Indian Maritime University

(A Central University, Govt of India)

End Semester Examinations – JUNE 2023

Programme Name: B Tech (ME)

Semester: VI

Subject Code: UG11T3602

Subject Name: Marine Internal Combustion Engines-II

Date: 29.05.2023	Max Marks: 70
Duration: 03 Hrs	Pass Marks: 35

General Instructions

(i) All Sections (A, B & C) are to be attempted.
(ii) Options, if any, are specified in respective section.

Section A

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable.

Q1.1st order vibration is purely due to _____ masses of the engine.

a. Rotating
b. Reciprocating
c. Auxiliary
d. None of these

Q2. In a VIT equipped jerk type fuel pump

a) Raising the barrel delays beginning of injection
b) Lowering the barrel delays beginning of injection
c) Raising the barrel delays end of injection
d) Lowering the barrel delays end of injection

Q3. Atmosphere line in indicator diagram for _____

a. Showing the volume change
b. Showing pressure change
c. Reference line for measuring compression and peak pressure
d. Checking the indicator instrument

Q4. Coupling in medium speed engine located _____

a. Between engine shaft and gear box
b. Between gearbox and output shaft
c. Between propeller shaft and gear box
d. None of the above

Q5. In a cam operated engine the starting air distributor is used for

a. Timing the start air sequence during cranking
b. Regulating the quantity of air during cranking
c. distributing the air amongst all pilot valves
d. starting air interlock

Q6. You notice the sump level in an engine has increased and no new oil has been added. What action would you take?

a. Drain some oil from the engine.
b. Stop the engine and look for a fuel or water leak
c. Reduced the load, and look after fuel or water leak
d. Leave it the same

Q7. Friction developing between the moving parts of a governor, governor linkage and control valve will cause the governor to _____.

a. has excessive sensitivity to small speed changes
b. remains in the neutral position
c. reacts with insufficient speed droop
d. fail to react to small speed changes

Q8. Crank web deflection readings will give a positive indication of

a. worn main bearing journals
b. torsional stress deformation
c. slack thrust bearings
d. bearing shells shim dimensions

Q9. Small amounts of moisture are necessary to trigger the growth of microbiological organisms found in some marine fuels. Some sources of water contamination are

a. tank surface leakage
b. humidity and condensation
c. improper tank washing procedures
d. all the options

Q10. Piston position in electronically controlled engines are sensed by

a. Synchronizing with cam
b. Position sensitive detectors
c. Crank angle sensing
d. Camshaft position sensors

Section B

Five Questions of 02 Marks each

Q11. What is the purpose of struts or bracings?

Q12. Describe briefly the role of temperature of fuel in effective combustion.

Q13. Explain the role of single helix profile in a port controlled fuel pump.

Q14. List out two reasons for an engine unable to crank on air.

Q15. State latest Marpol Annex VI requirements regarding sulphur content of MFO used inside & outside emission control areas (ECA)

Section C

Seven Questions of 10 Marks each of which any 05 questions to be answered.

Q16. a. What are the effects of higher level of transverse vibrations in diesel engines and mention few Design considerations to reduce the vibrations.(4 Marks) b. With the help of suitable diagrams/sketches describe the significance of the following in evaluating the performance/ health of a diesel engine. (6 Marks)

a. Power Card
b. Draw Card
c. Light Spring Card

Q17. a. Why fuel injection is advanced and how it varies with respect to engine speed and load? (4 Marks) b. Explain about VIT operation of MAN B& W Fuel pump with neat diagram (6 Marks)

Q18. With reference to Marine propulsion engine:

a. State the usage of Starting Air Distributor in starting of a marine diesel engine. (4 Marks)
b. What are the alarm and fail safe systems provided for protection of ship's marine engine? (6 Marks)

Q19. a. Describe various types of cylinder liner wear (6 marks).
b. Explain the term clover leafing in regards with liner wear, with help of simple sketch. (4 marks)

Q20. a. Define integral effect in governor parlance (3 marks)
b. Explain the working of isochronous governor with proportional and integral action on increase of load with help of neat sketch. (7 marks)

Q21.a. Discuss about Piston inspection, Piston Rings and Grooves maintenance. (5Marks) b. Write about cold corrosion in diesel engines and suggest suitable measures to control it. (5 Marks)

Q22 a) Discuss briefly about the improvements in RTA Sulzer diesel engines for increased time between over haul (7 Marks) b. Explain about Exhaust Gas recirculation technique for controlling NOx in Marine diesel engines. (3 Marks)
