

Syllabus for Certification of Ratings Forming Part of Engine Watch

Subject Area – 1

(a) Terms used in machinery spaces and names of machinery and equipment.

1. What is an internal combustion engine, Difference between petrol and a Diesel engine? Difference between a four stroke cycle and a two stroke cycle engine. How do you classify slow speed, medium speed and high speed engines? The names of the principal parts of the diesel engine.
2. Differentiate between a main engine an aux engine and aux machinery. The different systems in the engine room. Such as fresh water, sea water, fire main, fuel oil system; lube oil system, sea water and freshwater sanitary system.
3. List the machinery installed in the engine room and state the function of each (A sketch of the lay out would be helpful)
4. Explain the engine room department organization and the duties of each individual.

(b) Engine room watch keeping procedures

Define terms like pressure, temperature heat, atmospheric pressure, vacuum, pressure gauge, thermometer, level gauge. State the units of pressure temperature.

Level and flow.

State the watch keeping duties of a rating in port at sea and when the ship is manoeuvring in /out of port.

State what are the parameters to record on the engine and auxiliaries in the engine log book. What does a rating do initially before taking over an engine watch?

What is meant by engine control room also called MCR

When you hear an alarm what do you do and how do you distinguish it.

Where the steering gear located is and what checks will you carry out on your rounds.

(c) Safe working practices as to engine room operations.

1. State personnel protective equipment.

2. What precautions do you take when the day workers are overhauling the Auxiliary generator engine at a sea?

3. What are the uses of spanner, pliers, screwdrivers, screw spanner and Allan keys?

4. What is open ended / ring ended and socket spanners

5. What is the difference between a Bench and Pipe Vice?

6. What are various pneumatic / hydraulic tools?

7. What are the different types of hammers used on board the ship?

8. What is a torque wrench, and where is it used?

9. How do you lower the engine room bilges at sea and in port?

10. Who do you inform in case there is an engine alarm?

11. What do you do when you hear an oil mist detector alarm .State action taken and the possibility of evacuating the engine room?

(d) Basic environmental protection procedures.

1. State oily water separator and working principle. Explain MARPOL annexe 1.

2. State the use of the 15PPM alarm. What action to take if you find the level of the bilges has gone up suddenly in your watch? Carrying out emergency repairs to arrest a leaking pipe

3. What are the personal protective equipment to be used while carrying out general maintenance?

4. What is sewage plant used for, state the importance of treating sewage on board.

5. What special precautions to be observed while working with portable electrical machines/equipment)

6. State the precautions required in arc welding and gas welding .What is hot work permit.

7. How do you store and use oxygen and acetylene bottle. State precautions of handling the bottles.

8. State what is incinerator and its uses? What material can be burnt in the incinerator and what cannot be burnt by law? State that ash is prohibited to be dumped overboard.

9. Location of Emergency stopping of bilge transfer pump from deck.

Subject Area – 2

Safe operation of boilers

1. Define boiler and state the use of boiler on board

2. State types of boilers

3. List all the mountings on the boiler and uses.

4. State what is blow down and why it is done.

5. State what is soot blower and why is soot blowing carried out.

6. Describe the feed system of the oiler.

7. Describe the fuel oil burner. State the importance of purging the furnace before Igniting a burner. State the consequences of a back fire.

8. Explain the starting and stopping procedure of a boiler.

State the duties of a boiler watch. What risks are posed when working beside a boiler

9. State the means of seeing the boiler water level in a remote location.

Subject Area – 3

(a) Engine room alarm systems and ability to distinguish between various alarms with special ref to fire fighting

1. State that there are the different types of alarms for various functions in the engine room.

2. State the action to be taken when a watch keeper hears a co2 alarm in the engine room

3. State the difference between a Co2 alarm and a general alarm

4. The action to be taken by a watch keeper when he hears an Engine alarm.

5. State the action to be taken when a fire alarm sounds.

6. State the action to be taken when a bilge high level alarm sounds.

(b) Knowledge of Emergency Duties and Escape Routes

1. What is an emergency?

2. What are the various emergencies that may occur in Engine room?

3. State the importance of escape route in engine room.

4. How you will come out from engine room in case you hear emergency alarm/ CO2 flooding alarm.

5. What will you do if engine room is getting flooded?

6. In case of a fire in the engine room, why is the escape route is considered safer than the normal staircase in the engine room?

7. State that an EEBD (emergency escape breathing device) is used to escape from the engine room in the event of a fire.

(c) Fire Fighting Equipment in Engine Room

1. Identify different types of fire extinguishers (from the available models or diagrams. How each type is to be operated? Suitability for fire type)

2. State the common causes of fire in engine room?

3. State the class of fire which commonly occurs in the engine room?

4. List the different types of extinguishers you will find in engine room?

5. State What means is provided for extinguishing large fires in the engine room like Co2, high expansion foam, water fog systems etc.

6. How will you fight an electrical fire in engine room?

7. State the precautions a watch keeper takes when operating portable electrical equipment

8. State how the quick closing valves are closed from a remote location.

9. State the location of the fire control room and equipment provided.

9. State the location of the co2 room and release mechanism. List the checks to be made before co2 is Released in the engine room.