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***B.Tech. Degree IV Semester Examination in
Marine Engineering June 2014***

MRE 405 MARINE AUXILIARY MACHINERY I

Time : 3 Hours

Maximum Marks : 100

(5 x 20 = 100)

- I. Sketch and describe the lay out of main engine and auxiliary machineries in different decks of a cargo ship. (20)
- 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. (20)
- III. Sketch and describe a 2 stage air compressor with pressures and temperatures at each stage. Why are intercoolers fitted in compressors? Explain the importance of checking clearance volume during compressor overhaul. (20)
- 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. (20)
- V. (a) Explain in detail how the lubricating oil filter is changed over to the stand by filter of a diesel generator without stopping the engine. (10)
- (b) Sketch and describe the working of auto clean filters and mesh filters fitted in the lubricating system of generator engines. (10)
- OR**
- VI. Sketch and describe an oily water separator and state the oil content allowed to be pumped overboard as per MARPOL regulations. Sketch also a monitoring unit to measure the oil content and the operation of the 3 way valve in the bilge overboard line. (20)
- VII. Sketch and describe a hydraulic windlass and explain the advantages of hydraulic windlass over electrically operated windlass. (20)
- 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 are anodes fitted inside the heat exchangers and how the leakage in a tube is detected and plugged? (20)
- 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? (20)
- OR**
- X. Sketch and describe the different types of pumps used on ships for various requirements. What are the usual maintenance carried out on pumps? (20)