BT – MRE – IV – 06.13 –0635

# *B.Tech. Degree IV Semester Examination in Marine Engineering June 2013*

## MRE 405 MARINE AUXILIARY MACHINERY – I

Time : 3 Hours Maximum Marks : 100

(5 x 20 = 100)

I. Sketch and describe the bilge and ballast piping system with valves and mud boxes in a cargo ship. Also explain with reason the type of valves used in the bilge suction pipes and ballast lines.

**OR**

II. Sketch and describe the fuel oil system of a cargo ship including bunkering lines. Explain bunkering procedures and precautions to be taken during bunkering.

III. Sketch and describe a 2 stage air compressor with pressures and temperatures at each stage. Why intercoolers are fitted in compressors? Explain the importance of checking clearance volume during compressor overhaul.

**OR**

IV. Sketch and describe a high vacuum submerged tube evaporator with heater nest, demister, condenser nest, distilled water pump etc. Explain how the diesel engine jacket cooling water is able to boil the sea water.

V. Sketch and describe an auto clean filter and duplex filter and how a duplex filter is changed over and cleaned without stopping the engine.

**OR**

VI. Sketch and describe an oily water separator and state the oil content allowed to be pumped overboard as per MARPOL regulations. Also sketch a monitoring unit to measure the oil content and the operation of the 3 way valve in the bilge overboard line.

VII. Sketch and describe an electrically operated windlass and explain how the anchor is dropped and heaved up.

**OR**

VIII. Sketch and describe a tubular heat exchanger and explain how the expansion of tube nest is taken care of in the design. Why anodes are fitted inside the heat exchangers and how the leakage in a tube is detected and plugged?

IX. Explain the theory of fuel oil purification. Sketch and describe a fuel oil purifier and state the difference between a purifier and a clarifier. What is self-desludging purifier?

**OR**

X. Sketch and describe the working principles of and operation and maintenance of a centrifugal pump and also explain the advantages of double entry suction.

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