

Reg. No.

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B.E. / B.TECH. DEGREE EXAMINATION, MAY 2023

Fourth Semester

MR18403 - MARINE AUXILIARY MACHINERY-I*(Marine Engineering)***(Regulation 2018A)****TIME: 3 HOURS****MAX.MARKS: 100**

- CO1** On completion of the course the students will acquire knowledge of Ship's Engine Room Layout, Piping systems and fittings.
- CO2** On completion of the course the students will acquire knowledge of valves, cocks, packing, joints, filters and strainers
- CO3** On completion of the course the students will acquire knowledge of Various types of Pumps and its applications.
- CO4** On completion of the course the students will acquire knowledge of Construction details of Heat exchangers, Evaporators
- CO5** On completion of the course the students will acquire knowledge of Ship's steering systems.

PART- A (10x2=20Marks)

(Answer all Questions)

		CO	RBT LEVEL
1	Why bilge suction valves are of Non-return type?	1	2
2	What is the necessity of providing steam condenser on-board the ships?	1	2
3	What is the advantage of using duplex filter?	2	2
4	What do you understand by the term screw down non-return valve?	2	2
5	Why centrifugal pumps are used as cargo oil pump in tankers?	3	2
6	What do you infer from Characteristic curves of pumps?	3	2
7	What is the principle of vacuum type Evaporator?	4	2
8	What is meant by counter current flow in tubular type heat exchanger?	4	2
9	Why hunting gear is provided in steering gear system?	5	2
10	What is the function of Rapson slide actuator in steering gear system?	5	2

PART- B (5 x 14 = 70Marks)

		Marks	CO	RBT LEVEL
11(a)	Sketch and describe heavy fuel oil bunkering and transfer system with safety fittings on-board the ships.	(14)	1	3
(OR)				
11(b)	(i) With a neat sketch, explain the Ballasting and De-ballasting operations on-board the ships.	(10)	1	3
	(ii) Why emergency bilge suction required on-board the ships? and to which large capacity pump it is connected.	(4)	1	3

12(a)	(i) Sketch and describe a SDNR Valve.	(10)	2	3
	(ii) State the difference between screw down lift valve and SDNR valve.	(4)	2	3
(OR)				
12(b)	(i) Sketch and describe Mechanical seal arrangement in centrifugal pump.	(7)	2	3
	(ii) Sketch and describe the auto kleen filter and how does the automatic cleaning is performed?	(7)	2	3
13(a)	Sketch and describe the construction and working of centrifugal pump with its characteristic curves.	(14)	3	3
(OR)				
13(b)	(i) Sketch and describe the construction and working of Gear pump showing clearly the flow of liquid, direction of rotation and relief arrangements.	(10)	3	3
	(ii) What happens, if you start this pump keeping the delivery valve shut?	(4)	3	3
14(a)	(i) Sketch and describe shell and tube heat exchanger with expansion arrangements.	(10)	4	3
	(ii) How does the temperature of the hot liquid in the heat exchanger controlled?	(4)	4	3
(OR)				
14(b)	Sketch and describe Low pressure vacuum type evaporator used on-board the ships	(14)	4	3
15(a)	(i) Sketch and describe the construction and working of Heleshaw pump.	(10)	5	3
	(ii) State the function of Isolating valve, Relief valve and Bypass valve in hydraulic steering gear system?	(4)	5	3
(OR)				
15(b)	(i) Sketch and describe the hydraulic Telemotor system.	(10)	5	3
	(ii) What arrangements are made to avoid motoring of steering pump?	(4)	5	3

PART- C (1x 10=10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16	Analyze the characteristics of different types of pumps and justify the application with reason.	(10)	3	4