

Indian Maritime University
Supplementary Examinations – September/October 2024

B Tech (ME)

Sem VII

UG11T3704

ADVANCED MARINE TECHNOLOGY

Max Marks – 70 Marks	Pass Marks – 35 Marks
Date – 01.10.2024	Duration – 03 Hours

Part A – Q.No.1; 10 MCQs (10 X 01 Mark)

- (i) Chemical Tanker cargoes have been categorized as X, Y, Z & OS as per:
- SOLAS
 - IBC code
 - MARPOL Annex I
 - MARPOL Annex II
- (ii) Slop tank decanting cannot be carried out within ____ n.miles from the coast or within special areas.
- 12
 - 25
 - 50
 - 100
- (iii) When loading or discharging in Gas carriers venting of cargo tanks is done to:
- Atmosphere (open venting)
 - Vapor return (Controlled venting)
 - Both can be done
 - None of them
- (iv) The prime hazards associated with the shipment of solid bulk cargoes are those relating to?
- Improper cargo distribution
 - Loss of stability
 - Chemical reactions of cargoes
 - All of them
- (v) An index that enables operators to measure the fuel efficiency of a ship in operation and to gauge the effect of any changes in operation is called:
- EEDI
 - EEOI
 - SEEMP
 - SFOC
- (vi) Post 2020, the global sulphur for Marine fuels to be burnt at sea, has been reduced from 3.5% m/m to what % m/m, if no exhaust gas scrubbers are fitted on.
- 0.1

- 0.5
 - 1
 - 1.5
- (vii) The WECS control system is a part of which engine?
- Wartsila RT-Flex
 - MAN-ME-C
 - MAN-ME-B
 - Mitsubishi
- (viii) Why is 'Slow turning' arrangement provided in Main engines?
- To conserve compressed air quantity
 - To check for any hydraulic lock within cylinder by rotating engine slowly
 - To berth the vessel slowly.
 - All of them
- (ix) During UMS operation the Main starting air supply to main engine should be kept?
- Open
 - Closed
 - Blanked
 - Depending on situation operated accordingly.
- (x) What type of an electric motor is employed for deepwell pumps in chemical tankers?
- Cage induction motor of the increased safety (Ex e) type
 - Cage induction motor of the increased safety (Ex d) type
 - Cage induction motor of the increased safety (Ex h) type
 - None of them

Part B – 5 Short Questions (05 X 02 Marks)

- 2.(i) What are essentials of a Bridge Control system?
- (ii) With reference to chemical tanker cargo transfer, state what is pressure surge and what may lead to it?
- (iii) What condition monitoring systems are employed on board ships.
- (iv) What are the various hazards associated with various cargoes on Bulk carrier?
- (v) State Stability considerations of a Ro-Ro vessel

Part C – 7 Long Questions-Answer Any 5 (05 X 10 Marks)

- (3) (a) Sketch and describe re-liquefaction arrangement on fully refrigerated LPG carrier. [6]
- (b) List all alarms and safety devices on above system. [4]
- (4) With the help of simple block (or flow) diagram, discuss main engine starting and reversing process from local and remote position? [10]
- (5) (a) Sketch and explain the Inert Gas System as fitted in an Oil Tanker. [5]

- (b) What all safety devices are associated with such a system and elaborate their functions? [5]
- (6) With reference to Gas carriers:
- (a) In an LNG Carrier where is Nitrogen Gas used and why? [3]
- (b) Sketch a labelled diagram of compressor and electric motor room for liquefaction plant. [4]
- (c) Why Glycol used in LPG re-liquefaction system? [3]
- (7) (a) Why some modern Marine Diesel Engines are called Intelligent Engine? [5]
- (b) Explain Common Rail Fuel Injection w.r.t. Electronic Fuel Injection of a modern Slow Speed Marine Diesel Engine. [5]
- (8) State the fundamental difference between EEDI and SEEMP and state two methods in each for improving the energy efficiency. [10]
- (9) (a) Write details about what we have for fire prevention & fire control on RO RO ship. [5]
- (b) Write a note on watertight & Gas tight doors on RO RO ship? [5]