

- c) All steam valves are shut
d) All of a, b, c
9. Where do you dry your working cloths (cover all) on board a ship?
a) Boiler room
b) Engine room railings
c) Drier room
d) Funnel
10. Boiler Sight glass or Gauge glass is used for;
a) Find water level in the boiler
b) Find pressure in the boiler
c) Find oil level in the boiler
c) To find oxygen in the boiler
11. What information you will find in Muster-list when join on a ship?
a) Your engine room duty
b) All ship crew duty and responsibility
c) Master responsibility
c) All ship crew duty in an emergency
12. When CO2 alarm rings in the engine room, what is your correct action?
a) Inform bridge wait for the captain order
b) Get ready to fight the fire
c) Leave the engine room
d) inform to all engineers wait for help
13. Machinery Space Log Books are of great importance for following reasons;
a) They serve as history record for certain problem, concerning machinery
b) They serve as evidence in case of an inquiry/ Court case
c) They serve as evidence for proper running of Machinery)
d) All of a, b, c
14. Advantage of Center cooling system
a) Corrosion can be kept to a minimum
b) Maintenance of valves and pipeline reduced
c) Maintenance of filters reduced
d) All of a, b, c
15. Which one is **not** a boiler mounting?
a) Gauge glass or sight glass
b) Blow down valve
c) Main steam stop valve
d) Air starting valve
16. The purpose of Fuel injector is;
a) Supplies fuel to the piston
b) Supplies lub oil to the cylinder liner
c) Sprays fuel into the combustion space of cylinder
d) Supplies lub oil to the gudgeon Pin
17. In the purifier gravity disc determines;
a) The quality of separation
b) Bowl RPM
c) Sludge practical removal
d) Motor ampere
18. The purpose of Ism code is _____.
a) To avoid damage to the environment and to the ship
b) To ensure safety at sea
c) To prevent human injury or loss of life
d) All of a, b, c
19. Which one of the following is **not** a watch duty?
a) Maintenance work
b) Keeping machineries under observation
c) Cleaning and painting
d) Bunkering operation

20. During bunkering bridge should hoist.
- a) Blue flag
 - b) White flag
 - c) Red flag
 - d) Yellow flag
21. Which of the following is suitable for manufacture of drill bits
- a) Mild steel
 - b) High carbon steel
 - d) Cast Iron
 - d) Wrought iron
22. Which is **not** internal combustion engine
- a) 2 stroke marine engine
 - b) 4 stroke petrol engine
 - c) 4 stroke diesel engine
 - d) Steam turbine
23. Reason for tappet clearance is
- a) For proper injection
 - b) For proper atomization
 - c) For proper lubrication
 - d) For thermal expansion of valves
24. Cofferdam is a _____.
- a) Void space between two water tight bulkheads
 - b) Space between two engines
 - c) Space between two adjacent decks
 - d) All of a, b, c
25. Most suitable instrument to measure cylinder bore of an engine
- a) Vernier caliper
 - b) Steel ruler
 - c) Inside micrometer
 - d) Outside micrometer
26. Which is **not** a part of a 2 stroke marine diesel engine
- a) Cylinder
 - b) Cross head
 - c) Stuffing box
 - d) Inlet valve
27. Valves are provided in the piping system to
- a) Start the liquid flow
 - b) Regulate the liquid flow
 - c) Stop the liquid flow
 - d) All of the above
28. When there is no water in the boiler
- a) Stop the burner
 - b) Supply water to the boiler
 - c) Shut down air supply to burner
 - d) Close main stop valve
29. Which of the following is an enclosed space
- a) Boiler flat
 - b) Purifier flat
 - c) Double bottom tank
 - d) Cabin
30. The purpose of sign and notice is _____.
- a) To make the place beautiful
 - b) To inform and warning hazards
 - c) To read when you are nothing to do
 - d) To decorate the wall

31. Emergency Bilge suction valve
- a) Is connected to the main s.w pump
 - b) Is connected to the bilge pump
 - c) Is connected to the sludge pump
 - d) Is connected to the fuel transfer pump
32. In a large two stroke engine the bed plate, A frame and entablature are held together in compression by
- a) Tie bolts
 - b) Holding down bolts
 - c) Fitted bolts
 - d) External casing
33. Relief valves can be found in
- a) Screw pumps
 - b) Air compressors
 - c) Main engine cylinder head
 - d) All above

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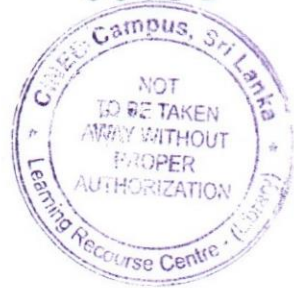
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Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (22-003 & 22-003A)

ENGINEERING KNOWLEDGE – II



- Answer **ALL FIVE** questions
- Date: 25.02.2023
- Time allocated: 03 Hrs

Pass mark 50%

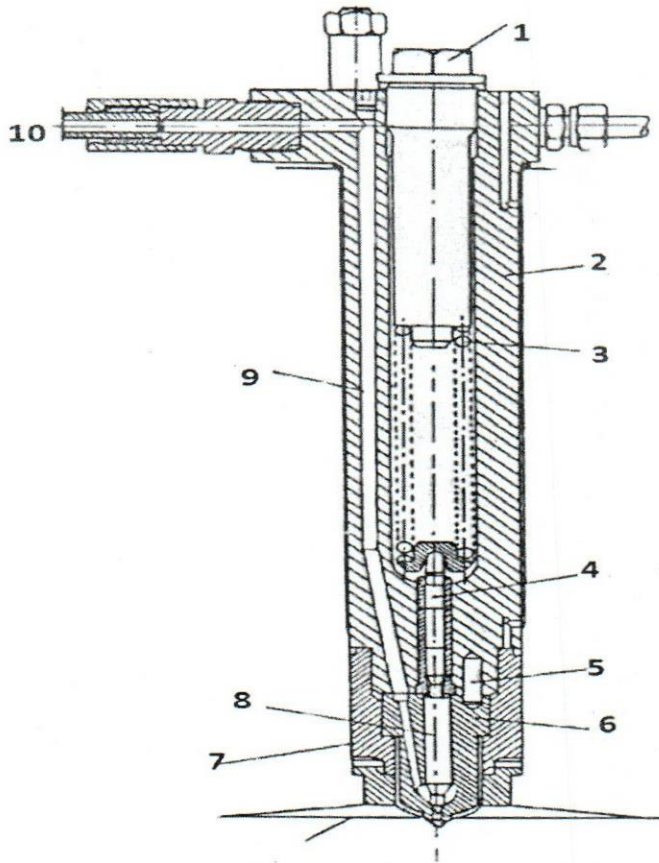
Answer all question.

- Define Purifier and Clarifier. (2 marks)
 - Draw a sketch of a Composite Boiler and name all important parts. (6 marks)
 - Write Down 2 Boiler Mountings and their purpose. (2 marks)
 - Write down 2 types of Manufacturing Process. (2 marks)
 - What is the purpose of a Circuit Bracker? (2 marks)
 - What is the purpose of an Intercooler in the Turbo Charged Engines? (2 marks)
 - Write Down 2 types of Heat Treatment Processes. (2 marks)
 - Write down 2 types of Rudder Actuating Systems (2marks)

- Write Down 4 kinds of Engine Room watches (4 marks)
 - Briefly explain following terms.
 - Ventilation Flap
 - Quick Closing Valve
 - Muster Station (each 2 marks)
 - Draw a Fire Triangle and name it. (3 marks)
 - Write Down 4 kinds of Portable Fire Extinguishers and their colour code. (4 marks)
 - Briefly explain, what is your action in case of fire in the Engine Room while you are on watch (3 marks)

- Draw a sketch of a 4 Stroke Engine Timing Diagram and name it. (6 marks)
 - What is Overlapping Period? (2 marks)
 - What is the purpose of Overlapping Period? (2 marks)
 - Draw a sketch of a Basic Refrigeration Diagram and name important components. (6 marks)
 - Briefly explain above components. (4 marks)

- Draw a sketch of one of below Pump and name it. (8 marks)
 - Axial Flow Pump
 - Gear Pump
 - Vane pump
 - Write down 2 kinds of Coolers. (2 marks)
 - What is the advantage of a Center Cooling System? State 2 of them. (4 marks)
 - How do you keep maintain emergency escape of engine room? (4 marks)
 - How do you identify or differentiate co2 alarm? (2marks)



- a) Name all numbered parts of above Sketch of fuel injector (8 marks)
- b) Write down 2 main parts of a Fuel Oil Injector Pump. (2 marks)
- c) Draw a sketch of one of below Measuring Instrument. (6 marks)
- i) Vernier Caliper
 - ii) Micrometer
- d) Write down 4 kinds of Files with sketches, which differ in shape. (4 marks)

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Faculty of Marine Engineering

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

COURSE CODE : ED 273 P1(BATCH 22-02)

ENGINEERING KNOWLEDGE – 1

- This paper consists of THIRTY THREE questions and the marks will be awarded,
 1st question - Four(04) marks Other questions -Three(03) marks each

- Answer ALL questions

Date: 22/01/2023

Pass mark 50%

Time allocated: 1Hrs

1) Engine can be in standby mode when the vessel in?

- a) Arrival/ departure port
- b) Poor visibility
- c) Restricted waters
- d) All of above

2) The purpose of a relief valve

- a) To relief excess temperature
- b) To regulate the flow
- c) To regulate the excess pressure
- d) None of above

3) Advantage of center cooling system

- a) Corrosion can be kept to a minimum
- b) Maintenance of filters reduced
- c) Maintenance of valves reduced
- d) All of above

- 4) 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
- 5) Which of the following is an enclosed space.
- a) Cabin
 - b) Galley
 - c) Double bottom tank
 - d) Bridge
- 6) Hunting gear is a
- 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 pump?
- a) Screw pump
 - b) Vane pump
 - c) Centrifugal pump
 - d) Gear pump
- 8) Welding
- a) Is a method of joining metal by fusion
 - b) Is method of joining metal by electric current
 - c) Is a method of joining metal by a filler rod
 - d) All of above
- 9) 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
- 10) Which portable fire extinguisher is suitable for electrical fire
- a) foam
 - b) water
 - c) CO₂
 - d) None of above
- 11) Which is not a part of a fire main
- a) Pumps
 - b) Isolating valve
 - c) Emergency fire pump
 - d) Activating cylinder

12) When the CO₂ alarm sounds in the engine room

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

13) What is your first action in case of fire in the engine room

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

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

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

15) What should the oil content in the water when discharge bilge water through oil monitoring device

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

16) Before enter the enclosed space

- a) Space should be ventilator
- b) Space should be tested
- c) Permit to work system should be used
- d) All the above

17) 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

- 18) 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
- 19) Main engine turbo charger should be check for,
- a) Oil level of both gas and air side
 - b) Air filter condition
 - c) Oil temperature
 - d) All of above
- 20) Hack saw blade cuts on the
- a) Forward stroke
 - b) Return stroke
 - c) Forward and return stroke
 - d) Direction of force
- 21) The main cause for eye injuries
- a) Exposure to particle and foreign bodies
 - b) Ultraviolet rays
 - c) Infra-red rays
 - d) All of above
- 22) Which is not a part of a marine 2 stroke diesel engine
- a) Cross head
 - 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 emergency
- a) Fire
 - b) Grounding
 - c) Sailing
 - d) Abandon ship

25) When there is no water in the boiler,

- a) Supply water to the boiler
- b) Close main stop valve
- c) Stop 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 is not a internal combustion

- a) 4 stroke diesel engine
- b) 4 stroke petrol engine
- c) 2 stroke marine engine
- d) Steam turbine

28) 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

29) Reason for tappet clearance

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

30) 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

31) During bunkering bridge should hoist

- a) Blue flag
- b) White flag
- c) No smoking sign
- d) Red flag

32) 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

33) Emergency Bilge suction valve

- a) Is connected to the main S.W pump
- b) Is connected to the bilge pump
- c) Is connected to the sludge pump
- d) Is connected to the fuel transfer pump

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Department of Marine Engineering
EDUCATION & TRAINING COURSE: PRE-SEA TRAINING COURSE FOR ENGINE RATINGS
COURSE CODE: ED 273 P1 (22-02)
ENGINEERING KNOWLEDGE – II

- Answer **ALL FIVE** questions
- Date: 22/01/2023

Pass mark 50%

Time allocated: 03 Hrs

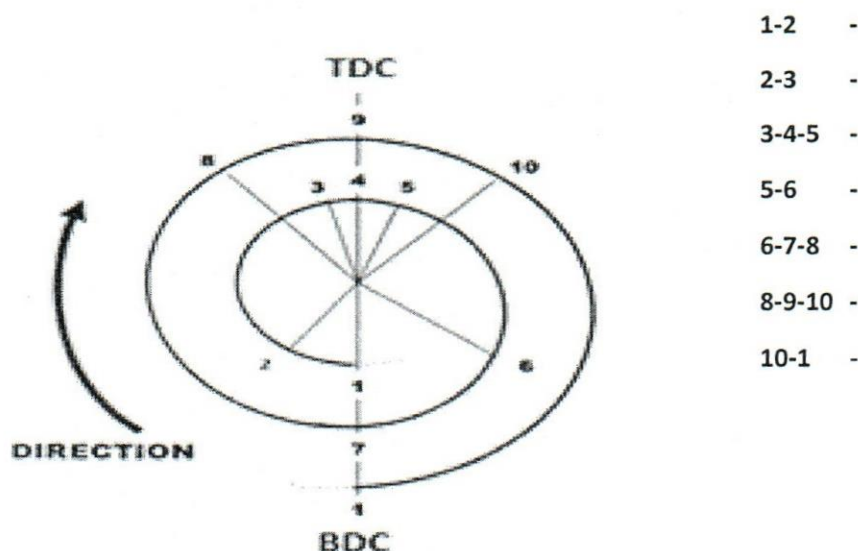
- 1)
- a. State the *six* MARPOL 73/78 annexes. (06 marks)
 - b. Explain(in-short) three of following terms (10 marks)
 - I. Drill
 - II. Muster station
 - III. Ventilation flap
 - IV. Quick closing valve
 - V. Muster list
 - c. Write down 4 portable fire extinguishers and their colour code (04 marks)
- 2)
- a. State **2** main potential hazards can be occurred in an enclosed space (02 marks)
 - b. Draw a sketch of a centrifugal pump and name it. (07 marks)
 - c. Draw a double acting resciprocating p/p & name it. (07 marks)
 - d. HFO #1 Port tank's depth is 950 cm, Sounding is 534 cm, Trim is 1m Head,
 - I. Find the Ullage. (02 marks)
 - II. Find the remaining oil (ROB) in the tank. (02 marks)

***** ULLAGE TABLE *****

ULLAGE DEPTH CM	TRIM BY HEAD 1.0M	EVEN KEEL 0.0M	CAPACITIES IN CUBIC METERS					
			TRIM BY STERN					
			-0.5M	-1.0M	-1.5M	-2.0M	-2.5M	-3.0M
400.0	2351.1	2350.6	2350.3	2350.1	2349.8	2349.6	2349.3	2349.1
402.0	2347.5	2347.0	2346.8	2346.5	2346.3	2346.0	2345.8	2345.6
404.0	2344.0	2343.5	2343.2	2343.0	2342.7	2342.5	2342.3	2342.0
406.0	2340.4	2339.9	2339.7	2339.5	2339.2	2339.0	2338.7	2338.5
408.0	2336.9	2336.4	2336.2	2335.9	2335.7	2335.4	2335.2	2334.9
410.0	2333.4	2332.9	2332.6	2332.4	2332.1	2331.9	2331.6	2331.4
412.0	2329.8	2329.3	2329.1	2328.8	2328.6	2328.3	2328.1	2327.8
414.0	2326.3	2325.8	2325.5	2325.3	2325.0	2324.8	2324.6	2324.3
416.0	2322.7	2322.2	2322.0	2321.7	2321.5	2321.3	2321.0	2320.8
418.0	2319.2	2318.7	2318.4	2318.2	2318.0	2317.7	2317.5	2317.2

3)

- a. Draw a sketch of a 2-stroke engine timing diagram and name it. (07 marks)
- b. Note down the main points of the following four-stroke marine diesel engine cycle as per the number listed below. (07 marks)



- c. Write down **three** types of scavenging methods (03 marks)
- d. Write down **three** personal protective equipment and their purposes (03 marks)

4)

- a. State the **two** types of actuator in steering system. (02 marks)
- b. State **three** components in the steering gear system. (03 marks)
- c. Define purifier and clarifier (04 marks)
- d. Draw a sketch of a basic refrigeration diagram and name it. (06 marks)
- e. Write down **three** checks to be done in a running Fresh water generator when at sea. (03 marks)
- f. Write down 2 types of valves used in engine room (02 marks)

5)

- a. Write down **two** types of boilers. (02 marks)
- b. State **three** purposes of steam used onboard. (03 marks)
- c. Write the procedure of a guage glass blow down of the marine boiler. (05 marks)
- d. State five boiler alarms. (05 marks)
- e. Write full terms of following abbreviations. (05 marks)
- I. MLC
 - II. DPA
 - III. SMS
 - IV. IMDG CODE
 - V. LSA



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Faculty of Marine Engineering

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

COURSE CODE : ED 273 P1(BATCH 22-02)

ENGINEERING KNOWLEDGE – 1

- This paper consists of THIRTY THREE questions and the marks will be awarded,
1st question - Four(04) marks Other questions -Three(03) marks each

- Answer ALL questions

Date: 22/01/2023

Pass mark 50%

Time allocated: 1Hrs

1) Engine can be in standby mode when the vessel in?

- a) Arrival/ departure port c) Restricted waters
- b) Poor visibility d) All of above

2) The purpose of a relief valve

- a) To relief excess temperature
- b) To regulate the flow
- c) To regulate the excess pressure
- d) None of above

3) Advantage of center cooling system

- a) Corrosion can be kept to a minimum c) Maintenance of valves reduced
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- 5) Which of the following is an enclosed space.
- a) Cabin
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 - c) Emergency fire pump
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12) When the CO₂ alarm sounds in the engine room

- a) Immediately evacuate the engine room
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- c) Inform to chief to chief engineer
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