

INDIAN MARITIME UNIVERSITY

(A central university , govt of India)

JUNE 22 END SEMESTER EXAMINATION

QUESTION PAPER

DNS - UD11T4205 - MARPOL & MARINE ENGINEERING KNOWLEDGE

MAXIMUM MARKS – 70 Marks

Pass Marks – 35

Date – 24.06.2022

Duration – 03 Hours

Part A – Each question carries 01 Mark

- (i) which is not the component of steering gear system.
- (a) Floating lever
 - (b) Rudder stock
 - (c) Rudder Angle indicator
 - (d) Fuel pump
- (ii) In a diesel engine, the fuel is injected by.....
- (a) purifier
 - (b) fuel injector / fuel valve
 - (c) cam shaft
 - (d) push rod
- (iii) The process of breaking up of a liquid fuel into fine droplet by spraying with a fuel valve is called.....
- (a) sublimation
 - (b) atomization
 - (c) alteration
 - (d) ionization
- (iv) emergency fire pump is fitted ...
- (a) in pump room
 - (b) in engine room
 - (c) in slop tank
 - (d) outside of engine room
- (v) Which of the following is not a part of an internal combustion engine?
- (a) Connecting rod

- (b) crankshaft
 - (c) capstan
 - (d) cylinder liner
- (vi) Oily water separator in engine room of a ship is used for.....
- (a) Pumping out engine room bilge
 - (b) Pumping out pump room bilge
 - (c) Pumping out slop tank
 - (d) Pumping out sludge tank
- (vii) Which one is safety device in hydraulic power pack system?
- (a) Pressure gauge
 - (b) Pressure regulating valve
 - (c) Direction control valve
 - (d) Flow control valve
- (viii) In emission control areas (ECA) sulphur limit in fuel used for main and auxiliary engines on board ship is limited to.....?
- (a) 3.5%
 - (b) 4.5%
 - (c) .1%
 - (d) 1.5%
- (ix) MARPOL Annex VI applies to new engines greater thankilowatt , installed on vessels constructed on or after January 1, 2000 .
- (a) 130 KW
 - (b) 200 KW
 - (c) 230 KW
 - (d) 330 KW
- (x) The steering gear system is to be provided with additional power unit (hydraulic pump etc.) connected to the emergency power supply from.....
- (a) Fresh water generator
 - (b) Emergency generator
 - (c) Shaft generator
 - (d) Evaporator

Part B – Each question carries 02 Mark

- (i) What is engine order telegraph?
- (ii) What are the uses of steam on board ship?
- (iii) What is the function of hunting gear in steering gear system?
- (iv) What is the function of FRL unit in pneumatic system in ship?
- (v) Why is safety valve fitted on boiler?

Part C – Each question carries 10 Marks

- (i) (a) explain the condition under which oily mixture may be discharged into the sea from an oil tanker from cargo area as per MARPOL Annex-1. (5 marks)
- (b) explain the regulations for discharge of sewage from ship in to the sea as per MARPOL Annex- 4. (5 marks)
- (ii) (a) sketch and enlist the machineries fitted at bottom platform of an engine room of a large vessel. (5 marks)
- (b) sketch and describe an air reservoir used for starting main engine of a large ship showing all mountings on it. Why is a fusible plug fitted on an air reservoir? (5 marks)
- (iii) (a) sketch and describe working of a gear type pump used on board ship. What arrangement for safety is incorporated if accidentally pump is started with keeping discharge valve closed? (5 marks)
- (b) list 05 types of valves used in engine room of a ship, with their function in brief. (5 marks)
- (iv) (a) sketch and describe 4 ram electro-hydraulic steering gear of a ship. (5 marks)
- (b) with the help a simple diagram explain the working of two stage reciprocating air compressor fitted in engine room of a ship. (5 marks)
- (v) (a) sketch and describe working of a water tube boiler on board ship. Where is the arrangement provided to see / check, how much is the water level in boiler? (5 mark)
- (b) list the uses of compressed air on board ship. What do you mean by control air? (5 marks)
- (vi) (a) sketch and describe a hydraulic system operating an actuator, name all its components. What is function of filter in hydraulic oil line? (5 marks)

(b) explain with sketch working of any one Fresh water generator.
How is sea water made to boil at low temperature in freshwater generator? (5 marks)

(vii) (a) with help of a sketch explain working of compression Refrigeration cycle. Show with arrow direction of flow of gas in circuit. (5 marks)

(b) with help of sketch show the working of a diesel engine 4 stroke cycle. (5 marks)