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-2021

Q1. Under Continuous survey of machinery (CSM) bottom end bearing of a large 2stroke slow speed engine is due for survey;
A. As 2nd 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 test are carried out on completion of survey and re-assembly.
2020/NOV/Q7 **2021/JAN/Q1**
Click Here to See the Answer

Q2: Describe how the following conditions are prevented in auxiliary boilers:
A. Feed contamination by oil from heating coil drains;
B. Internal corrosion;
C. Furnace blowback;
D. Uptake fire;
2021/JAN/Q2
Click Here to See the Answer

Q3. 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.
2020/MAR/Q5 **2021/JAN/Q3**
Click Here to See the Answer

Q4. A. As a second engineer, how often would you check holding-down bolts to ascertain that they are tight? What methods are used to check tightness?
B. 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?
2020/MAR/Q8 **2021/JAN/Q4**
Click Here to See the Answer

Q5. With respect to the operation of two stage reciprocating air compressor. Explain:
A. The causes of occasional lifting of 2nd stage relief valve.
B. Breakage of valve plates.
C. Puncture of bursting disc of 1st stage intercooler.
D. Noticeable reduction in capacity of the compressors over a period of time.
2020/OCT/Q3 **2021/JAN/Q5**
Click Here to See the Answer

Q6. A. Describe the events leading to a crankcase explosion.
B. State how overheating might be indicated other than by a mist detector.
C. Discuss the procedure to follow in the invent of overheating being indicated.
D. State how severity of a crankcase explosion is limited.
2021/JAN/Q6
Click Here to See the Answer

Q7. As a second engineer, list out all the potential hazards with regard to hot work on a fuel oil heater located inside a bunker oil fuel tank. Explain how do you carry out risk assessment for above mentioned hot work. What control measures do you employ so that residual risk shall be reduced as low as reasonably practicable (ALARP).
2021/JAN/Q7
Click Here to See the Answer

Q8. Severe engine vibration has recently become evident when the main engine for which you are responsible operates within a certain speed range –
A. State, with reasons, the possible causes of such vibration;
B. State the consequences of operating the engine under such vibratory conditions;
C. Describe the procedure you, as Second Engineer, would implement in order to investigate and rectify the problem.
2020/FEB/Q8 **2021/JAN/Q8**
Click Here to See the Answer

Q9. A. Briefly explain the term fatigue and explain how fatigue failure occur;
B. State the difference between high stress / low cycle and low stress / high cycle fatigue giving an example of each;

C. State how defect in metal can influence the expected safe life of a component;
D. State how fuel injection timing and cylinder power balance can influence the possibility of fatigue cracks developing in the bedplate.
2021/JAN/Q9
Click Here to See the Answer

FEB-2021

Q1. 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.
2020/FEB/Q3 **2020/NOV/Q6** **2021/FEB/Q1**
Click Here to See the Answer

Q2: A. Outline the procedure for the inspection of the rudder in a dry dock,
B. What are the requirement with respect to steeling gear as per SOLAS 74, as amended for the following:
i. Relief valve; ii. Steering gear control; iii. Electrical power circuit
2021/FEB/Q2
Click Here to See the Answer

Q3. Briefly describe your action plan on following exigencies:
A. Leaky economizer tube, while at sea;
B. Leaky intercooler of main air compressor, while maneuvering.
2020/DEC/Q4 **2021/FEB/Q3**
Click Here to See the Answer

Q4. With reference to Auxiliary boiler safety valve;
A. Describe with the aid of Sketch the safety valve for an auxiliary boiler;
B. Identify with reasons. The parts that require particularly close attention during overhaul;
C. Describe how the safety valves are reset after an overhaul.
2020/NOV/Q4 **2021/FEB/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 head fractured at the forward end.
2020/DEC/Q6 **2021/FEB/Q5**
Click Here to See the Answer

Q6. 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?
2021/FEB/Q6
Click Here to See the Answer

Q7. 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 TWO defects, which may be encountered during inspection of the bottom end bearing and crankpin giving possible causes of EACH.
D. State TWO checks, which should be made before returning the engine to service following overhaul of the bottom end bearing.
2021/FEB/Q7
Click Here to See the Answer

Q8. Using sketches explain the difference between Pulse and constant pressure turbocharger systems.
A. In the event of a Pulse turbocharger becoming inoperative due to mechanical breakdown explain the modifications required to allow the engine to operate safely.
B. State the instruction you as second engineer would issue regarding the additional engine monitoring requirements following the steps taken in (a).
2021/FEB/Q8
Click Here to See the Answer

Q9. 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?
2020/MAR/Q3 **2020/NOV/Q2** **2020/DEC/Q2** **2021/FEB/Q9**
Click Here to See the Answer

MAR-2021

Q1: Describe how the following conditions are prevented in auxiliary boilers:
A. Feed contamination by oil from heating coil drains.
B. Internal corrosion.
C. Furnace blowback.
D. Uptake fire.
2021/JAN/Q2 **2021/MAR/Q1**
Click Here to See the Answer

Q2. With reference to Marine Diesel engines:
(a) Describe how crankshaft alignment is checked.
(b) Identify with reasons the causes of crankshaft misalignment.
(c) State how the measurements are recorded.
2020/FEB/Q7 **2021/MAR/Q2**
Click Here to See the Answer

Q3. With regard to large 2 stroke engine:
(a) Explain how can the cooling spaces within a cylinder jacket be examined without withdrawing the cylinder liner?
(b) To what parts of a cylinder jacket would give attention after removing an old cylinder liner prior to fitting a new one?
(c) What periodic attention must be given to the scavenge air space and piston-rod packing (Stuffing box) at the bottom of a cylinder liner?
2021/MAR/Q3
Click Here to See the Answer

Q4. With reference to steering gear hydraulic systems:

A. Explain the factors that could contribute to failure of connecting flange leading to total loss of oil from the system.
B. Describe an arrangement designed to ensure that the problem would not cause steering failure.

2021/MAR/Q4

Click Here to See the Answer

Q5. What examinations must be carried out when a crosshead bearing of a large, slow-speed engine is
opened up for survey?

2021/MAR/Q5

Click Here to See the Answer

Q6: Your ship after having been accidentally grounded was taken to a dry-dock for inspection and necessary repairs. What defects would you look for in the following parts, that may have sustained damage due to grounding and suggest methods of repairs and tests that may be required to be carried out to the defects noticed:
A. Propeller and tail end shaft.
B. Main engine crankshaft.

2021/MAR/Q6

Click Here to See the Answer

Q7. During the cleaning & inspection oily bilge tank onboard your vessel;
A. As second engineer, explain the procedure involved in transferring the water, emptying out tank, without violating MARPOL Regulation.
B. List the precaution to be taken before entering and while cleaning the progress.
C. Explain what all checks to be carried out, before and after cleaning.

2021/MAR/Q7

Click Here to See the Answer

Q8. A. Sketch a transmission shaft coupling which enables the propeller shaft to be withdrawn outward.
B. (i) describe the coupling and method fitting and dismantling;
(ii) state how the grip of the coupling can be checked when fitted;
(iii) why should coupling bolts be interference fits
(iv) State what precaution should be taken when dismantling the coupling.

(V) State reasons why the metal that the intermediate and tail end remission shaft are made of.
2021/MAR/Q8
Click Here to See the Answer

Q9. With respect to the operation of two stage reciprocating air compressor. Explain:
A. The causes of occasional lifting of 2nd stage relief valve.
B. Breakage of valve plates.
C. Puncture of bursting disc of 1st stage intercooler.
D. Noticeable reduction in capacity of the compressors over a period of time.
2020/OCT/Q3 **2021/JAN/Q5** **2021/MAR/Q9**
Click Here to See the Answer

APRIL-2021

Q1. Under Continuous survey of machinery (CSM) bottom end bearing of a large 2stroke slow speed engine is due for survey.
A. As 2nd 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 test are carried out on completion of survey and re-assembly.
2020/NOV/Q7 **2021/JAN/Q1** **2021/APR/Q1**
Click Here to See the Answer

Q2. 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.
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;
C. State the consequences of the wear down clearances being reduced to less than zero.
2020/DEC/Q7 **2021/APR/Q2**
Click Here to See the Answer

Q3. 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?
2020/MAR/Q3 **2020/NOV/Q2** **2020/DEC/Q2** **2021/FEB/Q9** **2021/APR/Q3**
Click Here to See the Answer

Q4. Accidents occurred due to premature or accidental release of Co2 into machinery spaces With reference to this enumerate the procedure or arrangement that you as 2nd engineer would adopt with respect of the following
A. Contractors working on Co 2 system;
B. Understanding between bridge and engine room in the event of a machinery space fire;
C. Familiarizing staff with the system;
D. Checks and tests are carried out before putting system in operation?
2020/DEC/Q3 **2021/APR/Q4**
Click Here to See the Answer

Q5. A). Describe the procedure for overhauling a boiler safety valve and explain using sketches where necessary, those parts, which require close attention.
B). Describe the procedure for setting of boiler safety valves.
2021/APR/Q5
Click Here to See the Answer

Q6. A. State the circumstances owing to which it may be necessary to renew a cylinder liner.
B. Explain how the liner is removed
C. Explain how the new liner is fitted; State the important checks to be made before and after fitting.
2020/OCT/Q8 **2020/DEC/Q9** **2021/APR/Q6**
Click Here to See the Answer

Q7. With reference to lifeboats, Sketch and describe:

A. The handbrake used for lowering and state how it may be tested.
B. The centrifugal brake and method of testing.
C. A roller ratchet and the method of testing;
D. Why is ratchet incorporated into the system;ss

2021/APR/Q7

Click Here to See the Answer

Q8. 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.
B). Briefly explain the routine tests that are carried out on main engine fuel injectors.

2020/NOV/Q8 **2021/APR/Q8**

Click Here to See the Answer

Q9. While carrying out ship's hull inspection, describe the various defects and corresponding repairs that might be expected in shell plating, Ford end of ship, aft end of ship, openings in shell plating, Rudder, Propeller, and stern tube.

2021/APR/Q9

Click Here to See the Answer

JULY-2021

Q1. A. With the aid of a simple sketch, explain the "trouble spots" in a basic air-conditioning unit.
B. With reference to your sketch in 1(a), 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?

2020/MAR/Q3 **2020/NOV/Q2** **2020/DEC/Q2** **2021/FEB/Q9** **2021/APR/Q3** **2021/APR/Q4** **2021/JUL/Q1**

Click Here to See the Answer

Q2. 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 test are carried out on completion of survey and re-assembly.
2020/NOV/Q7 **2021/JAN/Q1** **2021/APR/Q1** **2021/JUL/Q2**
Click Here to See the Answer

Q3. Briefly describe your action plan on following exigencies:
A. Leaky economizer tube, while at sea;
B. Leaky intercooler of main air compressor, while maneuvering.
2020/DEC/Q4 **2021/FEB/Q3** **2021/JUL/Q3**
Click Here to See the Answer

Q4. A. As a second engineer, how often would you check holding-down bolts to ascertain that they are tight? What methods are used to check tightness?
B. If soon after joining a motor ship, you found a number of holding down bolts slack and fretting occurred in the areas of the slack bolts, describe how you would handle the situation?
2020/MAR/Q8 **2021/JAN/Q4** **2021/JUL/Q6** **2021/JUL/Q4**
Click Here to See the Answer

Q5. Accidents regularly occur due to premature or accidental release of Co2 into machinery spaces. With reference to this enumerate the procedure or arrangement that you as 2nd engineer would adopt with respect of the following
A. Contractors working on Co 2 system;
B. Understanding between bridge and engine room in the event of a machinery space fire;
C. Familiarizing staff with the system;
D. What checks and tests are carried out before putting system in operation?
2020/DEC/Q3 **2021/APR/Q4** **2021/JUL/Q5** **2021/JUL/Q5**
Click Here to See the Answer

Q6. With respect to the operation of two stage reciprocating air compressor. Explain:
A. The causes of occasional lifting of 2nd stage relief valve.
B. Breakage of valve plates.
C. Puncture of bursting disc of 1st stage intercooler.

D. Noticeable reduction in capacity of the compressors over a period of time.
2020/OCT/Q3 **2021/JAN/Q5** **2021/MAR/Q9** **2021/JUL/Q6**
Click Here to See the Answer

Q7. With reference to large two stroke engine:
(a) explain how abnormal and excessive cylinder liner wear caused, state how it can be detected;
(b) explain the effects and consequences of excessive cylinder liner wear;
(c) explain how abnormal cylinder linear wear may be prevented.
2021/JULY/Q1
Click Here to See the Answer

Q8. As a second engineer, list out all the potential hazards with regard to hot work on a fuel oil heater located inside a bunker fuel oil tank. Explain how do you carry out risk assessment for above mentioned hot work. What control measures do you employ so that residual risk shall be reduced as low as reasonably practicable (ALARP).
2021/JAN/Q7 **2021/JUL/Q7** **2021/JUL/Q8**
Click Here to See the Answer

Q9. Severe engine vibration has recently become evident when the main engine for which you are responsible operates within a certain speed range –
A. State, with reasons, the possible causes of such vibration;
B. State the consequences of operating the engine under such vibratory conditions;
C. Describe the procedure you, as Second Engineer, would implement in order to investigate and rectify the problem.
2020/FEB/Q8 **2021/JAN/Q8** **2021/JUL/Q9**
Click Here to See the Answer

AUG-2021

Q1: A. Outline the procedure for the inspection of the rudder in a dry dock.
B. What are the requirement with respect to steeling gear as per SOLAS 74, as amended for the following:
i. Relief valve;
ii. Steering gear control;
iii. Electrical power circuits.

2021/FEB/Q2 **2021/AUG/Q1**
Click Here to See the Answer

Q2. 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 TWO defects, which may be encountered during inspection of the bottom end bearing and crankpin giving possible causes of EACH.
D). State TWO checks, which should be made before returning the engine to service following overhaul of the bottom end bearing.
2021/FEB/Q7 **2021/AUG/Q2**
Click Here to See the Answer

Q3. A). Describe the overhaul of a boiler safety valve and explain using sketches where necessary those parts which require particularly close attention;
B). Describe the setting of boiler safety valve to comply with classification society requirements.
2021/AUG/Q3
Click Here to See the Answer

Q4. A. As a second engineer, how often would you check holding-down bolts to ascertain that they are tight? What methods are used to check tightness?
B. If soon after joining a motor ship, you found a number of holding down bolts slack and fretting occurred in the areas of the slack bolts, describe how you would handle the situation?
2020/MAR/Q8 **2021/JAN/Q4** **2021/JUL/Q6** **2021/JUL/Q4** **2021/AUG/Q4**
Click Here to See the Answer

Q5. A. During the weighment of CO2 bottles required for total flooding of Engine room, it was observed that few bottles are less than the original capacity. State the reasons for the same and checks / tests to be made prior refilling;
B. State how often the CO2 bottles are required to be weighed and pressure tested.

2020/FEB/Q4 **2021/AUG/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.
B. With reference to your sketch in 6(a), 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?
2020/MAR/Q3 **2020/NOV/Q2** **2020/DEC/Q2** **2021/FEB/Q9**
2021/APR/Q3 **2021/APR/Q4** **2021/JUL/Q1** **2021/AUG/Q6**
Click Here to See the Answer

Q7. Sketch FIVE methods used to prevent the distortion of ship's plates and frames during major welded hull repairs in dry dock.
2021/AUG/Q7
Click Here to See the Answer

Q8. As a second engineer, list out all the potential hazards with regard to hot work on a fuel oil heater located inside a bunker fuel oil tank. Explain how do you carry out risk assessment for above mentioned hot work. What control measures do you employ so that residual risk shall be reduced as low as reasonably practicable (ALARP).
2021/JAN/Q7 **2021/JUL/Q7** **2021/JUL/Q8** **2021/AUG/Q8**
Click Here to See the Answer

Q9. (a) Explain how can the cooling spaces within a cylinder jacket be examined without withdrawing the cylinder liner?
(b) To what parts of a cylinder jacket would give attention after removing an old cylinder liner prior to fitting a new one?
(c) What periodic attention must be given to the scavenge air space and piston-rod packing (Stuffing box) at the bottom of a cylinder liner?
2021/MAR/Q3 **2021/AUG/Q9**
Click Here to See the Answer

SEP-2021

Q1. As a second engineer, list out all the hazards identified with regard to cylinder head lifting job during main engine overhaul. Explain how do you carry out risk assessment for above mentioned job.
2020/NOV/Q1 **2020/DEC/Q5** **2021/SEP/Q1**
Click Here to See the Answer

Q2. Write short notes on following:
A. Magnetic Particle Inspection (MPI)
B. Ultrasonic Testing (UT)
C. Radiographic Testing (RT).
2020/FEB/Q6 **2020/NOV/Q3** **2021/SEP/Q2**
Click Here to See the Answer

Q3. With reference to large two stroke engine:
(a) Explain how abnormal and excessive cylinder liner wear caused, state how it can be detected;
(b) explain the effects and consequences of excessive cylinder liner wear;
(c) explain how abnormal cylinder linear wear may be prevented.
2021/JULY/Q1 **2021/SEP/Q3**
Click Here to See the Answer

Q4. 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.
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;
C. State the consequences of the wear down clearances being reduced to less than zero.
2020/DEC/Q7 **2021/APR/Q2** **2021/APR/Q8** **2021/SEP/Q4**
Click Here to See the Answer

Q5. A. With the aid of a simple sketch, explain the "trouble spots" in a basic air-conditioning unit.
B. With reference to your sketch in (A), 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?

2020/MAR/Q3 **2020/NOV/Q2** **2020/DEC/Q2** **2021/FEB/Q9** **2021/APR/Q3** **2021/APR/Q4** **2021/JUL/Q1** **2021/AUG/Q6** **2021/SEP/Q5**

Click Here to See the Answer

Q6. With regard to keeping the gas side of boilers in good condition discusses 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;

2021/SEP/Q6

Click Here to See the Answer

Q7. 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 head fractured at the forward end.

2020/DEC/Q6 **2021/FEB/Q5** **2021/APR/Q6** **2021/JUL/Q9** **2021/SEP/Q7**

Click Here to See the Answer

Q8. A. As a second engineer, how often would you check holding-down bolts to ascertain that they are tight? What methods are used to check tightness?
B. If soon after joining a motor ship, you found a number of holding down bolts slack and fretting occurred in the areas of the slack bolts, describe how you would handle the situation?

2020/MAR/Q8 **2021/JAN/Q4** **2021/JUL/Q6** **2021/JUL/Q4** **2021/AUG/Q4** **2021/SEP/Q8**

Click Here to See the Answer

Q9. During normal engine operation, a turbocharger rapidly loses speed and the speed reduction is accompanied by appreciable noise -

A. State with reasons the possible causes.
B. Explain in detail how the engine might be safely operated if the damage caused by this incident is such that the turbocharger cannot function.
C. State with reasons the factors which may limit engine operating speed with the turbocharger out of action.
2021/JUL/Q2 **2021/SEP/Q9**
Click Here to See the Answer

OCT-2021

Q1. With reference to large two stroke engine:
(a) Explain how abnormal and excessive cylinder liner wear caused, state how it can be detected;
(b) explain the effects and consequences of excessive cylinder liner wear;
(c) explain how abnormal cylinder linear wear may be prevented.
2021/JULY/Q1 **2021/SEP/Q3** **2021/OCT/Q1**
Click Here to See the Answer

Q2. When ship is in dry dock, as a Second Engineer, describe inspections you would make prior to the start of work,
during the work and after completion of the work of the following:
(a) Large sea water inlet chest and valves;
(b) Forward end of ship;
(c) Propeller and stern bush;
2020/NOV/Q1 **2021/OCT/Q2**
Click Here to See the Answer

Q3 (a) Sketch and explain any two methods used to prevent the distortion of ships plates and frames during major welded hull repairs in dry dock.
(b). Explain how EACH of the following hull defects should be dealt with;
(i). A cracked weld;
(ii). A severe indentation in way of a frame;
(iii). Surfaces suffering from general corrosion although the extent of wastage does not warrant plate replacement;
(iv). A bilge head fractured at the forward end.
2020/DEC/Q6 **2021/FEB/Q5** **2021/APR/Q6** **2021/JUL/Q9**
2021/SEP/Q7 **2021/OCT/Q3**

Click Here to See the Answer

Q4. 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.
2020/NOV/Q8 **2021/APR/Q8** **2021/OCT/Q4**
Click Here to See the Answer

Q5. With reference to Auxiliary boiler safety valve;
A. Describe with the aid of Sketch the safety valve for an auxiliary boiler;
B. Identify with reasons. The parts that require particularly close attention during overhaul;
C. Describe how the safety valves are reset after an overhaul.
2020/NOV/Q4 **2021/FEB/Q4** **2021/APR/Q5** **2021/OC/Q5**
Click Here to See the Answer

Q6. List out all the potential hazards with regard to cylinder head lifting job during main engine overhaul. As a second engineer, explain how do you carry out risk assessment for above mentioned job.
2021/OCT/Q6
Click Here to See the Answer

Q7. 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?
2020/NOV/Q2 **2020/DEC/Q2** **2021/FEB/Q9** **2021/APR/Q3** **2021/APR/Q4** **2021/JUL/Q1** **2021/AUG/Q6** **2021/SEP/Q5** **2021/OCT/Q7**
Click Here to See the Answer

Q8. 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.

2020/FEB/Q3 2020/NOV/Q6 2021/FEB/Q1 2021/APR/Q2 2021/OCT/Q8

Click Here to See the Answer

Q9. 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 test are carried out on completion of survey and re-assembly.

2020/NOV/Q7 2021/JAN/Q1 2021/APR/Q1 2021/JUL/Q2 2021/OCT/Q9

Click Here to See the Answer

NOV-2021

Q1. With reference to fire pumps.
A. Explain how and when fire pumps should be tested, what are the requirements as per SOLAS74, as amended
B. Describe the routine maintenance to be carried out on the various fittings on a fire line, giving testing pressure where appropriate.
C. Describe briefly how will you dismantle a fire pump for survey. Give details of factors which will decide replacing the parts.

2020/MAR/Q9 2021/NOV/Q1

Click Here to See the Answer

Q2. 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.

2020/MR/Q1 2021/JUL/Q3 2021/NOV/Q2

Click Here to See the Answer

Q3. 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.
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;
C. State the consequences of the wear down clearances being reduced to less than zero.
2020/DEC/Q7 **2021/APR/Q2** **2021/APR/Q8** **2021/SEP/Q4** **2021/NOV/Q3**
Click Here to See the Answer

Q4. Sketch and show all parts of two-stroke engine's Stuffing box. Describe the procedure of overhauling two stroke engine's Stuffing box, without removing the piston. Your answer should include all safety precautions taken and proper tools used during this Stuffing box overhaul.
2021/NOV/Q4
Click Here to See the Answer

Q5. 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?
(c). With a simple drawing, explain Psychrometric Chart.
2020/MAR/Q3 **2020/NOV/Q2** **2020/DEC/Q2** **2021/FEB/Q9** **2021/APR/Q3** **2021/APR/Q4** **2021/JUL/Q1** **2021/AUG/Q6** **2021/SEP/Q5** **2021/OCT/Q7** **2021/NOV/Q5**
Click Here to See the Answer

Q6. 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.

2020/MAR/Q5 **2021/JAN/Q3** **2021/NOV/Q6**
Click Here to See the Answer

Q7. There are approximately ten days of a voyage remaining for a ship before reaching port and the chemicals intended for the boiler water treatment are found unfit for further use.
A. Describe, with reasons, how the boiler and plant can be best protected whilst steaming before a fresh supply of chemicals is received.
B. Upon arrival at the port describe any inspection and precautions that may be necessary before proceeding.
2021/NOV/Q7
Click Here to See the Answer

Q8. List out all the potential hazards with regard to hot work on a fuel oil heater located inside a bunker fuel oil tank. As a second engineer, explain how do you carry out risk assessment for above mentioned hot work. What control measures do you employ so that residual risk shall be reduced as low as reasonably practicable (ALARP).
2021/JAN/Q7 **2021/JUL/Q7** **2021/JUL/Q8** **2021/AUG/Q8**
2021/NOV/Q8
Click Here to See the Answer

Q9. (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 in the area of slack holding down bolts. Describe what actions do you take.
(b) Explain the correct procedure for checking the holding down bolts tightness?
2021/NOV/Q9
Click Here to See the Answer

DEC-2021

Q1. (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 in the area of slack holding down bolts. Describe what actions do you take.

(b) Explain the correct procedure for checking the holding down bolts tightness?
2021/NOV/Q9 **2021/DEC/Q1**
Click Here to See the Answer

Q2. 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 test are carried out on completion of survey and re-assembly.
2020/NOV/Q7 **2021/JAN/Q1** **2021/APR/Q1** **2021/JUL/Q2**
2021/OCT/Q9 **2021/DEC/Q2**
Click Here to See the Answer

Q3. Sketch and describe any THREE methods used to prevent the distortion of ship's plates and frames during major welded hull repairs in dry dock.
2021/AUG/Q7 **2021/DEC/Q3**
Click Here to See the Answer

Q4. 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.
2020/FEB/Q3 **2020/NOV/Q6** **2021/FEB/Q1** **2021/APR/Q2**
2021/OCT/Q8 **2021/DEC/Q4**
Click Here to See the Answer

Q5. Briefly describe your action plan on following exigencies:
A. Leaky economizer tube, while at sea;
B. Leaky intercooler of main air compressor, while maneuvering.
2020/DEC/Q4 2021/FEB/Q3 2021/JUL/Q3 2021/DEC/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
(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/FEB/Q9 **2021/APR/Q3** **2021/APR/Q4** **2021/JUL/Q1** **2021/AUG/Q6** **2021/SEP/Q5** **2021/OCT/Q7** **2021/NOV/Q5** **2021/DEC/Q6**
Click Here to See the Answer

Q7. 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?
2021/FEB/Q6 **2021/APR/Q7** **2021/DEC/Q7**
Click Here to See the Answer

Q8. 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.
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;
C. State the consequences of the wear down clearances being reduced to less than zero.
2020/DEC/Q7 **2021/APR/Q2** **2021/APR/Q8** **2021/SEP/Q4** **2021/NOV/Q3** **2021/DEC/Q8**
Click Here to See the Answer

Q9. Severe engine vibration has recently become evident when the main engine for which you are responsible operates within a certain speed range –
A. State, with reasons, the possible causes of such vibration;
B. State the consequences of operating the engine under such vibratory conditions;
C. Describe the procedure you, as Second Engineer, would implement in order to investigate and rectify the problem.

2020/FEB/Q8 2021/JAN/Q8 2021/JUL/Q9 2021/DEC/Q9

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