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***B.Tech. Degree IV Semester Supplementary Examination in
Marine Engineering June 2023***

**MRE 1405 MARINE AUXILIARY MACHINERY - I
(2013 Scheme)**

Time: 3 Hours

Maximum Marks: 100

(Answer *ALL* questions)

(5 × 20 = 100)

- I. (a) Draw the bilge lines of a cargo ship and briefly explain the system. (14)
 (i) What are the probable constituents of bilge water?
 (ii) Why bilge water cannot be pumped out as it is?
- (b) With the help of the diagram explain how emergency bilge pumping is done in case of an engine room flooding. (6)
- OR**
- II. (a) Sketch and describe main engine lubrication oil system. Comparing with a 4-stroke engine, name additional places that are to be lubricated, in a two-stroke engine crank case. (12)
- (b) What are the pre bunkering checks and preparations to be taken at the time of receiving Fuel oil and Marine Diesel oil? (8)
- III. (a) What are the uses of compressed air on ship? What are the checks and precautions to be taken to avoid accidents to self and crew when working on compressed air system? (10)
- (b) Why is compression distributed into stages in an air compressor? Why is inter cooling provided in an air compressor? (10)
- OR**
- IV. (a) Sketch and describe a fresh water generator working with waste heat of the main engine jacket water and using tube type heat exchangers. Mention different parameters when the plant is working. (10)
- (b) What are the safeties fitted on a two-stage air compressor? With the aid of a line diagram mark the position where safety items are fitted. (10)
- V. (a) Write notes with a sketch: (i) Boiler gauge glass cock (ii) Steam trap. (10)
- (b) Sketch and explain a screw down non return valve. State where and why SDNR valve is to be used in the engine room. (10)
- OR**
- VI. (a) Explain the difference between seals and gaskets based on their design, materials used, function, pressure and placement. (8)
- (b) Write notes on: (i) Duplex filter (ii) Relief valve (iii) Auto clean filter. (12)
- VII. (a) Write notes on: (i) Hatch cover (ii) Life boat davits (iii) Windlass. (15)
- (b) Briefly explain corrosion protection of heat exchangers. (5)
- OR**
- VIII. (a) Sketch and describe a shell and tube type heat exchanger. How is expansion of tube taken care of when in use? (12)
- (b) Explain the procedure of taking over an engine room watch. (8)

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- IX. (a) Sketch and describe a Centrifugal Fuel oil purifier. State the difference between fuel oil purifier and clarifier. (10)
- (b) Explain the function of gravity disc in a purifier and how to select the correct size gravity disc for the supplied fuel. How is the vertical and horizontal vibration taken care of? Why is brake provided on a purifier? (10)
- OR**
- X. (a) Mention the differences between Reciprocating pump and Centrifugal pump. (8)
- (b) Describe the overhauling procedure of a centrifugal pump and explain the purpose of its wear ring and lantern ring. (12)
