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***B.Tech. Degree IV Semester Supplementary Examination in
Marine Engineering June 2024***

MRE 1405 MARINE AUXILIARY MACHINERY-1

(2013 Scheme)

(Answer *ALL* questions)

Time: 3 Hours

Maximum Marks: 100

(5 × 20 = 100)

- I. (a) Describe with a neat line diagram the bilge system of a ship. State the reason as to why bilge water cannot be pumped out to sea directly. (12)
(b) Explain with a diagram as to how emergency bilge pumping is done. (8)
- OR**
- II. (a) State the preparations and checks to be carried out prior bunkering fuel oil. Why is fuel oil ordered in metric tonnes and not in cubic meters? (12)
(b) Draw and explain the main sea water pipe line diagram. (8)
- III. (a) List and explain the main parts of a two-stage reciprocating air compressor including the safety related items. (12)
(b) What are the uses of compressed air on board? What are the dangers while working with compressed air and explain how accidents can be avoided? (8)
- OR**
- IV. (a) Explain with a sketch how fresh water is produced on board. Mark the direction of fluid flow. Write the safeties provided in a fresh water generator. (12)
(b) What are the adverse effects of distilled water if used for drinking. How is it made drinkable? (8)
- V. (a) Explain the working of a pressure reducing valve with a sketch. (12)
(b) Write notes on marine insulation and what makes it different from normal insulation. (8)
- OR**
- VI. (a) Write notes on (12)
(i) Quick closing valve.
(ii) Butterfly valve.
(iii) SDNR valves.
(b) Explain the procedure of cleaning a sea suction filter and mention the precautions taken to avoid accidental engine room flooding. (8)

(P.T.O.)

- VII. (a) Write Notes on (12)
(i) Hatch cover.
(ii) Life boat davit.
(iii) Mooring Winch.
(b) Mention the routine maintenance to be carried out on windlass. (8)
- OR**
- VIII. (a) Sketch and describe a shell and tube type heat exchanger double pass. How (12)
is the heat exchanger protected against corrosion?
(b) What are the merits and demerits of plate type cooler in comparison with (8)
shell and tube type cooler?
- IX. (a) Write notes on the following (12)
(i) Wear ring.
(ii) Lantern ring.
(iii) Cavitation (with reference to a centrifugal pump).
(b) Compare the advantages and disadvantages of reciprocating pump and (8)
centrifugal pump.
- OR**
- X. (a) How the vertical and horizontal vibration in purifier is taken care of? (12)
Explain. Also describe the selection of gravity disc. Compare a purifier
and clarifier.
(b) What are the precautions to be taken before entering a fuel oil tank for (8)
cleaning?
