MARINE AUXILIARY MACHINERY and SHIP FIRE PREVENTION & PROTECTION – I

SUBJECT CODE – UAME 501

SEMESTER V – BE(ME)-15 (2017-2018)

QUESTION BANK

SECTION A (2 marks each)

UNIT-1

1. Give two reasons for providing Expansion Tank In Jacket Cooling System?
2. Why heating coil is provided in Main Engine Lubricating oil sump tank?
3. How watertight doors are classified ?
4. What is the purpose of Observation tank, in steam Return Line?
5. What is 'emergency escape' in Engine Room?
6. Why compressed air is used in Hydrophore system?
7. How many 'Air bottles are provided in Engine room' ?
8. Why a booster pump is provided in Main Engine Fuel oil system?
9. Where is Main engine located in Engine Room ?
10. Why Cylinder lub. oil daily service tank is provided?

UNIT-2

1.Why Fresh water generator is provided on board ?
2. Why fresh water produced by Evaporator, must be treated ?
3. What happens when the salinity alarm rings?
4.Why vacuum is produced in fresh water generator ?
5. What is the purpose of Air Ejector ?
6. What is Brine, with respect to Fresh water generator ?
7. Name the uses of fresh water on board.
8. What is a ' Double Stage' Flash evaporator ' ?
9. What is salinity alarm in Evaporator ?
10.What is a 'Single Stage' Flash evaporator ' ?

UNIT-3

1. What is the purpose of Mooring winch ?
2. Why Deck machinery is mostly idle at sea ?
3. What is the length of one Cable, in Windlass arrangement ?
4. What is 'Luffing ' in Deck crane operation ?
5. How the oil is cooled in a hydraulic Deck crane ?
6. Why a Centrifugal brake is provided, in a 'Overhead Gravity Davit' ?

7. What is a ‘Load test’ , in a hydraulic deck crane ?
8. What is ‘Windlass’ ?
9. What is the purpose of Clutch in Windlass arrangement?
10. What is ‘Slewing’ in Deck crane operation ?

UNIT-4

1. Name the three components of Fire Triangle
2. List the sources of Fire in the engine room
3. Define ' Flash point'
4. What is 'Non volatile petroluem' ?
5. What is meant by ‘Chain reaction’ of fire?
6. Why emergency remote electrical trips and Quick closing valves required ?
7. For what purpose , 'EEBD' is used ?
8. Why the Fire dampers required to be closed, in the event of fire in the engine room ?
9. Why it is required to keep a copy of 'Fire control plan' outside accommodation and machinery spaces?
10. Name the places where the 'Muster List' is placed.

UNIT-5

1. State the operating time limit of Automatic fire doors.
2. What are the reasons for providing ' High pressure oil leak alarm' in UMS vessels?
3. Why Halon gas is prohibited now a days for firefighting ?
4. Why cargo pump room spaces cannot be inerted ?
5. What is the function of 'Demand valve' in SCBA ?
6. What is the required capacity of Engine room blowers, as per regulations ?
7. Why 'High velocity' air vents are used on mast head risers or IG main ?
8. How many emergency exits are provided in machinery spaces ?
9. Why SCBA air cylinders not to be recharged with ships service air from main air compressors ?
10. Where the 'Smoke extraction system' is used ?

SECTION – B (5 marks each)

UNIT – 1

1.Enumerate the various machineries found in the engine room of a large cargo ship
2.What factors influence the Layout of Engine room ?
3What factors influence the ‘Location of stores and workshops’?
4.What are the functions of Expansion tank in the Jacket Cooling Water system ?
5.Explain in detail the Drinking Water Treatment Plant, on board.
6.Explain in detail about ‘Emergency Escape’.

UNIT.2

1. What is the principle involved in flash evaporation ?
2. Write short notes on Salinity control in F.W.Generators.
3. Explain Osmosis and Reverse Osmosis.
4. Explain in detail the function of a 'Brine Ejector'.
5. Explain the reasons for Pretreating the Sea water feed in Reverse Osmosis Plant.
6. Explain in detail about the Maintenance of Fresh Water Generators.

UNIT-3

1. When the Ship is in Port, why the supervision of Moorings is required ?
2. What is the maintenance required for Anchor Windlass ?
3. How does a 'Slipping Clutch' function ?
4. What is the function of a 'Booster' Pump, in a Deck Crane Hydraulic circuit ?
5. What are the duties of a Deck Winch ?
6. During Cargo Gear Survey, What Inspections are carried out ?

UNIT-4

1. Write a short notes on 'Spontaneous combustion'
2. List the ' Classification' of fires on board ship
3. In a tabulated format, describe the types of fires and the relevant extinguishing mediums used.
4. As per SOLAS, explain the difference between Volatile and Non volatile petroleum products.
5. State the conditions which decides the 'Machinery spaces' specified as ' A' category.
6. Draw the 'Fire Tetrahedran' and explain the components

UNIT-5

1. What is Class A division bulkhead as per 'SOLAS' ?
2. Draw a schematic diagram of a ' Fire Detection Control unit'.
3. What are the routine checks, you will carry out on SCBA ?
4. List the possible sources of flammability on tankers
5. What are the additional requirements for the ships with 'Unattended machinery spaces' (UMS) with respect to the Fire prevention?
6. What are the contents in 'Fireman's outfit' ?

SECTION – C (10 marks each)

UNIT-1 (Various Piping Arrangement)

1. Draw the layout of the 'Second Deck ' of an engine room of a cargo ship. Explain the function of each machine fitted there.
2. Sketch & describe the fuel oil system of a large main engine, indicating the important components and the flow directions.
3. Sketch the "Closed circuit fresh water jacket cooling system " of a large Diesel engine,

indicating the components and flow directions.

4. Sketch and Describe Main Engine Cylinder Lub. Oil system, indicating the components and flow directions.
5. Sketch & Describe the Domestic Fresh water system of a ship, indicating the components and flow directions.

UNIT-2 (Evaporators)

1. Sketch and describe a low pressure vacuum type evaporator indicating the components and flow path.
2. Explain with a simple line sketch a 'Single Stage' Flash evaporator, indicating all components.
3. Sketch and describe a Reverse Osmosis plant, indicating all parts and the flow path .
4. a) Why fresh water produced by Evaporator, must be treated ?
   b) Sketch and describe a Fresh Water Treatment Plant, for drinking water purposes .
5. a) What is the principle involved in flash evaporation ?
   b) Explain the Flash process of distillation with simple line sketches.

UNIT-3 (Deck Machinery)

1. Describe the Windlass system with a line diagram.
2. With respect to Deck Crane Hydraulic System, write short notes on:
   a) Hydrulic Fluids b) Deterioration of hydraulic fluids.
3. Draw the Hydraulic circuit for the Hoisting system of a Deck crane & explain how the system works.
4. Sketch and describe a Hatch cover hydraulic system.
5. a) What are the duties of a deck winch?
   b) During cargo gear survey, what items are checked by the surveyor ?

UNIT- 4 (Fire safety and Control)

1. Draw the 'Fire Tetrahedran' and explain the 'Chain reaction'
2. Explain the methods of extinguishing fire by removal of Oxygen, Heat and Fuel?
3. Differentiate between SCBA and EEBD with emphasis on their respective uses and limitations.
4. Draw the 'Flammability' diagram and explain LFL and UFL
5. Explain in detail the 'Fire Tetrahedran' and the impact of chain reaction. Describe how the breaking of Chain reaction is accomplished with the use of Halon or Drypowder.

UNIT- 5 (Fire protection as per SOLAS)

1. Explain the 'Bunker fuel oil' regulations with reference to the fire prevention.
2. Describe the additional requirements for the UMS operated or periodically unattended machinery spaces.
3. Sketch and describe the SCBA unit and explain the demand valve assembly with diagram.
4. Describe the 'Emergency escape' routes from the Engine room and Engine control room with diagrams . State the regulations on 'Means of escape'.
5. Explain the purpose and operation of 'Fire doors' and state the regulation on Fire doors