



CINEC Campus (Pvt) Ltd

Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (23-04)

ENGINEERING KNOWLEDGE – I

- Answer **ALL** questions
- This paper consists of **33** questions and the marks will be awarded,

1st question – Four (04) marks

Other questions -Three (03) marks each

- Date: 20.02.2024

Pass mark 50%

Time allocated: **01 Hour**

1. Lubricating oils are used in an engine for
 - a) Detergency
 - b) Dispersant
 - c) Reduce Friction
 - d) All of above

2. Which is possible in an enclosed space?
 - a) Lack of oxygen
 - b) Present of toxic gasses
 - c) Less lighting (no illumination)
 - d) All above

3. Fuel injector
 - a) Supplies fuel to the piston
 - b) Sprays fuel into the combustion space of cylinder
 - c) Supplies L.O to the cylinder liner
 - d) Supplies L.O to the gudgeon pin

4. Which is not a part of a purifier?
 - a) Plunger
 - b) Sliding bowl
 - c) Bowl
 - d) Gravity disc

5. Which of the following is **not** a boiler mounting?
- a) Mechanical seal
 - b) Main steam stop valve
 - c) Gauge glass
 - d) Safety valve
6. Muster list does not contain
- a) Duties of each crew member in case of a fire
 - b) Location of muster station
 - c) Duties of each crew member in case of abandoning the ship
 - d) Life boat starting procedure
7. Emergency stops for main engine are located at
- a) Bridge
 - b) Engine control room
 - c) Emergency maneuvering stand
 - d) all above places
8. Which is not a part of 4 stroke diesel engine
- a) Gudgeon pin
 - b) exhaust valve
 - c) Crosshead bearing
 - d) main bearing
9. Identify the fixed firefighting system that can be found on board
- a) Fire main
 - b) CO₂ battery system
 - c) Hyper mist system
 - d) All above
10. In a large 2 stroke engine, what is the purpose of stuffing box
- a) It seals scavenge space and crank case
 - b) It seals cylinder head and liner
 - c) It seals scavenge air cooler and scavenge space
 - d) It seals turbo charger and scavenge space
11. Reason for having a tappet clearance is
- a) For proper injection
 - b) For proper atomization
 - c) For thermal expansion of valves
 - d) For proper lubrication

12. What is Annex 4

- a) Prevention of pollution by oil
- b) Prevention of pollution by noxious substances in bulk
- c) Prevention of pollution by harmful substances in packaged form
- d) Prevention of pollution by sewage

13. MARPOL regulations controls,

- a) Oil pollution by ships
- b) Pollution from garbage by ships
- c) Pollution from sewage by ships
- d) All of above

14. If the vessel is at port, you noticed no water level in the gauge glass, what is your first action,

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

15. In oil record book each completed page need to be signed by

- a) chief engineer
- b) master
- c) duty engineer
- d) company superintendent

16) Evaporative distillation fresh water generators used to heat sea water by,

- a) Jacket cooling water
- b) LUB oil
- c) Fuel oil
- d) None of above

17. Steering gear is the equipment for

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

18) Which portable fire extinguisher is suitable for electrical fire

- a) foam
- b) water
- c) CO₂
- d) None of above

19) When the CO₂ alarm sounds in the engine room

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

20) Things not found in **SOPEP** locker,

- a) Saw dust
- b) Fire axe
- c) Absorbing pad
- d) Shovel

21) What is the purpose of sign and notice,

- a) To make the place beautiful
- b) Information and warning hazards
- c) To decorate the wall
- d) All of the above

22) On the expiry of the work permit during the work in an enclosed space,

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

23) Boiler gauge glass is used

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

24) In a centrifugal pump what is the purpose of the impeller

- a) It provides pressure to the liquid
- b) It provides kinetic energy to the liquid
- c) It provides potential energy to the liquid
- d) It converts kinetic energy to pressure energy

25) Which operation is not coming under oil record book

- A. Bunkering of fuel oil
- B. Pumping out engine room bilges
- C. Collection and disposal of oil residues
- D. Incineration of oily rags

26) what is the purpose of having boiler forced draught fan?

- a) To cool down the boiler.
- b) To purge the furnace
- c) To increase the steam pressure.
- d) To blow down the boiler.

27) Which one of following is **not** a measuring tool?

- a) In side micrometer
- b) Center punch
- c) Vernier caliper
- d) Steel ruler

28) what is the function of A/C compressor?

- a) Compressed refrigerant gas
- b) Condensed refrigerant gas
- c) Compressed refrigerant liquid
- d) Condensed refrigerant vapor

29) What kind of pumps are fitted to the steering gear system

- a) Centrifugal pumps
- b) Variable delivery pumps
- c) Diaphragm pumps
- d) Axial flow pumps

- 30) What is the purpose of boiler scum blow down 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
- 31) What is the most efficient scavenging method used in modern marine engines
- a) Cross scavenging
 - b) Loop scavenging
 - c) Uni flow scavenging
 - d) Natural aspiration
- 32) What items **cannot** be burnt in incinerator
- a) Oily rags
 - b) Card board
 - c) Paper
 - d) Cooking oil
- 33) When you notice oil on the deck during bunkering, what is your first action?
- a) Inform duty engineer
 - b) Notify the terminal/barge
 - c) Stop bunkering and inform the engineer officer in charge of bunkering
 - d) Call the chief officer



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ENGINEERING KNOWLEDGE – II

- Answer **ALL FIVE** questions
- Date: 20/02/2024

Pass mark **50%**Time allocated: **03 Hrs**

1. A) Write down 6 Annexes of MARPOL 73/78 (06 marks)

B) What is ISPS & explain the three security levels (In- short) (04 marks)

C) Describe the following terms. (2 marks each)

 - IMO
 - STCW
 - ISPS
 - SOLAS
 - MLC
2. A) Draw a sketch of a **2-stroke** engine timing diagram and name *Suction, compression, Combustion, Expansion or power stroke, exhaust & scavenging* areas. (07 marks)

B) Draw & name marine **4-stroke** timing diagram (07 marks)

C) Advantages & disadvantages of both timing diagrams (03 marks)

D) What are the scavenging methods used in marine engine? (03 marks)
3. A) Write down 4 portable fire extinguishers & their color code (08 marks)

B) What are the fixed fire extinguishing systems onboard (03 marks)

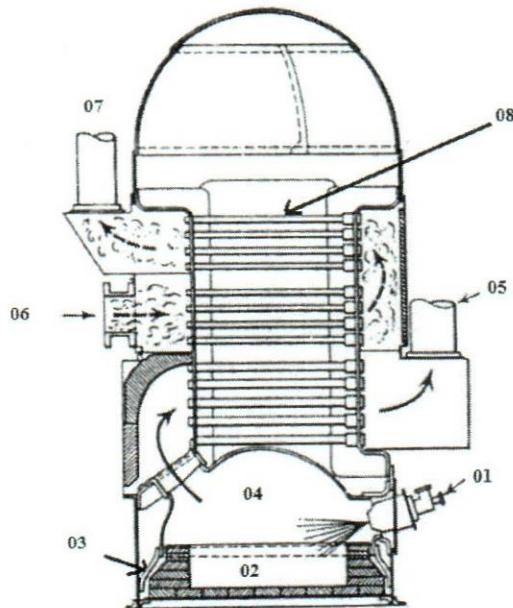
C) Write down **6** personal protecting equipments that use onboard (03marks)

D) what is meant by enclosed space (02marks)

E) What is meant by muster list (02marks)

F) What is meant by Risk Assesment (02marks)

4. A) Name the components of the below composite boiler. (08 marks)



- B) State 4 boiler alarms (04 marks)
- C) State *three* purposes of steam used onboard. (03 marks)
- D) Write down boiler gauge glass blow down procedure (05 marks)
5. A) Draw & name a plate type freshwater generator. (10 marks)
- B) Write down *three* checks to be done in a running Fresh water generator when at sea. (03 marks)
- C) Name the 3 tanks which are located in sewage treatment plant (03 marks)
- D) State the reason why quick closing valves are fitted to fuel oil tanks (02 marks)
- E) State four types of pumps using onboard. (02 marks)