D. MARINE
Study Material

MEO CLASS 2 WRITTEN: MEP

(MARINE ENGINEERING PRACTICE)

FOR INDIAN COMPETENCY EXAM

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D. MARINE
Study Material

JAN 2025

1. Under Continuous survey of machinery (CSM) bottom end bearing of a large 2stroke slow speed engine is due for survey.
a) As second engineer, explain the procedure involved in complete inspection of a bottom end bearing.
b) List the precaution to be taken.
c) Indicate the reasons for possible defects which could be encountered and state how they may be rectified.
d) What tests are carried out on completion of survey and re-assembly.

2022/FEB/06	2022/NOV/08	2024/JAN/01	2024/JUN/07	2025/JAN/01	

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2. What is Rocking test of Deck Crane? Explain the procedure of rocking test. Tabulate and indicate fault finding procedure. What is the action taken if deviation is out of limit?

2022/SEP/01	2023/JUN/09	2023/OCT/05	2024/JUL/07	2025/JAN/02

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3. With Reference to Main Engine Fuel Pumps.
a) Explain how the setting of a variable injection timing fuel pump is checked and adjusted
b) State why it may be necessary to adjust the settings of a variable injection timed fuel pump.

2022/MAR/06	2022/APR/09	2023/OCT/04	2024/FEB/01	2025/JAN/03

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4. a) State the reason for fitting crosshead guides to engines and explain why ahead and 'astern faces are required with uni-directional engines.
b) Describe how crosshead guide clearance is checked and adjusted.
c) List reasons for limiting such crosshead clearance

2022/OCT/09	2023/DEC/04	2025/JAN/04	

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5.a) Specify with reasons those parts requiring particularly close scrutiny during internal and external examinations of independently fired auxiliary bollers.

b) With reference to these examinations distinguish between metal fatigue due to caustic embrittlement, corrosion fatigue, overheating (plastic flow) and direct overpressure.

2025/JAN/05	

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6. With reference to main engine starting and reversing:
a) Define the function of the automatic valve and how it is controlled.
b) State what provisions are made to control the engine in the event of automatic valve failure.
c) Define the purpose of interlocks and blocking devices, differentiating between their functions.

2023/FEB/06	2025/JAN/06

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7.a) Describe how it is determined whether a crankshaft was twisted during a major "smash up" in a main engine. (4)
b) Explain where twisting is most likely to occur (3)
c) Specify with reasons the degree of twisting that might be accommodated, without correction (4)
d) Explain briefly what adjustments and precautions should be instituted when puttingan engine with a twisted crankshaft back into service (5)

2025/JAN/07	

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8.a) Explain in detail how an in-water survey is carried out
b) State the requirements to be fulfilled before an in-water survey is acceptable to the survey authority (6)
c) Construct a list of the items in order of importance that the underwater survey authority should include (5)

2023/MAR/02	2025/JAN/08	

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9. a) State the circumstances owing to which it may be necessary to renew a cylinder liner of a 4-stroke auxiliary engine. (2)
b) Explain how the liner is removed.
C) Explain how the new liner is fitted
d) State the important checks to be made before and after fitting.

2023/NOV/06	2025/JAN/09	

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FEB -2025

1. a) What are the various types of corrosion that can occur in auxiliary boilers on ships? Describe each type, including its causes, symptoms, and potential consequences. (8)
b) Discuss the preventive measures and maintenance practices that can be implemented to mitigate corrosion and ensure the efficiency of the auxiliary boiler. (8)
2024/JUL/04 **2025/FEB/01**
Click Here to See the Answer

2. Discuss the advantages and disadvantages of adopting the following policies for maintenance of main and auxiliary diesel engines.
A. Planned maintenance;
B. Condition monitoring;
C. Periodic replacement of components.
D. Break down maintenance. (16)
2024/JUN/03 **2024/JUL/03**
Click Here to See the Answer

3. Sketch and describe the arrangement of a main engine camshaft chain. Describe the repair procedure following fracture of one chain link during operation of the engine. Give possible reasons for the failure and explain how the chain is set initially at the correct degree of tension. (16)
2024/SEP/05 **2025/FEB/03**
Click Here to See the Answer

4. Describe how a main engine fuel pump would be set and checked for:
(i) Timing;
(ii) Quantity (6)
b) Explain how a setting of a variable injection timing fuel pump is checked and adjusted. (5)

c) State why it be necessary to adjust the settings of a variable injection timed fuel pump. (5)
2023/FEB/01 **2023/APR/01** **2025/FEB/04**
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5.a) Describe the events leading to a crankcase explosion
b) How is overheating indicated other than by a mist detector (6)
c) How is severity of a crankcase explosion controlled (5)
d) Discuss the action required when overheating is indicated (5)
2024/JUN/06 **2025/FEB/05**
Click Here to See the Answer

6.a) Sketch and describe a pneumatic control system for controlling temperature of main engine lubricating oil at outlet of the cooler.
b) Explain why air supplied to a pneumatic control system must be free from dust and water. (4)
c) Describe how above impurities are removed (4)
d) State the possible consequences if the air supply is contaminated (2)
2025/FEB/06
Click Here to See the Answer

7. a) Give reasons why cracks occasionally develop in large piston crown. State to what extent this cracking is considered of consequence. (8)
b. State how it is dealt with in the following instances - Fine hairline, Localized and shallow crack. (8)
2025/FEB/07
Click Here to See the Answer

8. Recent experience has shown persistence damage occurring on seating faces of main engine exhaust valve, which is not confined to any particular unit
a) State with reason the possible causes. (6)
b) State the short-term action to be taken to minimize engine operational problem. (5)
c) State with reason how future incident of this nature could be

minimized (5)
2025/FEB/08
Click Here to See the Answer

9. a) If soon after joining as a second engineer on a motor vessel, you observed that number of holding down bolts are slack, and fretting has occurred around slack holding down bolts. Describe what actions do you take. (8)
b) Explain the correct procedure for checking the holding down bolts' tightness. (8)
2023/SEP/07 2023/DEC/05

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MARCH -2025

1. Express your reactions and state the subsequent investigation you would make if a laboratory report on a used diesel engine oil sample indicated the presence of appreciable amounts of:
a) Iron
b) Copper, Antimony and Tin
c) Silicon (16)
2022/NOV/06
Click Here to See the Answer

2.a) During an inspection it is noticed that tie rods of certain main engine units have become slack, state with reasons the possible causes of this. (5)
b) Explain how correct tension is restored and the risk of future slackness minimized. (5)
c) A tie rod has fractured and cannot be replaced immediately, State with reasons the course of action to be adopted in order to allow the engine to be operated without further damage. (6)
2023/DEC/06 2024/JUL/08 2025/MAR/02
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3. With reference to fixed CO2 system for fighting machinery space fires: a) sketch a CO2 bottled system. b) How the number of CO2 bottles required for ship is calculated? c) explain how the system sketched in part (a) is protected from overpressure d) Describe the periodic maintenance required. (16)
2023/DEC/07 **2025/MAR/03**
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4. a) State the circumstances owing to which it may be necessary to renew an exhaust valve (5)
b) Explain how the exhaust valve is removed and fitted back
c) State the important checks to be made on the engine before after fitting the exhaust valve. (6)
Click Here to See the Answer

5. a) Describe THREE different patterns of tube used in exhaust gas bollers
b) Give reasons why a tube is condemned.(4)
c)Describe how it is replaced by a spare tube.(4)
d) Suggest with reasons the possible consequences of allowing an exhaust gas boiler to run dry during full power operation of the main engine (4)
2025/MAR/05
Click Here to See the Answer

6.a) Sketch an outboard type of oil seal suitable for oil filled stern tube indicating the principal component. (5)
b) Explain how the seal compensated for wear of the seal face maintains oil tightness.(4)
c)What is the effect of seawater contamination of stern tube oil and how contamination risk can be reduced? (3)
d)State the physical properties required for the bearing material in oil filled stern tube. (4)
Click Here to See the Answer

7. For a fully automatic provisions refrigeration system incorporating a number of rooms
a) Explain how each room temperature is set(4)
b) Describe the sequence of events following a demand for increased refrigerant flow from one room (4)
c)State with reasons the devices incorporated into the system to protect the machinery and equipment against malfunction (4)
d)State how satisfactory operation of the plant can be established?(4)
Click Here to See the Answer

8. As a second engineer, list out all the hazards identified with regard to cylinder head lifting job during main engine overhaul, explain how you carry out risk assessment for above mentioned job.(16)
2022/MAR/05 **2025/MAR/08**
Click Here to See the Answer
9. Discuss the causes of corrosion in seawater pipelines on ships and the methods used to prevent it. Explain in detail the systems implemented for corrosion prevention. (16)
Click Here to See the Answer

APRIL-2025

Q.1 (a) Sketch and describe the construction and working principle of an air starting valve used in a two-stroke main engine. (10)
(b) Discuss common faults associated with air starting valves, their possible consequences, and maintenance or safety measures taken to ensure reliable operation. (6)
Click Here to See the Answer

Q.2(a) Explain the purpose and working principle of the Load Dependent Cooling System (LDCS) in a two-stroke main engine. With the help of a diagram, describe how the system varies cooling water flow with engine Ibad. (10)
(b) Discuss the advantages and disadvantages of using a load-dependent cooling system over a conventional constant-flow cooling system. What

issues may arise if the system malfunctions, and how are they addressed? (6)
Click Here to See the Answer

Q.3With reference to the Crosshead of large two-stroke engines:
(a) Explain how crosshead and guide shoe clearances are checked in large two-stroke engines.
(b) Explain how crosshead alignment is checked and adjusted.
(8)
2023/NOV/07
Click Here to See the Answer

Q.4(a) Describe the different types of cams used in marine main engines. Explain their functions and how the cam profile affects the operation of exhaust valves, fuel pumps, and starting air systems.(10)
(b) What is a negative cam? Explain its purpose, constructional features, and where it is typically used in main engines. (6)
2023/JUL/08 **2024/DEC/09**
Click Here to See the Answer

Q.5Describe briefly the methods of carrying out a bend test and an impact test. Illustrate the general form of the test pieces used and state how the final results are given for comparison of different materials. Of what practical use are the figures obtained. (16)
2023/JUN/08 **2023/OCT/08** **2024/SEP/09** **2024/DEC/01**
Click Here to See the Answer

Q.6(a) Describe the inspection required to be carried out in the dry-dock after the stern of a ship has heavily struck a dock wall. (8)
(b) The propeller is found to be damaged, and it is acided to fit the spare propeller. Describe the process and mention the precautions to be taken to ensure correct assembly. (8)
2023/MAR/08 **2023/SEP/03**
Click Here to See the Answer

Q.7During the overhaul of a medium-speed auxiliary diesel generator, you find that the white metal of one of the bottom end bearings has cracked. Explain how you would fit a spare bearing and enumerate the various tests you would carry out before putting the machine back into service. (16)

2022/JUL/07 **2024/OCT/06**

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Q.8With reference to the exhaust gas boiler of your ship, explain the following: (16)
(a) Composition and reasons for soot deposits.

(b) Various stages of soot fire leading to high-temperature fire.
(c) Procedure to be followed for firefighting under different stages of soot fire.
(d) Actions required prior to dry running of an exhaust gas boiler.

2023/OCT/03

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Q.9(a) Describe the routine and preventive maintenance procedures carried out on a plate-type cooler used on ships. Explain the steps involved in dismantling, inspection, cleaning, and reassembly of the plates. (8)
(b) Explain the procedure for detecting internal leakage in a plate-type cooler. What are the indications of leakage during operation, and how can they be confirmed during maintenance? (4)
(c) Describe the backflushing procedure for a plate-type cooler. When is it recommended, and how does it help in maintaining the efficiency of the heat exchanger? (4)

Click Here to See the Answer

JUNE-2025

Q.1(a) Sketch and describe the construction and working principle of an air starting valve used in a two-stroke main engine.
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2025/APR/02
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Q.3 With reference to the Crosshead of large two-stroke engines:
(a) Explain how crosshead and guide shoe clearances are checked in large two-stroke engines.
(b) Explain how crosshead alignment is checked and adjusted
2023/NOV/07 **2025/APR/03**
Click Here to See the Answer

Q.4(a) Describe the different types of cams used in marine main engines. Explain their functions and how the cam profile affects the operation of exhaust valves, fuel pumps, and starting air systems.
(b) What is a negative cam? Explain its purpose, constructional features, and where it is typically used in main engines.
2025/APR/04
Click Here to See the Answer

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2024/SEP/09 **2024/DEC/01** **2025/APR/05**
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2023/MAR/08 **2023/SEP/03** **2025/APR/06**
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(c) Procedure to be followed for firefighting under different stages of soot fire.
(d) Actions required prior to dry running of an exhaust gas boiler.
2023/OCT/03 **2025/APR/08**
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(b) Explain the procedure for detecting internal leakage in a plate-type cooler. What are the indications of leakage during operation, and how can they be confirmed during maintenance?

(c) Describe the backflushing procedure for a plate-type cooler. When is it recommended, and how does it help in maintaining the efficiency of the heat exchanger?

2025/APR/09

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JULY-2025

1. With reference to reciprocating air compressors explain the cause of the following faults:
(a) Collapse of discharge valve springs,
(b) Breakage of plate valves,
(c) Overheating of the discharge air with an unrestricted air intake,
(d) Inoperative piston rings.

2021/NOV/02 **2022/JUN/01** **2025/JUL/1**

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2. What is Metal-locking? What types of repairs are carried out by metal-locking? Describe the repair procedure using Metal-Locking.

2023/SEP/08 **2025/JULY/02**

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3. With the aid of a simple sketch, explain the "trouble spots" in a basic air conditioning unit and with reference to your sketch, explain the following:
i) How the problem of increase in humidity of cooled air is overcome?
ii) How discomfort caused by the excessive drying effect of heated air is overcome?

Click Here to See the Answer

4. The LT cooler of the centralized cooling water system on your ship is showing poor performance. What measures would you initiate to rectify the problem and improve the performance?

Click Here to See the Answer

5. Explain why auxiliary engine bottom-end bolts are prone to failure, even under normal running conditions. Identify those features incorporated into the design of bottom-end bolts, to inhibit failure. Explain how this tendency is

either aggravated or inhibited during maintenance and what checks are to be carried out.
2021/DEC/04 **2022/MAR/04** **2025/JULY/05**
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6. Enumerate the maintenance routines carried out for the proper functioning of the following systems:
a. Water hyper mist system.
b. Smoke detection system.
c. Quick closing valves.
d. Fire hydrants and hoses.
2021/JAN/03 **2021/NOV/06** **2025/JULY/06**
Click Here to See the Answer

7. With reference to the exhaust gas boiler of your ship explain the following:
a. Composition and reasons of soot deposits.
b. Various stages of soot fire leading to high temperature fire.
c. Procedure to be followed for firefighting under different stages of soot fire.
d. Actions required prior to dry running of an exhaust gas boiler.
2023/OCT/03 **2025/APR/08** **2025/07/07**
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8. If soon after joining a motor ship, you found a number of holding down bolts slack and fretting to have occurred in the area of slack bolts describe how you would handle the situation?
Click Here to See the Answer

9. During the past four months since you joined the ship as Second Engineer a number of main engine exhaust valves have suffered cracking and corrosion at the seating faces. Write a report to the Superintendent Engineer covering the following points:
(a) An explanation detailing how the problem becomes evident.
(b) Your action upon recognizing the extent and seriousness of the problem.
(c) Your reasoned views regarding the possible causes of the problem.
(d) Your recommendations to avoid future incidents.
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AUG-2025

1. Explain in detail how you would isolate CO2 Fixed firefighting system for routine maintenance. Please incinerate the Maintenance schedules and their frequency performed on this system. Describe all tests and inspections you would make and how you would return the system to service.
2023/APR/05 **2025/AUG/01**
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2. Describe the procedure to be undertaken when, upon a routine schedule for changing Exhaust Valve on a main engine, it is found that the Exhaust valve body is seized inside the cylinder head and cannot be removed by conventional means and also the internal threads in the exhaust valve body connecting to the exhaust bellows are damaged.
2023/AUG/01 **2023/OCT/09** **2025/AUG/02**
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3. Write short note on the following:
(a) Metal-locking
(b) TIG and MIG welding
(c) Brazing
(d)Soldering
Click Here to See the Answer

4. With regard to keeping the gas side of boilers in good condition discuss EACH of the following:
a. The mechanism of combustion, stating the factors which are important to good combustion;
b. Oil fuel treatments;
c. Soot removal equipment.
2023/DEC/03 **2024/APR/12** **2024/OCT/03**
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5. An auxiliary boiler water level control system has a differential pressure transmitter as the detecting element for water level.
(a) Sketch and describe such an arrangement.
(b) If the transmitter was damaged describe how a replacement unit would be calibrated.
2023/FEB/02 **2025/AUG/05**
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6.a) With the aid of a simple sketch, explain the "trouble spots" in a basic air-conditioning unit.
(b) With reference to your sketch, explain the following:
i. How the problem of increase in humidity of cooled air is overcome?
ii. How discomfort caused by the excessive drying effect of heated air is overcome?
2022/JAN/06 **2022/FEB/03** **2022/APR/04** **2022/JUN/03**
2023/APR/04 **2025/JUL/03** **2025/AUG/06**
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7. Describe, with the aid of sketches, a system of turbo-charging a two-stroke cycle main engine. State the routine attention, which should be given to the turbo-charger.
Click Here to See the Answer

8. With reference to sea water cooled multi-tubular heat exchangers state-
(a) the materials used for the construction of the tubes, tube plate, and water boxes.
(b) The various types of corrosion that the parts in (a) are subjected to.
(c) measures employed to reduce or prevent above corrosion.
2023/JUN/03 **2025/AUG/08**
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9. What examinations must be carried out when a crosshead bearing of a large, slow-speed engine is opened up for survey?
2024/AUG/04 **2025/JUN/04**
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SEP-2025

1. Discuss the validity of EACH of the following statements with respect to large slow speed diesel engines:
a) Bearing clearances obtained by taking leads (or use of plastic inserts) are fundamentally more accurate than those obtained with the use of feelers.
b) Bearing wear down can be measured by taking deflections.
c)A timing chain should be renewed when its slackness causes late fuel injection and exhaust valve operation
d) Timing chain slackness is solely due to stretch of the link plates.
2022/DEC/06 **2023/JAN/02** **2023/MAR/01** **2025/SEP/01**
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2. a) Explain in detail how an in-water survey is carried out.
b) State the requirements to be fulfilled before an in-water survey is acceptable to the survey authority.
c) Construct a list of the items in order of importance that the underwater survey authority should include
2023/MAR/02 **2025/JAN/08** **2025/SEP/02**
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3. With reference to main turbochargers:
(a) Give a reason why binding wire is frequently fitted near the top of the blades,
(b) Mention one fault that occasionally develops with binding wire in service,
(c) Define the cause and identification under running conditions of turbine blade damage,
(d) State how
(c) can be largely avoided.
2023/JAN/05 **2023/MAR/03** **2024/JAN/08** **2024/DEC/03** **2025/SEP/03**
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4. Comment on the rellability and maintenance requirements of two of the following:

(a) Pneumatic control equipment,
(b) Electro-mechanical control equipment,
(c) Electronic control equipment
Discuss the routine attention required and the defects, which may occur in service.
2023/MAR/04 **2024/JUN/02** **2024/JUL/02** **2025/SEP/04**
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5.a) Suggest four reasons why the temperature of the oil in the steering gear system may become excessive.
b) With reference to steering gears explain how the ship may be steered in each of the following circumstances.
i. Destruction by fire of the primary supply cable;
ii. Destruction by fire of the telemeter lines,
iii Bearing failure in the running pump,
2022/JUL/06 **2023/MAR/05** **2025/SEP/05**
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6. a) Describe the procedure for opening a bottom end bearing for inspection making reference to the positioning of the crank and the safety precautions to be observed.
b) State how the bearing clearance may be checked and adjusted when necessary
c) State the defects, which may be encountered during inspection of the bottom end bearing and crankpin giving possible causes of EACH,
d)State the checks, which should be made before returning the engine to service following overhaul of the bottom end bearing.
2021/FEB/07 **2021/AUG/02** **2022/JAN/01** **2023/MAR/06** **2025/SEP/06**
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7. Auxiliary boiler is periodically unattended and equipped with harms to cover low water level, high steam pressure, and air and flame failure.
a) State why and how fuel the burners are automatically cut off under alarm conditions of water level, steam pressure, air and flame failure.

b) Describe how and when each of the above alarms is tested without endangering the boiler.
2022/OCT/07 **2023/MAR/07** **2025/SEP/07**
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8. a) Describe the inspection, which is required to be carried out in the dry-dock after the stern of a ship has heavily struck a dock wall.
b) The propeller is found to be damaged, and it is decided to fit the spare propeller. Describe the process and mention the precautions to be taken to ensure correct assembly.
2023/MAR/08 **2023/SEP/03** **2025/APR/06** **2025/SEP/08**
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9. a) State why onboard testing of fuel oil whilst taking bunkers can be advantageous.
b) State how a representative fuel sample may be obtained during the bunkering operation.
c) Explain how EACH of the following is formed during the combustion of fuel:
(1) Oxides of Nitrogen,
NOx (ii) Carbon Monoxide, CO
(iii) Oxides of Sulphur, SOx
d) State how the effects of sulphureous products of combustion on the engine system may be reduced.
2023/MAR/09 **2024/FEB/02** **2024/DEC/05** **2025/SEP/09**
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OCT-2025

Q1. With reference to reciprocating air compressors explain the cause of the following faults.
a) Collapse of discharge valve springs;
b) Breakage of plate valves;
c) Overheating of the discharge air with an unrestricted air intake;
d) Inoperative piston rings.
2021/JUL/03 **2021/NOV/02** **2022/JUN/01** **2025/JUL/01**
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Q2. Describe the procedure to be undertaken when, upon a routine schedule for changing fuel injector on a main engine, it is found that the injector body is seized and cannot be removed by conventional means

2021/APR/08 **2024/JUN/09**

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Q3. (a) With the aid of a simple sketch, explain the "trouble spots" in a basic air-conditioning unit and with reference to your sketch, explain the following:
(a). How the problem of increase in humidity of cooled air is overcome?
(b). How discomfort caused by the excessive drying effect of heated air is overcome?

2023/APR/04 **2025/JUL/03** **2025/AUG/06**

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Q4. The LT cooler of the centralized cooling water system on your ship is showing poor performance. What measures you would initiate to rectify the problem and improve the performance.

2025/JUL/04

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Q5. Explain why auxiliary engine bottom-end bolts are prone to failure, even under normal running conditions. Identify those features, incorporated into the design of bottom-end bolts, to inhibit failure. Explain how this tendency is either aggravated or inhibited during maintenance and what checks are to be carried out. (16)

2021/DEC/04 **2022/MAR/04**

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Q6. Explain how EACH of the following hull defects should be dealt with;
(a) A cracked weld;
(b) A severe indentation in way of a frame;
(c) Surfaces suffering from general corrosion although The extent of wastage does not warrant plate replacement;
(d) A bilge keel fractured at the forward end.

2021/OCT/03

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Q7. With reference to the exhaust gas boiler of your ship explain the following:
a) c Composition and reasons of soot deposits.
b) Various stages of soot fire leading to high temperature fire.
c) Procedure to be followed for firefighting under different stages of soot fire.
d) Actions required prior to dry running of an exhaust gas boiler. (4 Each)
2023/OCT/03 **2025/APR/08** **2025/JUL/07**
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Q8. If soon after joining a motor ship, you found a number of holding down bolts slack and fretting to have occurred in the area of slack bolts describe how you would handle the situation? (16)
2023/SEP/07 **2023/DEC/05** **2025/JUL/08**
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Q9. During the past four months since you joined the ship as Second engineer a number of main engine exhaust valve have suffered from cracking and corrosion at the seating faces; Write a report to the Superintendent Engineer covering the following points:
a) An explanation detailing how the problem becomes evident:
b) Your action upon recognizing the extent and seriousness of the problem:
d) Your recommendations to avoid future incidents.
2021/JUL/04 **2022/JUN/09** **2025/JUL/09**
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NOV-2025

Q1. With reference to Auxiliary boiler safety valves.
A. Describe with the aid of Sketch the safety valve for an auxiliary boiler. (6)
B. Identify with reasons. The parts that require particularly close attention during overhaul. (5)
C. Describe how the safety valves are reset after an overhaul. (5)
2021/FEB/Q4 **2021/APR/Q5** **2021/OC/Q5** **2022/MAR/Q4**
2022/JUN/Q8 **2024/APR/Q9** **2025/NOV/Q1**
Click Here to See the Answer

Q2. Under Continuous survey of machinery (CSM) the bottom end bearing of a large slow speed engine is due for survey. A. As second engineer explain the procedure involved in complete inspection of a bottom end bearing. (6)
B. List the precaution to be taken. (2)
C. What test are carried out on completion of survey and re-assembly. (4)
2021/JAN/Q1 **2021/APR/Q1** **2021/JUL/Q2** **2021/OCT/Q9** **2021/DEC/Q2** **2022/FEB/Q6** **2022/NOV/Q8** **2024/JAN/Q1** **2024/JUN/Q7** **2025/JAN/Q1** **2025/NOV/Q2**
Click Here to See the Answer

Q3. a) State the circumstances owing to which it may be necessary to renew a cylinder liner. (3)
b) Explain how the liner is removed (5)
c) Explain how the new liner is fitted. State the important checks to be made before and after fitting. (5)
2024/OCT/Q4 **2025/NOV/Q3**
Click Here to See the Answer

Q4. A) Describe the procedure to be undertaken when, upon a routine schedule for changing fuel injector on a main engine, it is found that the injector body is seized and cannot be removed by conventional means. (10)
2020/NOV/Q8 **2021/APR/Q8** **2024/JUN/Q9** **2025/NOV/Q4**
Click Here to See the Answer

Q5. Explain how EACH of the following hull defects should be dealt with. (a) A cracked weld.
(b) A severe indentation in way of a frame.
(c) Surfaces suffering from general corrosion although the extent of wastage does not warrant plate replacement.
(d) A bilge keel fractured at the forward end.
2021/FEB/Q5 **2021/APR/Q6** **2021/JUL/Q9** **2021/SEP/Q7** **2021/OCT/Q3** **2022/FEB/Q8** **2022/DEC/Q2** **2025/OCT/Q6** **2025/NOV/Q5**
Click Here to See the Answer

Q6. a) With the aid of a simple sketch, explain the "trouble spots" in a basic air-conditioning unit and
b) With reference to your sketch, explain the following: -
(i) How the problem of increase in humidity of cooled air is overcome?
(ii) How discomfort caused by the excessive drying effect of heated air is overcome?

2021/APR/Q4 **2021/JUL/Q1** **2021/AUG/Q6** **2021/SEP/Q5**
2021/OCT/Q7 **2021/NOV/Q6** **2021/DEC/Q6** **2022/JAN/Q6**
2022/FEB/Q3 **2022/APR/Q4** **2022/JUN/Q3** **2023/APR/Q4**
2025/JUL/Q3 **2025/AUG/Q6** **2025/OCT/Q3** **2025/NOV/Q6**

Click Here to See the Answer

Q7. With respect to hydraulic Ram steering gears:
A. What emergency locking device can be used in order to speedily bring the steering gear to rest? State one reason the best angular position to lock the steering gear. (4)
B. Use a simple sketch to show where the "Jumping" (top) and wear down (bottom) rudder carrier ring clearances can be measured. Indicate what clearances you would expect with a new steering gear. (8)
C. State the consequences of the wear down clearances being reduced to less than zero. (4)

2021/DEC/Q8 **2022/JUN/Q7** **2022/OCT/Q4** **2023/JAN/Q9**
2023/OCT/Q1 **2024/SEP/Q8** **2025/NOV/Q7**

Click Here to See the Answer

Q8. Write short note on the followings –
A. Metal – locking.
B.TIG and MIG welding.
C. Brazing. D. Soldering.

2021/APR/Q3 **2022/JUL/Q9** **2025/AUG/Q3** **2025/NOV/Q8**

Click Here to See the Answer

Q9. (a) With reference to the insulation testing of marine electrical plant:
(i). State the reason for insulation testing:
(ii). State the precautions to be observed when testing intrinsically safe equipment

(b). Describe the overhaul of a D.C. motor which has been subject to excessively damp condition or flooding with seawater.

2025/NOV/Q9

Click Here to See the Answer