## **Indian Maritime University**

(A Central University, Govt. Of India)

# End Semester Examination Dec-2019/Jan-2020

B. Tech(Marine Engineering)
Semester -VII/VIII
Advanced Marine Technology
(UG11T2704/UG11T1804)

Date:16-12-2019 Max Marks:**70**Time:3 Hrs Pass Marks: **35** 

## <u>Part - A (compulsory)</u> Answer the following (10x2=20 Marks)

- Expand following abbreviations: ALARP, OCIMF, MSDS, MCR
- 2. Bridge indicator panel for engine room machineries have minimum possible alarms and instrumentations sufficient enough to warn the watch keeper. List these alarms and instrumentations.
- 3. What should be the qualities of inert gas used for atmosphere control on board LPG carriers?
- 4. With reference to a reciprocating oil free compressor used for LPG reliquefaction, explain how 'capacity control', 'crankcase heating' and 'cooling' is done.
- 5. Discuss briefly the problem of stability on car carriers.
- 6. Discuss cargo tank stripping arrangement on chemical tankers with a simple sketch.
- 7. What are the disadvantages of larger oil tankers like VLCC and ULCC?
- 8. What is condition assessment of Bulk Carriers?
- 9. Enumerate key features of the common rail system with reference to modern large two stroke engines.
- 10. What is NO<sub>x</sub> Technical File?

#### Part - B

#### Answer any 5 out of 7 questions (5 x 10 = 50 marks)

- 11. (a) Sketch and describe a two-stage direct reliquefaction cycle with inter-stage cooling. (7 marks)
  - (b)List the alarms and safety devices on reliquefaction plant of fully refrigerated LPG carriers. (3 marks)
- 12. (a) Sketch and describe the 'absorption drier" used for inert gas generators on board liquefied gas carriers. (5 marks)
  - (b) Discuss the ventilation arrangements in the car decks of a car carrier.

(5 marks)

- 13.(a) Discuss general types of chemical tankers. (3 marks)
  - (b) Sketch and describe materials for tank coatings and construction.

(7 marks)

- 14.(a)State accelerated phase-out schedule for single-hull tankers as per MARPOL73/78. Define various categories of oil tankers related to the same. (4 marks)
  - (b) Sketch and describe workings of 'Deck Water Seal' and 'PV Breaker' with reference to inert gas system of an oil tanker. (6 marks)
- 15.(a)Explain stress considerations with regard to loading and discharging of a bulk carrier. (6 marks)
  - (b)Explain charge air humidification with examples? (4 marks)
- 16. (a)Discuss "condition monitoring system" as used in intelligent engines to evaluate general condition of the engine. (6 marks)
  - (b)Draw a schematic (block) diagram showing the concept of an intelligent engine (4 marks)
- 17. (a) Discuss main engine starting and reversing process from local and remote position with the help of a simple block diagram. (7 marks)
  - (b) What is "cargo containment system" of a liquefied gas carrier? (3 marks)

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