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18MR53

## Fifth Semester B.E. Degree Examination, Feb./Mar. 2022 Marine Internal Combustion Engine - I

Time: 3 hrs.

Max. Marks: 100

**Note:** Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 Explain the following in short : i) Mechanical efficiency ii) Mean effective pressure  
iii) M.C.R iv) C.S.R v) Overload Rating vi) Astern output vii) Rated Power  
viii) Continuous power ix) Over load x) M.P.S (Mean Piston Speed). (20 Marks)

OR

- 2 a. With the help of P-V diagram, explain valve of port timing of 4 stroke and 2 – stroke engines. (14 Marks)  
b. Explain Heat Balance chart, with the help of a neat sketch. (06 Marks)

### Module-2

- 3 a. Write down the advantages and disadvantages of various cooling media used for piston cooling. (10 Marks)  
b. Write a short note on Cooling Water treatment. (10 Marks)

OR

- 4 a. Write down the differences between 2 – stroke and 4 – stroke pistons. (06 Marks)  
b. Explain the importance of Crankshaft. Explain its types with neat sketch. (14 Marks)

### Module-3

- 5 a. What is Surging? How can we prevent it? (08 Marks)  
b. Explain Turbocharger water washing and Dry cleaning procedures. (12 Marks)

OR

- 6 a. What is Scavenging? What are the requirements of a Satisfactory Scavenging System? (06 Marks)  
b. Explain Scavenging process and types of Scavenging methods in detail. (14 Marks)

### Module-4

- 7 a. Sketch and explain “FUEL INJECTOR”. (10 Marks)  
b. Write down the functions and requirements of a Fuel Injector. (10 Marks)

OR

- 8 a. Explain Crankcase Explosion in detail. (10 Marks)  
b. Explain the measures to be taken when oil mist is detected. (10 Marks)

### Module-5

- 9 a. Write a short note on following lube oil properties : i) TAN ii) SAN iii) TBN  
iv) Coking capacity v) De – Emulsivity vi) Cracking stability. (12 Marks)  
b. List out the Cylinder Lubrication requirements. (08 Marks)

OR

- 10 a. Write a short note on following on board lube oil tests : i) TBN test ii) Spot test  
iii) Water crackle test iv) Alkalinity test v) Water content test. (10 Marks)  
b. What is Microbial Degradation of lube oil? Explain indications , prevention and treatment for the same. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.