



CINEC Campus (Pvt) Ltd

Department of Marine Engineering

EDUCATION & TRAINING COURSE: PRE-SEA TRAINING COURSE FOR ENGINE RATINGS

COURSE CODE: ED 273 P1 (24-01)

ENGINEERING KNOWLEDGE – II

- Answer **ALL FIVE** questions
- Date: **04/06/2024**

Pass mark **50%**

Time allocated: **03 Hrs**

1.

- a) Sketch a 2-stroke engine timing diagram. Label the following areas: Suction, Compression, Combustion, Power Stroke, Exhaust, and Scavenging. (07 marks)
- b) Draw and label a marine 4-stroke engine timing diagram. (07 marks)
- c) Draw and explain three scavenging methods used in marine diesel engines. (06 marks)

2.

- a) List and describe fixed fire extinguishing systems onboard. (03 marks)
- b) List and briefly describe the six annexes of MARPOL. (06 marks)
- c) Expand the following acronyms: (06 marks)
 - i) IMO
 - ii) SOLAS
 - iii) MLC
 - iv) STCW
 - v) ISPS
 - vi) SOPEP
- d) Briefly explain the conditions for minimum work and rest hours onboard. (05 marks)

3.

- a) List four checks to be performed on the Main Engine during a deep sea watch. (04 marks)
- b) Describe the interlocks provided in the Main Engine. (04 marks)
- c) List two Main Engine shutdown alarms. (04 marks)
- d) Explain what an EEBD (Emergency Escape Breathing Device) is and its purpose. (04 marks)
- e) Briefly explain what a dead man alarm is and its purpose. (04 marks)

4.

- a) List four boiler alarms. (04 marks)
- b) Describe the gauge glass blowdown procedure with the aid of a sketch. (08 marks)
- c) List four alarm trips of a boiler burner. (04 marks)
- d) List four boiler mountings. (04 marks)

5.

- a) Draw and label a plate-type freshwater generator. (10 marks)
- b) Explain the purpose of a salinometer. (03 marks)
- c) List three checks to be performed on a running freshwater generator when at sea. (03 marks)
- d) Explain why quick-closing valves are fitted to fuel oil tanks. (02 marks)
- e) Name two types of pumps used onboard. (02 marks)



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ENGINEERING KNOWLEDGE – I

- This paper consists of THIRTY THREE (33) questions and the marks will be awarded,

1st question - Four(04) marks

Other questions -Three(03) marks each

- Answer ALL questions

Date: 04/06/2024

Pass mark 50%

Time allocated: 1Hour

1. How important is the lockout & tag-out system on board?

- a) Only for display purposes for the port state control instructor
- b) Only for display purposes for the master & DPA
- c) To acknowledge the danger and enhance safety
- d) All the above statements are incorrect

2. As per ISPS, what is the normal security level during cargo and regular operations while adhering to the level of security on board and at the port facility?

- a) Security level 1
- b) Security level 2
- c) Security level 3
- d) High Security level

3. What are the advantages of a central cooling system?

- a) Corrosion can be minimized
- b) Maintenance of filters is reduced
- c) Maintenance of valves is reduced
- d) All of the above

4. When should the FO Settling tank be drained for water?
- a) Just after the transfer pump stops
 - b) After the purifier stops
 - c) Half an hour before the transfer pump starts
 - d) None of the above
5. Which of the following is considered an enclosed space?
- a) Cabin
 - b) Galley
 - c) Double bottom tank
 - d) Bridge
6. What is a hunting gear?
- a) Cargo handling gear
 - b) Feedback mechanism of a rudder control
 - c) System of reversing gear
 - d) Gear system of a purifier
7. Which pump is not self-priming?
- a) Screw pump
 - b) Vane pump
 - c) Centrifugal pump
 - d) Gear pump
8. After January 1st, 2020, what is the limitation of sulfur emission outside ECA areas?
- a) 4.50%
 - b) 6.50%
 - c) 3.50%
 - d) 0.50%

9. The steering gear is used to:

- a) Turn the ship during sailing
- b) Start the main engine
- c) Turn the main engine flywheel
- d) Start the fire pump

10. Which portable fire extinguisher is suitable for an electrical fire?

- a) Foam
- b) Water
- c) CO₂
- d) None of the above

11. Which condition does not cause the auxiliary boiler burner to trip?

- a) Flame failure alarm
- b) Low low water level alarm
- c) Burner door swing out alarm
- d) Low steam pressure alarm

12. When the CO₂ alarm sounds in the engine room, what should you do?

- a) Immediately evacuate the engine room
- b) Inform the bridge
- c) Inform the chief engineer
- d) Abandon ship

13. What is your first action in case of a fire in the engine room?

- a) Try to extinguish the fire
- b) Inform the bridge
- c) Inform the chief engineer
- d) Immediately raise the fire alarm

14. What do the "standing orders" of the Chief Engineer mean?

- a) Verbal orders
- b) Verbal instructions
- c) Written orders
- d) Written instructions

15. What should the oil content in the water be when discharging bilge water through an oil monitoring device?

- a) 17 PPM
- b) 20 PPM
- c) Less than 15 PPM
- d) More than 20 PPM

16. Before entering an enclosed space:

- a) The space should be ventilated
- b) The space should be tested
- c) Obtain the Enclosed Space Entry Permit
- d) None of the above

17. What is the purpose of signs and notices?

- a) To make the place beautiful
- b) To provide information and warn of hazards
- c) To decorate the wall
- d) None of the above

18. Which MARPOL annex refers to the carriage of noxious liquid substances in bulk?

- a) Annex III
- b) Annex II
- c) Annex IV
- d) Annex V

19. Which of the following is not a boiler mounting?

- a) Safety valve
- b) Blowdown valves
- c) Main steam stop valves
- d) Indicator cock

20. Which information is not included in the muster list?

- a) General emergency alarm
- b) Abandon ship signal
- c) Officer in charge of maintaining LSA & FFA
- d) Watchkeeping duties

21. Who should carry out a risk assessment and when?

- a) Competent person / before starting work
- b) Chief engineer / before starting work
- c) Master / while work is in progress
- d) Competent person / after completion of work

22. Which is not a part of a marine 2-stroke diesel engine?

- a) Crosshead
- b) Stuffing box
- c) Inlet valve
- d) Inlet ports

23. Which is not a component of a steering system?

- a) Bridge transmitter
- b) Telemotor receiver
- c) Plunger & Barrel
- d) Rudder and steering mechanism

24. Which one is not an emergency?

- a) Fire
- b) Grounding
- c) Sailing
- d) Abandon ship

25. What should you do when there is no water in the boiler?

- a) Supply water to the boiler
- b) Close the main stop valve
- c) Stop the burner
- d) Increase air supply

26. Which one is not a part of a purifier?

- a) Activator
- b) Sliding bowl
- c) Bowl
- d) Gravity disc

27. Which statement about emergency power is incorrect? Emergency power is supplied to:

- a) Steering gears
- b) Emergency fire pump
- c) Main ballast pump
- d) Navigation lights

28. Boiler gauge glass is used to:

- a) Find the water level in the boiler
- b) Find the pressure in the boiler
- c) Find the oil level in the boiler
- d) Find the fuel level in the boiler

29. What is the reason for tappet clearance?

- a) For proper injection
- b) For proper automation
- c) For proper thermal expansion of valves
- d) For proper lubrication

30. On the expiry of the work permit during work in an enclosed space, what should be done?

- a) Everyone should leave the space
- b) Inform the chief engineer
- c) Stay in the space until a new permit is obtained
- d) None of the above

31. Which one is not a self-priming pump?
- a) Centrifugal pump
 - b) Gear pump
 - c) Screw pump
 - d) Reciprocating pump
32. What is the purpose of having a boiler forced draught fan?
- a) To pressure release the boiler
 - b) To purge the furnace
 - c) To increase the steam pressure
 - d) To blow down the boiler
33. What is the purpose of the boiler scum blowdown valve?
- a) To take boiler water samples
 - b) To remove floating solids from the boiler
 - c) To fill the boiler
 - d) To release air from the boiler