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## ***B.Tech. Degree V Semester Regular/Supplementary Examination in Marine Engineering November 2023***

**19-208-0504 MARINE AUXILIARY MACHINERY - II  
(2019 Scheme)**

Time: 3 Hours

Maximum Marks: 60

**Course Outcome**

On successful completion of the course, the students will be able to:

CO1: Understand working of steering gears and shafting of ships.

CO2: Gain knowledge dry docking and different works associated with that.

CO3: Understand the working of different on board machinery, the source of noise and noise suppression.

CO4: Understand IMO regulations on the prevention of pollution by oil, oily water and sewage.

CO5: Explain the basic of lubrication and the testing of lub oil and fuel oil.

Bloom's Taxonomy Levels (BL): L1 – Remember, L2 – Understand, L3 – Apply, L4 –Analyze, L5 – Evaluate, L6 – Create

PI – Programme Indicators.

(Answer *ALL* questions)

(5 × 15 = 75)

|           |   | Marks | BL | CO | PI    |
|-----------|---|-------|----|----|-------|
| I.        | (a) Sketch and describe working of any one type of variable delivery pump used in a steering gear system.   | 10    | L1 | 1  | 1.4.1 |
|           | (b) What are the problems associated with leakage of stern tube seal? How to identify these faults?   | 5     | L3 | 1  | 1.4.1 |
| <b>OR</b> |   |       |    |    |       |
| II.       | (a) What is the redundancy concept as per SOLAS and explain how it is applied in construction and operation of steering gear systems onboard?   | 10    | L1 | 1  | 1.4.1 |
|           | (b) What are the reasons for misalignment of a ship's shafting system while in service?   | 5     | L3 | 1  | 1.4.1 |
| III.      | (a) Explain the refitting procedure for a keyless propeller.  | 5     | L1 | 2  | 1.4.1 |
|           | (b) What is meant by Propeller drop? What does it indicate?   | 10    | L2 | 2  | 1.4.1 |
| <b>OR</b> |   |       |    |    |       |
| IV.       | (a) What is meant by Rudder drop? How it is measured?   | 5     | L1 | 2  | 1.4.1 |
|           | (b) How will you prepare the engine room before dry-docking a vessel?   | 10    | L2 | 2  | 1.4.1 |
| V.        | What are the sources of noise produced while running a large marine diesel engine? What is the maximum allowable noise level in a machinery compartment? How to protect an operator from such noise levels? | 15    | L2 | 3  | 1.4.1 |
| <b>OR</b> |   |       |    |    |       |
| VI.       | What is meant by Critical speed? Why it is important to consider while manoeuvring a Vessel?  | 15    | L2 | 3  | 1.4.1 |

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|           |     |   | Marks | BL | CO | PI    |
|-----------|-----|---|-------|----|----|-------|
| VII.      | (a) | How will you prepare an aerobic type of sewage treatment plant for operation?   | 9     | L3 | 4  | 1.4.1 |
|           | (b) | What are the parameters observed while operation of such a plant?   | 6     | L2 | 4  | 1.4.1 |
| <b>OR</b> |     |   |       |    |    |       |
| VIII.     | (a) | Explain use of Coalescers in an oily water separator.   | 6     | L2 | 4  | 1.4.1 |
|           | (b) | With the help of neat sketches explain functions of an Oil Content Meter (OCM) and Oil Level Monitor (OLM) used in an oily water separator. | 9     | L3 | 4  | 1.4.1 |
| IX.       | (a) | What are the problems that may arise for the lubricating oil while in service in a trunk piston engine?                                     | 8     | L4 | 5  | 1.4.1 |
|           | (b) | What should be done to ensure the quality of lubeoil in service?  | 7     | L4 | 5  | 1.4.1 |
| <b>OR</b> |     |   |       |    |    |       |
| X.        | (a) | Discuss about the friction in a shell bearing? How it is minimized?   | 8     | L4 | 5  | 1.4.1 |
|           | (b) | What is the effect of using emulsified lubeoil in an engine?  | 7     | L4 | 5  | 1.4.1 |

**Bloom's Taxonomy Levels**

L1 - 20%, L2 - 41%, L3 - 19%, L4 - 20%.

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