

Indian Maritime University
Question Paper (UG)
70 Marks

June 2022 End Semester Examinations

Programme – B Tech (ME),
CODE – UG 11T3602
Subject – MARINE INTERNAL COMBUSTION ENGINES II
Duration of the paper – 3 hours,
Maximum marks – 70
Pass marks – 35
Date – 03.06.2022

Part A – 10 MCQs (10 X 01 Mark)

1. Answer all questions

- (i) Which of the following is not primarily used for reducing the vibration of an engine?
- (a) Axial vibration damper
 - (b) Detuners
 - (c) Cross head
 - (d) Top bracing
- (ii) Which is not a part of a fuel injection system
- (a) High-pressure pipe
 - (b) Condenser
 - (c) Puncture valve
 - (d) Needle guide
- (iii) Pilot air that is used for opening the air starting valves located on the cylinder head, is coming from
- (a) Distributor
 - (b) Crankshaft
 - (c) Relief valve
 - (d) Governor
- (iv) The tip of an indicator diagram represents
- (a) Peak pressure
 - (b) Mean effective pressure
 - (c) Atmospheric pressure
 - (d) Scavenge pressure
- (v) In the lubrication system of a diesel engine, which of the following components is lubricated by lubricating oil?
- (a) Bedplate
 - (b) Entablature
 - (c) Fuel pump plunger
 - (d) Crosshead
- (vi) Which one of the following statements is true for medium-speed engines?
- (a) They are directly coupled with propellers

- (b) They are with trunk pistons
 - (c) They are found with piston rods
 - (d) They are with a stuffing box.
- (vii) The function of a governor is
- (a) Maintain the rpm of the engine irrespective of load
 - (b) Provide pilot air to starting air valves
 - (c) Change the ratio of rpm between camshaft and crankshaft.
 - (d) Control the vibration of engine parts
- (viii) While doing a unit overhaul of an engine, which component is removed first
- (a) Main bearing
 - (b) Cylinder head
 - (c) Cylinder liner
 - (d) Connecting rod
- (ix) Which of the following may not be a reason for starting failure of a diesel engine?
- (a) Turning gear is engaged
 - (b) Main lubricating oil pressure is zero.
 - (c) Air bottle valves are closed.
 - (d) Main seawater pump is not running.
- (x) In a cam less engine, find the component that exists in the engine.
- (a) Camshaft drive.
 - (b) Roller guides of the fuel pump.
 - (c) Crankshaft.
 - (d) Starting air distributor.

Part B – 5 Short Questions (05 X 02 = 10 Marks)

2) Answer all questions

- (i) What is "critical speed". Why this speed is barred?
- (ii) What is total stroke and effective stroke in a jerk type fuel pump?
- (iii) For medium speed engines, what will be the effects, if the area of the exhaust valve is too large or too small.
- (iv) Briefly explain any two reasons for crankshaft deflection.
- (v) Name eight engine parts that do not exist in an electronic diesel engine in comparison to conventional engine with cam shaft.

Part C - Long Questions
Answer Any five out of seven (05 X 10 Marks)

- 3) While using heavy fuel oil in marine diesel engines
(A) Briefly explain the effect of viscosity on liquid fuel combustion.
(i) if the viscosity is higher (ii) if the viscosity is lower than the recommended values. [3 + 3 marks]
(B) Briefly explain FQS incorporated with VIT and why it is used. [4 marks]
- 4) (A) Briefly explain the starting air overlap and its use. [3 marks]
(B) With help of a neat sketch, briefly explain the starting air system of a two stroke, slow speed marine diesel engine. [7 marks]
- 5) With help of indicator diagrams, briefly explain how the following faults on engine are explicit and for each explain the deviation from a normal diagram. The diagram to be superimposed with a normal curve.
a) After burning
b) Leaky injector
c) Choked intake
d) early opening of exhaust valve
e) Delayed ignition [10 marks]
- 6) In reference to lubrication of a marine diesel engine
(A) What is the function of cylinder lubrication? [3 marks]
(B) Sketch a lubrication arrangement for a large 2 stroke marine diesel engine including coolers and filters. [7 marks]
- 7) Sketch and explain the working of an electrohydraulic governor with compensating arrangement. [10 marks]
- 8) In reference to maintenance of diesel engine used for propulsion duties
(A) What are the safety precautions to be taken before starting main engine unit overhaul work? [4 marks]
(B) Briefly explain [3X2 = 6 marks]
(i) Corrosive wear in liners
(ii) Effects of butt clearance of piston rings if too high or too low
(iii) Effects of plain bearing clearances if too high or too low
- 9) In reference to modern trends in the development of diesel engines,
(A) write short notes on the following [6 marks]
(i) Anti-polishing ring
(ii) OROS type piston
(iii) Slide type of fuel valve
(B) Name any four methods adopted in a marine diesel engine to reduce the NO_x levels. [4 marks]

