle of each of the strokes. **(10 Marks)**
12. Sketch Box type and a trestle type bedplate. **(5 Marks)**
Enumerate the forces that a bedplate has to withstand during engine operation. **(3 Marks)**
In addition to withstanding these forces what are the three functions a bedplate provides? **(2 Marks)**

13. Draw a simple line diagram to explain the air flow in all scavenging mode. **(5 Marks)**
List out the advantages and disadvantages of loop and uniflow scavenging. **(5 Marks)**
14. Describe the 'Pulse' type and "Constant" Type of supercharging system in a diesel engine with diagrams. **(6 Marks)**
Enumerate the advantages and disadvantages of each system. **(4 Marks)**
15. With a neat sketch explain the 4 phases of combustion. **(6 Marks)**
Define Flash point and Fire Point. **(2 Marks)**
Why are flash point tests required? **(2 Marks)**
16. Explain with suitable drawing the method of cooling of the Piston of Slow speed Main Engine used for propulsion **(10 Marks)**
17. State the factors which must be present for an explosion to occur in the Crank case of a diesel engine. **(6 Marks)**
Explain the provisions provided to detect a Crank Case explosion in advance. **(4 Marks)**

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