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B.Tech. Degree V Semester Regular/Supplementary Examination in Marine Engineering November 2022

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 lubricating oil and fuel oil.
 Bloom's Taxonomy Levels (BL): L1 – Remember, L2 – Understand, L3 – Apply, L4 – Analyze,
 L5 – Evaluate, L6 – Create
 PO – Programme Outcome

		(5 × 15 = 75)	Marks	BL	CO	PO
I.	(a)	With a simple sketch explain the working of a four ram hydraulic steering gear system. What are the safeties incorporated in the system?	10	L2	1	1.4.1
	(b)	Explain the working of a hunting gear mechanism in steering, connected with variable delivery pump.	5	L2	1	1.4.1
OR						
II.	(a)	Sketch and describe an oil lubricated stern tube bearing system with sealing arrangements in fwd and aft of stern tube.	9	L2	1	1.4.1
	(b)	Explain various stresses acting on the shafting system.	6	L3	1	1.4.1
III.	(a)	Enumerate the procedure for dry docking a vessel with particular reference to the inspections to be carried out.	8	L2	2	1.4.1
	(b)	Sketch and explain a keyless propeller fitting method on the propeller shaft.	7	L3	2	1.4.1
OR						
IV.	(a)	Discuss various clearances checked and inspections carried out in dry dock on propeller and rudder.	9	L3	2	1.4.1
	(b)	Explain the checks and maintenance carried out on anchor and anchor chains during dry docking.	6	L2	2	1.4.1
V.	Write short notes on:			L1	3	1.4.1
	(i)	Impressed current system for hull protection.	5			
	(ii)	Critical speed and barred speed range in diesel engines.	5			
	(iii)	Bad weather precautions to be taken.	5			
OR						
VI.	(a)	Describe the sources of vibration and its effect on ships. How can they be reduced or prevented?	8	L2	3	1.4.1
	(b)	Describe the sources of noise on ships and its suppression techniques.	7	L2	3	1.4.1

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		Marks	BL	CO	PO
VII.	(a) Sketch and describe an IMO approved oily water separator suitable for a cargo vessel.	9	L3	4	1.4.1
	(b) Mention the starting and operating procedure for the above mentioned OWS.	6	L2	4	1.4.1
OR					
VIII.	(a) Sketch and describe an aerobic type sewage treatment plant used on board.	10	L1	4	1.4.1
	(b) Enumerate the conditions to be satisfied for discharge of machinery bilge water to sea.	5	L2	4	3.1.4
IX.	(a) Explain theories of lubrication and role of additives in lubricants.	9	L2	5	3.1.4
	(b) What are the desirable properties for the crank case lubricating oil for a two-stroke diesel engine?	6	L1	5	2.4.4
OR					
X.	Write short notes on:		L1	5	1.4.1
	(i) Emulsified fuels and its advantages.	5			
	(ii) Hydrodynamic lubrication.	5			
	(iii) Lubricating oil analysis and interpretation of results.	5			

Bloom's Taxonomy Levels

L1 = 30.7%, L2 = 48.7%, L3 = 20.6%.
