D. MARINE
Study Material

MEO CLASS 4 WRITTEN: MEP

(MARINE ENGINEERING PRACTICE)

FOR INDIAN COMPETENCY EXAM

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JANUARY – 2026

Q1. (a) Describe the procedure for:
(i) Riveting work (5)
(ii) Removing a stud from the plates. (5)
(b) What are the essential tools required for the procedure in (a) above. (6)
2025/MAR/Q1 **2026/JAN/Q1**
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Q2. (a) Describe how cylinder liners are checked for wear (5)
(b) Explain how these measurements are recorded (5)
(c) Explain why allowance for wear is limited and what extent of the wear governs liner replacement (6)
2024/MAY2/Q2 **2024/AUG/Q2** **2025/AUG/Q2** **2026/JAN/Q2**
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Q3. (a) Describe uses of compressed air onboard the ship. (6)
(b) Describe maintenance schedule of various systems on main air compressor. (6)
(c) Describe Isolation procedure of main air compressor before starting any work (4)
2023/APR/Q4 **2025/MAR/Q3** **2026/JAN/Q3**
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Q4. (a) Describe why priming is required for a centrifugal pump. With the aid of a sketch, describe working of a primer for centrifugal pump. (10)
(b) Why balance holes are provided in the impeller? (6)
2022/NOV/Q2 **2023/APR/Q5** **2025/MAR/Q4** **2026/JAN/Q4**
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Q5. Work is being carried out in drydock on a large sea water inlet chest and the valves. Describe the inspection you would carry out:
(a) As the work starts (8)

(b) During and after the work. (8)
2023/APR/Q6 **2024/MAY1/Q3** **2024/SEP1/Q3** **2025/FEB/Q3** **2025/MAR/Q5** **2026/JAN/Q5**
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Q6. a) Describe how A. E, crankshaft deflections are measured. (6)
b) State how the measurements can be checked for accuracy. (5)
c) Specify with reasons other checks that should be made on the crankshaft.
2022/SEP/Q5 **2022/OCT/Q6** **2022/DEC/Q9** **2023/APR/Q7** **2023/SEP/Q9** **2023/OCT/Q9** **2024/JAN/Q7** **2024/JUN/Q7** **2024/NOV/Q7** **2025/MAR/Q6** **2026/JAN/Q6**
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Q7. With reference to auxiliary boiler safety valves state with reasons:
(a) What clearances need checking when lapping valves to seats (5)
(b) Why the drain must be clear (5)
(c) Why opening gear should be kept in good working order at all times (6)
2024/MAY2/Q7 **2024/AUG/Q7** **2025/AUG/Q7** **2026/JAN/Q7**
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Q8. Describe the procedure for the regular maintenance routines to be carried out on the various types of portable fire extinguisher on ships. (16)
2023/APR/Q8 **2025/MAR/Q8** **2026/JAN/Q8**
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Q9. With reference to exhaust valves of an auxiliary diesel engine.
(a) Describe how valves are reconditioned (8)
(b) Explain how valve timing is checked and corrected. (8)
2023/APR/Q9 **2025/MAR/Q9** **2026/JAN/Q9**
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FEBRUARY – 2026

Q1. During your watch you observe that Main Engine L.O. Sump level is rising due to contamination of lubricating oil. Describe the procedure:
a) To identify the contaminant. (6)
b) Locate the cause of contamination. (6)
c) Action to make the oil suitable for its continued usage. (4)
2022/AUG/Q5 **2023/AUG/Q1** **2023/DEC/Q4** **2024/APR2/Q4** **2024/OCT/Q4** **2026/FEB/Q1**
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Q2. With reference to main refrigeration plant give reason for each of the following operational irregularities and state how these are dealt with:
a) Rapid loss of lubricating oil from the crankcase of a "vee" block compressor. (4)
b) steady "fall off" in refrigeration effect over a comparatively short period of time. (4)
c) Excessive "icing up" at compressor suction. (4)
d) Short cycling. (4)
2023/AUG/Q2 **2026/FEB/Q2**
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Q3. Performance of a Fire-pump has deteriorated and is not developing required head. Describe the following:
a) The procedure for dismantling the pump. (4)
b) The likely defects and remedial measures to be taken. (3)
c) Clearances to be checked. (3)
d) Precautions during assembly. (3)
e) Checks for alignment of motor pump coupling. (3)
2023/AUG/Q3 **2026/FEB/Q3**
Click Here to See the Answer

Q4. Give reasons why each of the following conditions can result in oil being carried over with the water discharge from lubricating oil centrifuges:
a) High throughput of mixture. (6)

b) Abnormally high temperature of mixture. (6)
c) Appreciable accumulation of solids in bowl. (4)
2023/AUG/Q9 **2026/FEB/Q4**
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Q5. (a) Describe different components used in soldering process. (6)
(b) Describe soldering process in detail. (6)
(c) What are Do's and Don'ts for good soldering joint. (4)
2023/JUL/Q2 **2024/FEB/Q6** **2024/JUL/Q6** **2025/JAN1/Q6**
2025/JUL/Q6 **2026/FEB/Q5**
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Q6. Write short notes on the following:
(a) The need for taking double bottom tank soundings regularly after a grounding incident. (4)
(b) Need to pre-heat main engines prior to continuous running of the engine. (4)
(c) Utility of pressure gauges on either side of high-pressure fuel oil filters.
(d) The purpose of opening indicator cocks before blowing through an engine. (4)
2025/JAN1/Q7 **2025/JUL/Q7** **2026/FEB/Q6**
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Q7. (a) Describe maintenance required on auxiliary boiler burner. (8)
(b) Describe safety features provided on fuel burning system of auxiliary boiler (8)
2023/MAY1/Q9 **2023/JUL/Q9** **2024/FEB/Q8** **2024/JUL/Q8**
2025/JAN1/Q8 **2025/JUL/Q8** **2026/FEB/Q7**
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Q8. (a) Describe what would be the indications of crank case explosion in main engine. (4)
(b) Describe actions to be taken, if there is crank case explosion in main engine. (8)
(c) Describe means of prevention of crank case explosion. (4)

2023/JUN/Q2 **2024/FEB/Q9** **2024/JUL/Q9** **2025/JAN1/Q9** **2025/JUL/Q9** **2026/FEB/Q8**

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Q9. Describe reasons and actions to be taken for the following malfunction on auxiliary boiler.
(a) Pilot burner does not fire (4)
(b) Efficiency of boiler is low (4)
(c) Low water level in boiler (4)
(d) Flame failure. (4)

2023/FEB/Q8 **2026/FEB/Q9**

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MARCH – 2026

Q1. Describe the examination you will carry out on the following parts of Air Compressor,
a) Suction and delivery valves and seats. (4)
b) Relief valves and bursting discs. (4)
c) coolers and cooling passages. (4)
d) Piston and piston rings. (4)
2022/DEC/Q4 **2023/OCT/Q4** **2025/APR2/Q1** **2025/SEP/Q1** **2026/MAR/Q1**
Click Here to See the Answer

Q2. The exhaust temperatures of an auxiliary diesel engine are found to be excessive and uneven at normal load, with dark exhaust at the funnel. Describe EACH of the following:
a) An investigation of the situation. (5)
b) The procedure to remedy the immediate problems. (6)
c) Any further action that might be necessary. (5)
2022/DEC/Q6 **2023/SEP/Q6** **2023/OCT/Q6** **2023/DEC/Q8** **2024/MAR/Q8** **2024/APR2/Q8** **2024/OCT/Q8** **2024/DEC2/Q8** **2025/APR2/Q2** **2025/SEP/Q2** **2026/MAR/Q2**
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Q3. A Centrifugal pump has been opened up due to abnormal noise:
a) List the checks you will carry out on various parts (4)
b) Name the parts which may require replacement. (4)
c) Checks to be carried out after assembly. (4)
d) Operational parameters, which may be required to be compared with manufacturers test records. (4)
2022/DEC/Q7 **2023/SEP/Q7** **2023/OCT/Q7** **2024/JAN/Q6** **2024/JUN/Q6** **2024/NOV/Q6** **2025/APR2/Q3** **2025/SEP/Q3** **2026/MAR/Q3**
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Q4. With reference to auxiliary boilers
(a) Briefly describe the maintenance procedures for oil burning equipment.
(b) Explain the need for and the use of soot blowers. (5)
(c) Describe how a boiler should be taken out of service. (6)
2022/OCT/Q4 **2025/APR2/Q4** **2025/SEP/Q4** **2026/MAR/Q4**
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Q5. An air cooler of a large two stroke marine diesel engine is showing poor performance. Suggest
some measures you would initiate to rectify the problem and improve the performance. (16)
2022/OCT/Q4 **2025/APR2/Q5** **2025/SEP/Q5** **2026/MAR/Q5**
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Q6. Briefly explain the following:
(a) How would you know if a refrigeration system is 'undercharged'? (4)
(b) What should you do to ensure that there is no water leakage into the engine cylinder before main engine for sea? (4)
(c) What would be the probable cause of a rise in the level of the lub oil sump tank of a main engine?(4)
(d) How does the valve rotator as fitted on an exhaust valve of aux. engine work? (4)
2025/APR2/Q6 **2025/SEP/Q6** **2026/MAR/Q6**
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Q7. With reference to Steering Gear & Hydraulic Power Rotary pumps:
(a) Explain how the reserve of fluid in the system is checked and how make-up is achieved? (5)
(b) Describe how a steering system is tested prior to leaving port with reference to SOLAS (5)
(c) Explain how tests are made for leaks, and air and other gases are bled from the system. (6)
2025/APR2/Q7 **2025/SEP/Q7** **2026/MAR/Q7**
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Q8. With respect to centrifuges.
(a) Explain the reasons which shall cause a purifier to overflow (6)
(b) What are reasons that induces vibration in a purifier" (4)
(c) Explain the process of desludging? Why is the purifier amperage an important parameter for
the operator? (6)
2024/MAR/Q6 **2024/DEC/Q5** **2025/APR/Q7** **2025/JUN/Q6** **2025/DEC/Q6** **2025/DEC/Q6** **2026/MAR/Q8**
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Q9. With reference to stuffing box of a two-stroke main engine explain following
a) Why stuffing box is required in two stroke diesel engines. (8)
b) Explain the maintenance carried out on stuffing box during piston overhaul. (8)
2022/NOV/Q5 **2023/DEC/Q6** **2024/APR2/Q6** **2024/OCT/Q6** **2025/APR2/Q9** **2025/SEP/Q9** **2026/MAR/Q9**
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APRIL – 2026

Q1. (a) Explain the circumstances under which a two stroke engine fails to turn on air. (8)
(b) What investigations and corrective actions are required to be taken by you as a watch keeping engineer if the engine does not turn on air after repeated trials? (8)
2025/JAN1/Q1 **2025/JUL/Q1** **2026/APR/Q1**
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Q2. Prepare a report to the Chief Engineer stating how an emergency fire pump which had difficulty taking suction earlier during ballast passage of a ship, is now rectified to operate satisfactorily under any acceptable condition of loading of the ship. (16)
2025/JAN1/Q2 **2025/JUL/Q2** **2026/APR/Q2**
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Q3. Explain in detail how you would isolate one section of a water sprinkler system for routine maintenance. Describe all tests and inspections you would make and how you would return the system to service. (16)
2022/DEC/Q5 **2023/SEP/Q5** **2023/OCT/Q5** **2024/FEB/Q3**
2024/JUL/Q3 **2025/JAN1/Q3** **2025/JUL/Q3** **2026/APR/Q3**
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Q4. Describe a procedure for cylinder liner calibration indicating how the readings are recorded to allow for easy recognition of liner wear. (16)
2024/FEB/Q4 **2024/JUL/Q4** **2025/JAN1/Q4** **2025/JUL/Q4**
2026/APR/Q4
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Q5. (a) State, with reasons, the causes of fatigue cracking of engineering components. (4)
(b) State, with reasons, how material and design defects can influence fatigue life. (6)

(c) With reference to engine bed plate transverse girders explain how the incidence of fatigue cracking can be minimized. (6)
2022/DEC/Q8 **2023/SEP/Q8** **2023/OCT/Q8** **2024/FEB/Q5**
2024/JUL/Q5 **2025/JAN1/Q5** **2025/JUL/Q5** **2026/APR/Q5**
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Q6. With reference to a fuel oil purifier:
(a) What are the reasons that may cause the purifier to overflow? (6)
(b) What are the reasons for the water carry-over with the oil? (5)
(c) What are the probable reasons for vibration seen during purifier starting? (5)
2024/MAY2/Q8 **2024/AUG/Q8** **2025/AUG/Q8** **2026/APR/Q6**
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Q7. Describe the following turbocharger cleaning operations.
(a) Turbine side water washing. (6)
(b) Turbine side Dry Cleaning. (5)
(c) Blower side water washing (5)
2023/JUL/Q7 **2024/FEB/Q7** **2024/JUL/Q7** **2024/DEC1/Q9**
2025/APR1/Q9 **2025/OCT/Q9** **2026/APR/Q7**
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Q8. (a) Describe the effects of taking fresh water from the shore as feedwater for auxiliary boilers. (5)
(b) Describe the measures taken to reduce these effects. (5)
(c) What is the purpose of deaerator in the boiler feed water system? How is the deaeration achieved? (6)
2024/DEC1/Q8 **2025/APR1/Q8** **2025/OCT/Q8** **2026/APR/Q8**
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Q9. State some built in measures by which the steering gear mechanism can be kept operational, in the event of breakages, pipe failures, motor burn out etc. (16)
2024/MAY2/Q3 **2024/AUG/Q3** **2025/AUG/Q3** **2026/APR/Q9**

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