

PAST PAPERS

Faculty	Department / Section/Division
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Past Papers

Faculty of Marine Engineering

**Engine Rating  
(Motorman)**

**2019-2022**

Document Control & Approving Authority	Senior Director – Quality Management & Administration
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CINEC Campus (Pvt) Ltd

Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (22-01)

ENGINEERING KNOWLEDGE – II



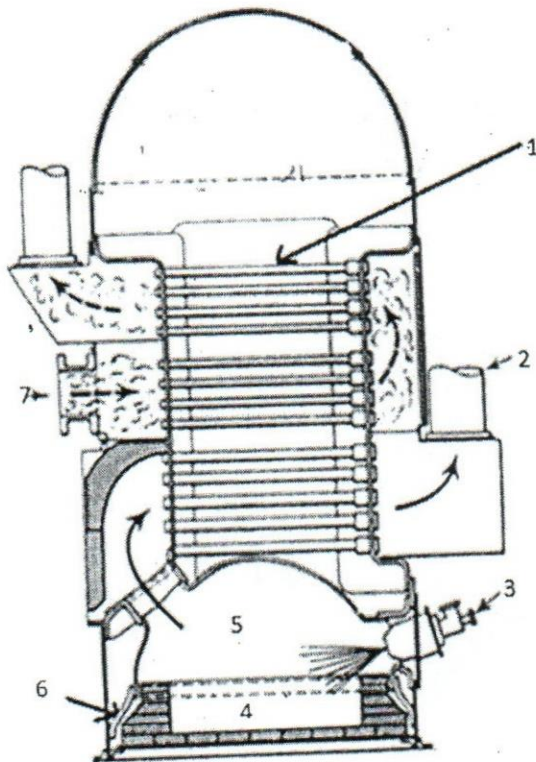
- Answer **ALL FIVE** questions
- Date: 17.11.2022

Pass mark 50%

Time allocated: 03 Hrs

- 1) a) Write down **two** types of boilers  
b) State **three** uses of steam onboard  
c) Write down **two** boiler mountings and their purpose  
d) Name the followings of the composite boiler

(02marks)  
(03marks)  
(04marks)  
(07marks)



- e) State **four** boiler alarms.

(04 marks)

2)

- a) Write down **6 Annexes** of MARPOL 73/78.
- b) Describe the following terms,
  - I. M.S.D.S
  - II. DPA
  - III. I.M.D.G CODE

(06 marks)

(08 marks)



- IV. ISPS CODE
- V. MLC
- VI. IMO
- VII. ORB
- VIII. FFA

c) Draw a centrifugal pump & name it.

(06 marks)

3)

a) Write down safety checks of the followings, (02 each)

(06 marks)

- I. Before bunkering
- II. During bunkering
- III. After bunkering

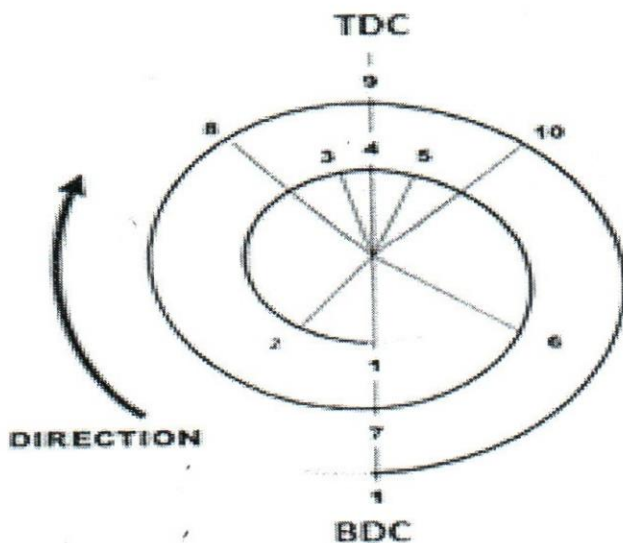
b) Write down the followings' **running time checks** when you are on duty, (03 - each)

- I. Purifier (03 marks)
- II. Air compressor (03 marks)
- III. Main sea water pump (03 marks)
- IV. Generator (03 marks)

c) State 2 types of portable fire extinguishers which can be used for an "OIL" fire. (02 marks)

4)

a) Note down the main points of the following four-stroke marine diesel engine cycle as per the number listed below. (07 marks)



1-2 -

2-3 -

3-4-5 -

3-4-5 -

5-6 -

6-7-8 -

8-9-10 -

10-1 -

b) Write down the scavenging methods for 2 stroke engines. (03 marks)

(03 marks)

c) State three main engine fault alarms. (03 marks)

(03 marks)

d) Draw a plate type freshwater generator & name it. (07 marks)

(07 marks)

5)

a) Draw the basic refrigeration cycle and "explain the duties" of main components. (10 marks)

b) Describe the following terms (in -short)

(10 marks)

- I. fuel injector
- II. mixing Column
- III. hydrophore tank
- IV. Scupper plugs
- V. Ullage



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Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (22-002 & 22-002A)

ENGINEERING KNOWLEDGE – II

- Answer **ALL FIVE** questions
- Date: 16.10.2022

Pass mark 50%

Time allocated: 03 Hrs

01.

- Write down two types of boilers (2marks)
- What is the purpose of steam onboard state three of them (3marks)
- Write down 2 boiler mountings and their purpose (2marks)
- What do you understand by (3marks)
  - MLC 2006
  - DPA
  - SMS
- Draw a sketch of a basic refrigeration diagram and name it (6marks)
- Briefly explain above components (4marks)

02.

- State all MARPOL 73/78 annexes (6 marks)
- Briefly explain three of following terms (6marks)
  - Drill
  - Muster station
  - Ventilation flap
  - Quick closing valve
  - Muster list
- Write down 4 heat treatment process (4marks)
- Write down 4 portable fire extinguishers and their colour code (4marks)

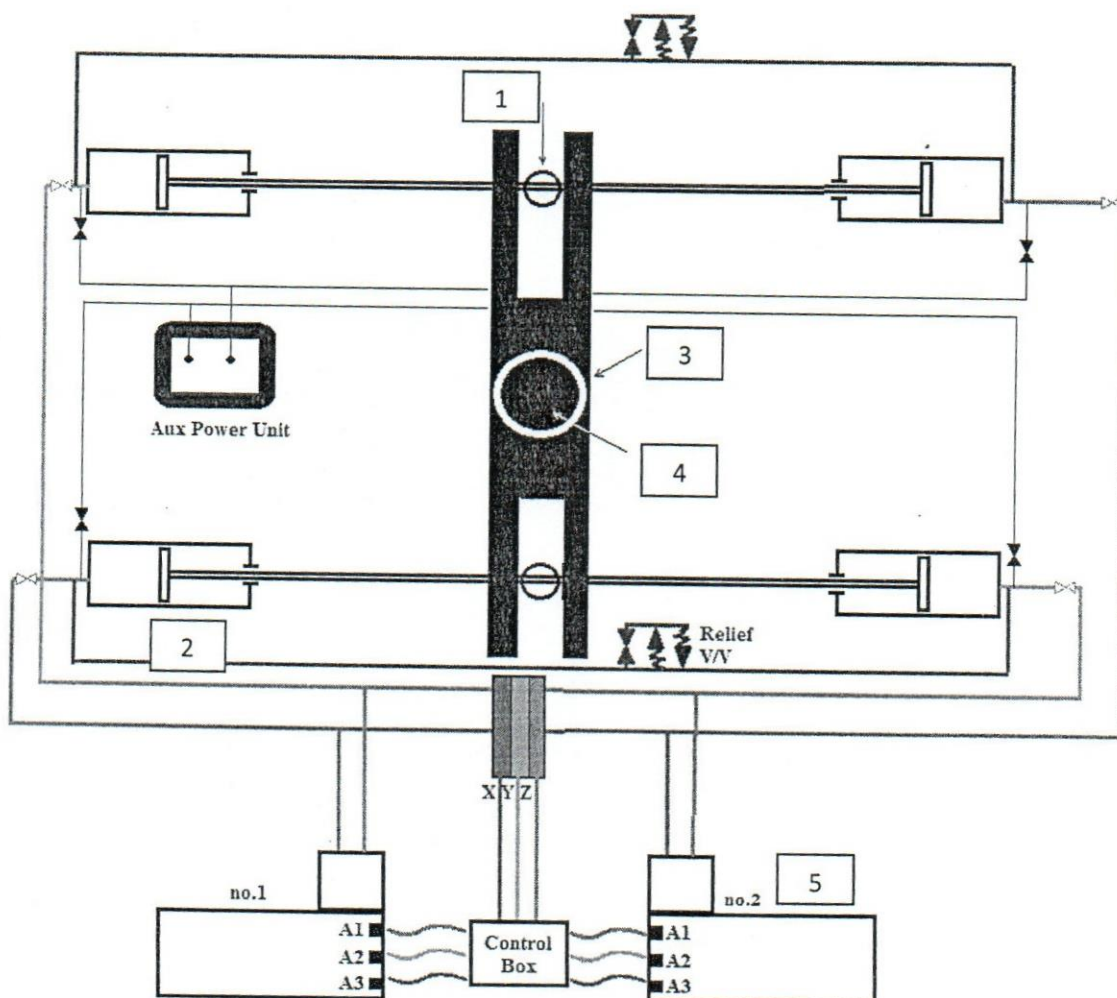
03.

- Draw a sketch of one of below measuring tool and name it (6marks)
  - Micrometer
  - Vernier calliper
- State 3 main potential hazards can be occurred in an enclosed space (3marks)
- Write down 2 instruments which used to check enclosed space (2marks)
- Draw a sketch of a centrifugal pump and name all important parts (6marks)
- Write down two kinds of sealing methods of a centrifugal pump (2marks)
- State a method of priming in centrifugal pump (1marks)

04.

- Draw a ship and name all important places and parts (8marks)
- Draw a sketch of a 2-stroke engine timing diagram and name it (6mark)
- Write down 3 kinds of scavenging methods (3marks)
- Write down 3 personal protective equipment and their purposes (3marks)

05.



- Name the parts of above diagram (6marks)
- Define purifier and clarifier (2marks)
- Briefly explain the starting method of a purifier (6marks)
- What procedures will be taken when changing watch from deep sea watch to standby watch (4marks)
- Write down 2 types of valves used in engine room (2marks)



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Faculty of Marine Engineering  
Department of Marine Engineering

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

COURSE CODE : ED 273 P1(BATCH 22-002 &22-002A)

ENGINEERING KNOWLEDGE – 1

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

- Answer ALL questions

Date: 16.10.2022

Pass mark 50%

Time allocated: 1Hrs

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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,
- 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) CO<sub>2</sub>
  - 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) Which is not a part of a injector pump
- a) Plunger
  - b) Barrel
  - c) Needle valve
  - d) Delivery valve
- 13) When the CO<sub>2</sub> alarm engine in the engine room
- a) Leave the engine room
  - b) Inform to bridge
  - c) Inform to chief to chief engineer
  - d) Abandon ship

- 14) 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
- 15) Things not found in sopep locker
- a) Saw dust
  - b) Fire axe
  - c) Absorbing pad
  - d) Shovel
- 16) 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
- 17) 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
- 18) If gas cylinder leaks from outlet valve cannot be stopped,



- a) Repair the valve
- b) Fully open the outlet valve
- c) Take to the open deck, away from heat or ignition and slowly discharge to atmosphere
- d) None of above

19) 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

20) 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

21) 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

22) Hack saw blade cuts on the

- a) Forward stroke
- b) Return stroke
- c) Forward and return stroke
- d) Direction of force

23) The main cause for eye injuries

- a) Exposure to particle and foreign bodies
- b) Ultraviolet rays
- c) Infra-red rays
- d) All of above

24) Which is not a part of a marine 2 stroke diesel engine

- a) Cross head
- b) Stuffing box
- c) Inlet valve
- d) Inlet ports

25) Which is not a component of a steering system

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

26) Annealing of steel means,

- a) Heating upto 950°C and rapid cooling
- b) Heating upto 950°C and slow cooling
- c) Heating upto 950°C and cooling in the air
- d) None of the above

27) Which one is not emergency

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

28) 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

29) Which one is not a part of a purifier

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

30) The ARC welding equipment are

- a. Welding holders
- b. Welding cables
- c. Welding transformers
- d. All of the above

31) Which is not a internal combustion

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

32) 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



33) Reason for tappet clearance

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

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CINEC Campus (Pvt) Ltd

Department of Marine Engineering

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

COURSE CODE : ED 273 P1(BATCH 21-04)

ENGINEERING KNOWLEDGE – 1



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

- Answer ALL questions

Date: 14.07.2022

Pass mark 50%

Time allocated: 1Hrs

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- (1) What is the SI unit for energy?  
a) Joule (J)      b) Kilo joule (KJ)      c) Ampere (A)      d) Kelvin (K)
- (2) Emergency Bilge injection 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
- (3) The main course of eye injury are  
a) Infrared rays-Gas  
b) Ultra-Violet rays-electric welding  
c) Exposure to particles and foreign bodies  
d) All of above
- (4) Breathing apparatus is a  
a) Respiratory equipment                      c) Both are correct  
b) Non respiratory equipment                d) Non of above
- (5) When CO2 alarm is given by a siren/bell  
a) Should inform Chief engineer  
b) Should report at the muster  
c) Should vacate from the engine room  
d) Should report to the engine control room

- (6) What is your first action in case of fire in E/R
- a) Immediately try to extinguish the fire
  - b) Close ventilation flaps
  - c) Keeping machineries under observation
  - d) Immediately raise the fire alarm
- (7) 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
- (8) 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
- (9) 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
- (10) At least how many safety valves should be fitted to a marine boiler
- a) 1
  - b) 2
  - c) 4
  - d) 3
- (11) What items cannot be burnt in incinerator
- a) Oily rags
  - b) Card board
  - c) Paper
  - d) Heavy metals
- (12) Quick closing valves are not situated in
- a) Fresh water line
  - b) HFO lines
  - c) Lub oil lines
  - d) Diesel oil lines
- (13) Emergency fire pump should not be situated in
- a) Bow thrust room
  - b) Engine room
  - c) Steering compartment
  - d) Pump room



- (14) What is the use of volute casing of a centrifugal pump
- a) Convert pressure energy into kinetic energy
  - b) Convert potential energy into pressure energy
  - c) Convert kinetic energy into pressure energy
  - d) None of above
- (15) Relief valves can be found in
- a) Screw pumps
  - b) Air compressors
  - c) Main engine cylinder head
  - d) All above
- (16) What is the danger of an enclosed space
- a) Low oxygen levels
  - b) Toxic gases
  - c) Poor lighting
  - d) All above
- (17) 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
- (18) CO<sub>2</sub> is used as a fire extinguishing medium, because
- a) It does not support combustion
  - b) Non corrosive
  - c) Non conductive
  - d) All above
- (19) 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
- (20) A/C compressor
- a) Compresses refrigerant gas
  - b) Condenses refrigerant gas
  - c) Compresses refrigerant liquid
  - d) Condenses refrigerant vapors
- (21) Which is not a part of a purifier?
- a) Plunger
  - b) Sliding bowl
  - c) Bowl
  - d) Gravity disc

(22) Welding

- a) Is a method of joining metal by fusion
- b) Is a method of joining metal by electric current
- c) Is a method of joining metal by a filler rod
- d) All of above

(23) 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

(24) Lubricating oils are used in an engine for

- a) Reduce friction
- b) Transfer heat
- c) Prevent corrosion
- d) All of above

(25) What is the SI unit for pressure? ( $P=F/A$ )

- a) NM
- b) Nm-1
- c) Nm-2
- d) Nm-3

(26) During bunkering bridge should hoist

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

(27) When shall you use goggles?

- a) When the floor plates have become slippery.
- b) Whenever you engage in a work which there is a risk of harm to eyes.
- c) When the noise is unbearable and you need to talk.
- d) There is no need of wearing them.

(28) When you notice oil on the water near your vessel during bunkering, you should first?

- 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

(29) In a four-stroke cycle of a marine diesel engine, the sequence of operations is

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- a) Suction, compression, expansion and exhaust
- b) Suction, expansion, compression and exhaust
- c) Expansion, compression, suction and exhaust
- d) Compression, expansion, suction and exhaust

(30) What is the use of volute casing of a centrifugal pump?

- a) Convert pressure energy into kinetic energy
- b) Convert potential energy into pressure energy
- c) Convert kinetic energy into pressure energy
- d) none of above

(31) Cofferdam is a

- a) void space between two water tight bulkheads
- b) space between two engines
- c) space between two adjacent decks
- d) all above

(32) MARPOL regulations controls,

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

(33) Which is the most suitable instrument to measure cylinder bore of an engine?

- a) Vernier Caliper
- b) Inside micrometer
- c) Steel ruler
- d) Pressure gauge

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CINEC Campus (Pvt) Ltd

Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (21-04)

ENGINEERING KNOWLEDGE – II



- Answer **ALL FIVE** questions
- Date: 14.07.2022

Time allocated: 03 Hrs

Pass mark 50%

(1)

- a) Draw & name the fire triangle. (03 marks)
- b) state 3 fixed fire extinguishing methods used onboard. (03 marks)
- c) Describe the following terms. (08 marks)
  - i. I.M.D.G code
  - ii. M.S.D.S
  - iii. ISM CODE
  - iv. SOPEP
- d) write down 4 personnel protective equipment. (04 marks)
- e) write down 2 types of portable fire extinguishers which can be used for an "OIL" fire. (02 marks)

(2)

- a) Describe the following terms (in –short) (10 marks)
  - I. boiler safety valve
  - II. fuel injector
  - III. mixing Column
  - IV. bunkering
  - V. portable fire extinguisher
- b) state **four** boiler alarms (04 marks)



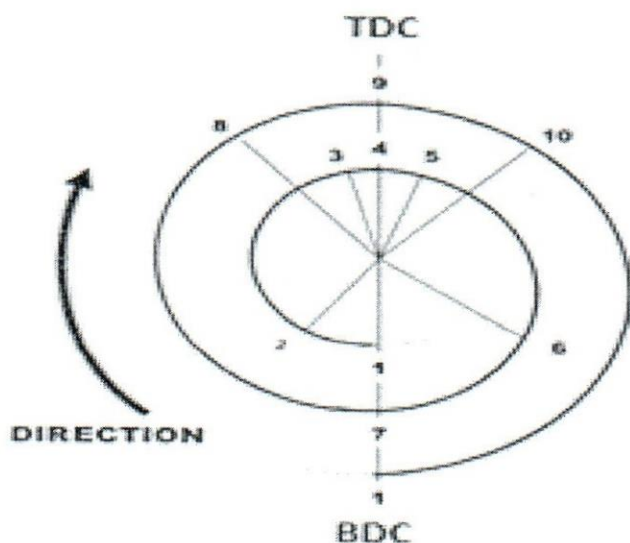
- c) define the term **black out** (02 marks)  
 d) state **four** daily log book entries (04 marks)

(3)

- a) State the reason why quick closing valves are fitted to fuel oil tanks (02 marks)  
 b) write down **6 Annexes** of MARPOL 73/78. (06 marks)  
 c) write down **3 tanks** in sewage treatment plant. (02 marks)  
 d) Draw & name a plate type freshwater generator. (10 marks)

(4)

- a) Draw the basic refrigeration cycle and "explain the duties" of main components. (10 marks)  
 b) Note down the main points of the following four-stroke marine diesel engine cycle as per the number listed below. (07 marks)



- 1 -  
 2 -  
 2-3 -  
 3-4-5 -  
 5-6 -  
 6 -  
 8 -  
 10 -

- c) Write down available scavenging methods for 2 stroke engines. (03 marks)

(5)

- a) State four types of pumps using onboard. **(04 marks)**
- b) Draw a double acting reciprocating pump & name it. **(10 marks)**
- c) Write down the procedure of boiler "guage glass blow -down" with the aid of a sketch. **(06 marks)**

CINEC Campus (Pvt) Ltd

Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (22-01)

ENGINEERING KNOWLEDGE – II



- Answer **ALL FIVE** questions
- Date: 18.06.2022

Pass mark 50%

Time allocated: 03 Hrs

01.

- |   |          |
|---|----------|
| a. Briefly explain the purpose of air-conditioning                    | (3marks) |
| b. Draw a sketch of a composite boiler and name it                    | (6marks) |
| c. State 2 rudder actuating systems of steering gear                  | (2marks) |
| d. Write down two types of cargo handling gear                        | (2marks) |
| e. What is the purpose of emergency power supply on board             | (2marks) |
| f. What is the purpose of circuit breaker on an electrical circuit?   | (2marks) |
| g. Write down 3 important parts from a bosch type fuel injector pump? | (3marks) |

02.

- |  |           |
|--|-----------|
| a. What do you understand by priming a pump?                   | (3 marks) |
| b. Write down 4 parts from centrifugal pump.                   | (4marks)  |
| c. Write down two types of coolers                             | (2marks)  |
| d. Draw a sketch of one of below pump and name it.             | (6marks)  |
| a. Gear pump   |           |
| b. Vane pump   |           |
| c. Axial flow pump   |           |
| e. Write down three types of valves used on board engine room. | (3marks)  |
| f. Write down 2 types of Lub oil filters.                      | (2marks)  |

03.

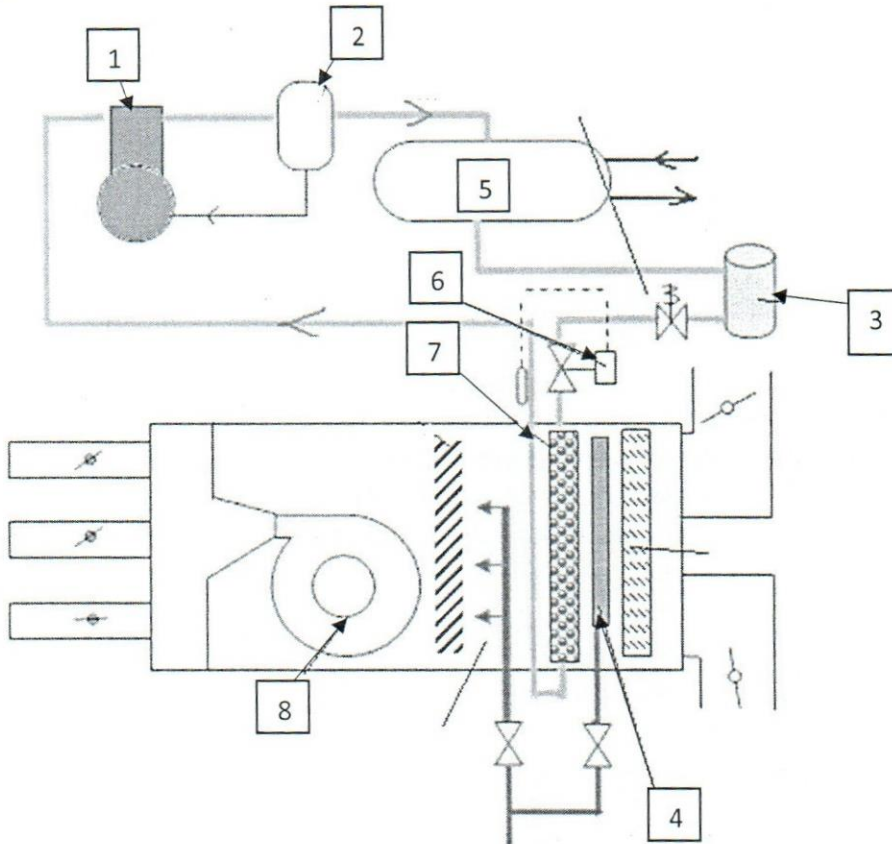
- |   |          |
|---|----------|
| a. Draw a sketch of a 4 stroke engine timing diagram                                    | (6marks) |
| b. State 3 different parts of a marine 2 stroke engine, not a part of a 4 stroke engine | (3marks) |
| c. Briefly explain two of below terms   | (6marks) |
| a. Fire main  |          |
| b. Oily water separator   |          |
| c. Muster station   |          |
| d. Quick closing valve  |          |
| d. Draw a fire triangle and name it   | (3marks) |
| e. What is SOPEP?   | (2marks) |

04.

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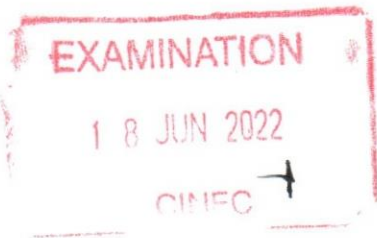
- a. What are the potential hazards can be in enclosed space? State three of them (3marks)
- b. What type of entries to be entered in chief engineer's log book? State 3 of them. (3marks)
- c. What safety precautions you will take while working with an electrical equipment? (4marks)
- d. Draw a sketch of a lathe machine and mark main parts. (6marks)
- e. List out lathe machine work holding devices (minimum 4 numbers) (4 marks)

05.



- a. Name the parts of above diagram (8marks)
- b. State 4 types of portable fire extinguisher and their colour code (4marks)
- c. State 4 types of personal protective system (PPE) (4marks)
- d. State 4 type of watches (4marks)



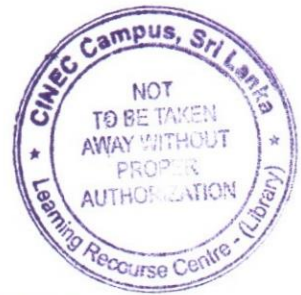


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Faculty of Marine Engineering  
Department of Marine Engineering

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

COURSE CODE : ED 273 P1(BATCH 22-01)

ENGINEERING KNOWLEDGE – 1

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

Date: 18.06.2022

Pass mark 50%

Time allocated: 1Hrs

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1) Which is not a part of CO<sub>2</sub> fixed installation?

- |                 |                      |
|-----------------|----------------------|
| a) Master valve | c) Mechanical seal   |
| b) Relief valve | d) Operating bottles |

2) DPA means

- a) District Personal Assistant
- b) Designated Person Ashore
- c) Delivery Pump Accessories
- d) None of above

3) Which is not a boiler mounting

- |                     |                    |
|---------------------|--------------------|
| a) Main steam valve | c) Piston rod      |
| b) Gauge glass      | d) Blow down valve |

- 4) Reasons for tappet clearance is
- For proper injection
  - For proper atomization
  - For thermal expansion of valves
  - For proper lubrication
- 5) We can throw plastic
- 3 nautical miles away from the nearest land
  - 12 nautical miles away from the nearest land
  - 25 nautical miles away from the nearest land
  - Cannot throw anywhere
- 6) Which is not part of a fuel injector?
- Needle valve
  - Nozzle
  - Compression Nut
  - Rocker arm
- 7) When CO2 alarm rings in the engine room?
- Abandon ship
  - Get ready to fight the fire
  - Leave the engine room
  - Report to chief engineer
- 8) Which is not one of the heat treatments processes?
- tempering
  - Annealing
  - Hardening

- d) Moulding
- 9) Advantage of center cooling system
- a) Corrosion can be kept to a minimum
  - b) Maintenance of valves reduced
  - c) Maintenance of filters reduced
  - d) All of the above
- 10) Which of the following is suitable for manufacture of drill bits
- a) Mild steel
  - b) Cast iron
  - c) High carbon steel
  - d) Wrought iron
- 11) Evaporative distillation fresh water generators used to cool generated steam
- a) Jacket cooling water
  - b) Sea water
  - c) Lubricating oil
  - d) None of above
- 12) Oil monitoring device is fitted to
- a) Sewage treatment plant
  - b) Oily water separator
  - c) Incinerator
  - d) Boiler
- 13) Which one is not a scavenging method?
- a) Loop scavenging
  - b) Cross scavenging
  - c) Turbo scavenging

- d) Uniflow scavenging
- 14) What is your first action in case of fire in the engine room
- a) Try to extinguish the fire
  - b) Close ventilation flaps
  - c) Close quick closing valves
  - d) Immediately raise the fire alarm
- 15) The main cause of eye injury
- a) Infrared rays- Gas welding
  - b) Ultra- Violet rays – Electric welding
  - c) Exposure to particles and foreign bodies
  - d) All of above
- 16) Fuel injector
- a) Supplies fuel to the piston
  - b) Sprays fuel into the combustion space of cylinder
  - c) Supplies lub oil to the cylinder liner
  - d) Supplies lub oil to the gudgeon Pin
- 17) MARPOL Annex IV states,
- a) Prevention of pollution by air
  - b) Prevention of pollution by oil
  - c) Prevention of pollution by Sewage
  - d) Prevention of pollution by garbage



18) Which of the following is an enclosed space

- a) bridge
- b) Galley
- c) Chain locker
- d) Cabin

19) Welding,

- a) Is a method of joining metal by fusion
- b) Is a method of joining metal by electric current
- c) Is a method of joining metal by a filler rod
- d) All of the above

20) In the purifier gravity disc determines

- a) The quality of separation
- b) Bowl RPM
- c) Sludge particle removal
- d) Motor ampere

21) The purpose of a relief valve

- a) To relief excess temperature
- b) To regulate flow
- c) To relief excess pressure
- d) Non of above

22) Which one is not a watch keeping duty

- a) Maintenance work
- b) Cleaning and painting
- c) Keeping machineries under observation

d) Bunkering operation

23) Steering gear is the equipment for

- a) Turn the ship during sailing
- b) Move the vessel ahead or astern
- c) Start the main engine
- d) Start the fire pump

24) IMDG states

- a) International Marine Deck Goods
- b) International Maritime Dangerous goods
- c) International Manual of Dangerous Goods
- d) None of above

25) A/C Compressor

- a) Compresses refrigerant gas
- b) Condenses refrigerant gas
- c) Compresses refrigerant liquid
- d) Reduces liquid pressure

26) 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

27) Emergency equipment equipped in the Ship

- a) Quick closing valve
- b) Ventilation flap

- c) Portable fire extinguisher
- d) All of above

28) During survival craft drill, before launch the craft, engine should not run for longtime while testing the engine, what is the reason for this?

- a) To shorten the time
- b) Engine and propeller shaft gland may over heated
- c) To save the fuel economically
- d) None of above

29) Before enter the enclosed space,

- a) Space should be ventilated
- b) Space should be tested for toxic and flammable gasses and oxygen level
- c) Permit to work system should be used
- d) All of above

30) Which pump is not a self-priming pump

- a. Centrifugal pump
- b. Screw pump
- c. Vane pump
- d. Gear pump

31) Which portable fire extinguisher is suitable for oil fire?

- a. CO<sub>2</sub>
- b. foam
- c. dry powder
- d. water

32) The purpose of ISM code is

- a. To ensure safety at sea
- b. To prevent human injury or loss of life
- c. To avoid damage to the environment and to the ship
- d. All of above

33) Enclosed space defines

- a. Limited access to enter and exit
- b. Not ventilated area
- c. Non design for continuous working purpose
- d. All of above



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CINEC Campus (Pvt) Ltd

Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (21-03)

ENGINEERING KNOWLEDGE – II



- Answer **ALL FIVE** questions
- Date: 11.06.2022

Pass mark 50%

Time allocated: 03 Hrs

---

1)

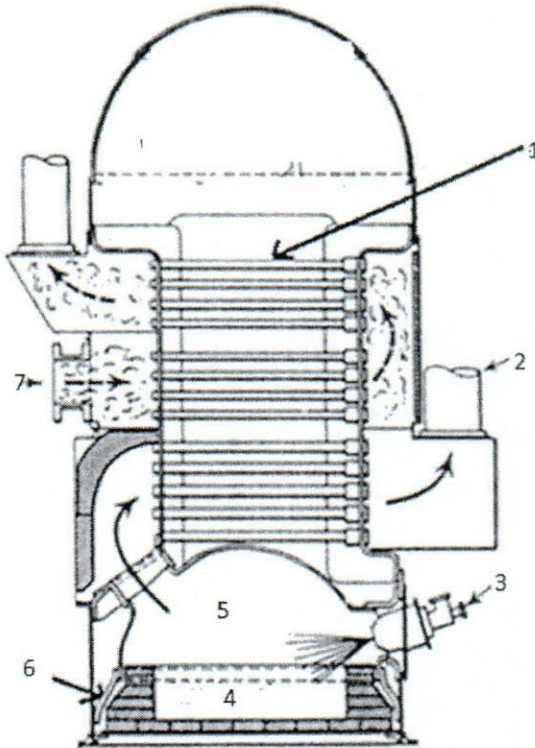
- With regards to MARPOL 73/78 regulation state the *6 annexes* of Marpol convention. **(06 marks)**
- State four types of v/vs used onboard. **(04 marks)**
- Name **four** types of portable fire extinguishers used on board. **(04 marks)**
- State the following terms. **(06 marks)**
  - SOPEP
  - SOLAS
  - EPIRB
  - EEBD
  - LSA
  - FFA

2)

- Draw & explain two-stroke timing diagram with the v/v positions (open or close). **(10 marks)**
- Write down the three scavenging methods in 2-stroke engines. **(03 marks)**
- State self priming & non-self priming p/p s used onboard (02 each) **(04 marks)**
- State **three** entries (daily entries) in Engine room log book. **(03 marks)**

3)

- (a) State **five** boiler alarms. (05 marks)
- (b) Draw & explain the procedure of "boiler bottom blowdown". (08marks)
- (c) Name the followings of the boiler (07 marks)



4)

- a) Draw a gear pump & name it (10 marks)
- b) Draw & name a plate type fresh water generator. (10 marks)

5) Explain (in- short) the purpose of the following,

- a) Brine eductor (02 marks)
- b) PPM monitor (02 marks)
- c) Salinometer (02 marks)
- d) Gravity disc (02 marks)
- e) Fuel injector (marine diesel engine) (02 marks)
- f) M/E turbo charger (02 marks)
- g) Cascade tank (02 marks)
- h) Oil mist detector (OMD) (02 marks)
- i) Oily water separator (OWS) (02 marks)
- j) Emergency generator (02 marks)

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Department of Marine Engineering  
EDUCATION & TRAINING COURSE: PRE-SEA TRAINING COURSE FOR ENGINE RATING  
COURSE CODE: ED 273 P1 (21-03)  
ENGINEERING KNOWLEDGE – I

- Answer **ALL** questions
- Date: 11.06.2022

Time allocated: <sup>01</sup>~~03~~ Hrs

Pass mark 50%

- 
1. Which one of the following statement is most accurate?
    - a) Oily water separator require regular maintenance to work properly
    - b) Oily water separator only need maintenance in dry-dock
    - c) regular flushing with sea water in the only maintenance required for an oily water separator
    - d) Oily water separator are designed to be maintenance free
  2. 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
  3. Lubricating oils are used in an engine for
    - a) Reduce friction
    - b) Transfer heat
    - c) Prevent corrosion
    - d) All of above
  4. 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
  5. The main course of eye injury are
    - a) Infrared rays-Gas
    - b) Ultra-Violet rays-electric welding
    - c) Exposure to particles and foreign bodies
    - d) All above



6. Which is not a part of a centrifugal pump?
- Impeller
  - Wear ring
  - driven wheel
  - Mechanical seal
7. Which one is not a self-priming pump?
- Centrifugal pump
  - Gear pump
  - Screw pump
  - Reciprocating pump
8. What is not a routine maintenance of a boiler?
- Boiler blow downs
  - Hydraulic pressure testing of the boiler
  - Continuous testing of boiler water and maintain chemicals
  - gauge glass blow downs
9. A gear pump is a -----
- Positive displacement pump
  - Dynamic pressure pump
  - Reciprocating pump
  - None of above
10. Which one is an advantage of carbon dioxide use as fixed firefighting medium?
- No cooling effect
  - Limited supply
  - Less harm to equipment
  - Space with the fire must be enclosed prior to opening carbon dioxide
11. Which pump is most suitable to transfer sludge?
- Centrifugal pump
  - mono pump
  - Axial flow pump
  - Rotary vane pump



12. 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

13. 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

14. A/C compressor

- a) Compresses refrigerant gas
- b) Condenses refrigerant gas
- c) Compresses refrigerant liquid
- d) Condenses refrigerant vapors

15. Which is not a part of a purifier?

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

16. Which is the most suitable instrument to measure cylinder bore of an engine?

- a) Vernier Caliper
- b) Inside micrometer
- c) Steel ruler
- d) Pressure gauge

17. During bunkering bridge should hoist

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

18. Which of the following is **not** a boiler mounting?

- a) Mechanical seal
- b) Main steam stop valve
- c) Gauge glass
- d) Safety valve

19. Which statement is correct about maintenance of bilge system?
- a) Mud box strainers should be cleaned
  - b) Suction filter of the pump should be cleaned
  - c) bilge wells has to be maintained in oil free condition
  - d) All above
20. 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
21. Emergency stops for main engine are located at
- a) Bridge
  - b) engine control room
  - c) emergency maneuvering stand
  - d) all above places
22. Which is not a part of 4 stroke diesel engine
- a) Gudgeon pin
  - b) exhaust valve
  - c) Crosshead bearing
  - d) main bearing
23. Which substance is an air pollutant?
- a) SOX
  - b) NOX
  - c) Volatile organic compounds
  - d) All above
24. which is not a part of CO<sub>2</sub> total flooding system?
- a) master valve
  - b) relief valve
  - c) mechanical seal
  - d) operating bottles
25. Action during a fire,
- a) Try to fight the fire with an extinguisher as soon as you see it.
  - b) Raise the fire alarm, or inform to somebody when you see it.
  - c) If any casualty, rescue the person & escape the place.
  - d) Use foam fire extinguisher to extinguish it.

26. Which one is incorrect regarding emergency power. Emergency power is supplied to
- Steering gears
  - Emergency fire pump
  - Main ballast pump
  - navigation lights
27. Identify the fixed firefighting system that can be found on board
- Fire main
  - Co<sub>2</sub> battery system
  - Hyper mist system
  - All above
28. Select the correct statement regarding the loss of suction in a centrifugal pump
- Air entering suction side
  - Suction lift too much
  - Suction strainer blocked
  - All above are correct
29. What is the correct practice regarding the synchro scope, after synchronizing the generators?
- Keep switch on
  - Switched off
  - No need of paying attention
  - None of above
30. Which is not a part of 4 stroke diesel engine
- Gudgeon pin
  - exhaust valve
  - Crosshead bearing
  - main bearing
  - e)
31. Emergency fire pump should not be situated in
- Bow thrust room
  - Engine room
  - Steering compartment
  - Pump room
32. What is the SI unit for pressure? ( $P=F/A$ )
- NM
  - Nm-1
  - Nm-2
  - Nm-3
33. In a large 2 stroke engine, what is the purpose of stuffing box
- It seals scavenge space and crank case
  - It seals cylinder head and liner
  - It seals scavenge air cooler and scavenge space
  - It seals turbo charger and scavenge space

Library

00025



CINEC CAMPUS (PVT) LTD

Faculty of Marine Engineering  
Department of Marine Engineering

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

COURSE CODE : ED 273 P1(BATCH 21-01)

ENGINEERING KNOWLEDGE – 1



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

- Answer ALL questions

Date: 12.02.2022

Pass mark 50%

Time allocated: 1Hrs

---

- 1) Which is not a part of a centrifugal pump?
  - a) Mechanical seal
  - b) Crank shaft
  - c) Volute casing
  - d) Wear ring
- 2) We can throw plastic
  - a) 3 nautical miles away from the nearest land.
  - b) 12 nautical miles away from the nearest land.
  - c) 25 nautical miles away from the nearest land.
  - d) Cannot throw anywhere
- 3) Reason for tappet clearance is
  - a) For proper injection
  - b) For proper atomization
  - c) For thermal expansion of valves
  - d) For proper lubrication



- 4) Which one is not a boiler mounting?
- a) Gauge glass
  - b) Blow down valve
  - c) Main steam valve
  - d) Isolating valve
- 5) In the purifier gravity disc determines
- a) The quality of separation
  - b) Bowl RPM
  - c) Sludge partial removal
  - d) Motor ampere
- 6) MLC 2006 means,
- a) Marine Local Council
  - b) Maritime Labour Convention 2006
  - c) Mechanical Labour Convention 2006
  - d) None of above
- 7) The purpose of Ism code is
- a) To ensure safety at sea
  - b) To prevent human injury or loss of life
  - c) To avoid damage to the environment and to the ship
  - d) All of above
- 8) When entering enclosed space atmosphere should be tested for
- a) Oxygen deficiency
  - b) Presence of flammable gas
  - c) Presence of toxic gas
  - d) All of the above
- 9) 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 oxygen in the boiler
- 10) Oil record book should contains
- a) Bunkering of fuel oil
  - b) Disposal of bilge water
  - c) Collection and disposal of oil residue
  - d) All above
- 11) 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
- 12) During bunkering bridge should hoist,
- a) Blue flag
  - b) White flag
  - c) Red flag
  - d) Yellow flag
- 13) 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 the above
- 14) Most suitable instrument to measure cylinder bore of an engine
- a) Vernier caliper
  - b) Steel ruler
  - c) Inside micro meter
  - d) Pressure gauge

15) Which of the following is an enclosed space

- a) Monkey Island
- b) Galley
- c) Double bottom tank
- d) Cabin

16) DPA means

- a) District Personal Assistant
- b) Designated Person Ashore
- c) Delivery pump accessories
- d) None of above

17) Which of the following is suitable for manufacture of drill bits

- a) Mild steel
- b) High carbon steel
- c) Cast Iron
- d) Wrought iron

18) Which is not a part of a Fuel injector

- a) Nozzle
- b) Needle valve
- c) Compression nut
- d) Rocker ARM

19) Which is not a part of a 2 stroke marine diesel engine

- a) Cylinder
- b) Cross head
- c) Stuffing box
- d) Inlet valve

20) 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
- 21) When there is no water in the boiler
- a) Stop the burner
  - b) Supply water to the boiler
  - c) Increase air supply
  - d) Close main stop valve
- 22) What is the colour code of dry powder fire extinguisher
- a) Cream
  - b) Blue
  - c) Red
  - d) Black
- 23) Internal thread cutting tool is
- a) Chisel
  - b) Torque wrench
  - c) Tap and Tap wrench
  - d) Half round file
- 24) Any mistake made while entering the reading in E/R logbook
- a) Erase and write correct one
  - b) Paint it and write correct one
  - c) Paste a sticker on it and write correct one
  - d) Cut with single stroke, write correct one beside it.



25) Steering gear is the equipment for

- a) Turn the ship during sailing
- b) Move the vessel ahead or astern
- c) Start the main engine
- d) Start the fire pump

26) Which is not a part of a ships fire main

- a) Main fire pump
- b) Emergency fire pump
- c) Isolating valve
- d) Fire axe

27) Plunger and barrel are part of

- a) Oily water separator
- b) Fuel injector
- c) Sewage treatment plant
- d) Fuel injection pump

28) The purpose of sign and notice

- a) To make the place beautiful
- b) Information and warning hazards
- c) To read when you are nothing to do
- d) To decorate the wall

29) Purpose of pumps,

- a) Raise the liquid from one level top another
- b) To transport liquid though a pipe at a specified flow rate
- c) To force liquid through a hydraulic system against various resistance
- d) All of the above

30) Machinery space log books are important because,

- a) They serve evidence for proper running of machinery
- b) They serve as evidence in case of an inquiry or court case
- c) They serve as history records for certain problem concerning machinery
- d) All of the above

31) To extinguish cooking oil fire in the galley

- a) Apply water
- b) Through oil outside
- c) Use fire blanket
- d) Non of above

32) Which is not a internal combustion engine

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

33) The tool used for cut thin metal

- a) Plier
- b) snip
- c) hacksaw
- d) hammer

library

00025



CINEC Campus (Pvt) Ltd

Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (21-01)

ENGINEERING KNOWLEDGE – II



- Answer **ALL FIVE** questions
- Date: 12.02.2022

Pass mark 50%

Time allocated: 03 Hrs

- 
- 1)
    - a) State the main components of a steering system (05 marks)
    - b) State 2 types of rudder actuating systems. (02 marks)
    - c) Draw a 4 RAM steering system and name it (08 marks)
    - d) State 2 types of coolers (02marks)
    - e) State 3 types of Lub oil filters (03 marks)
  
  - 2)
    - a) State all MARPOL 73/78 annexes. (06 marks)
    - b) Draw sketch of a oily water separator and name it (08 marks)
  
    - c) Write down 3 safety precautions when working with lathe machine (03 marks)
  
    - d) Write down three types of positive displacement pumps (03 marks)

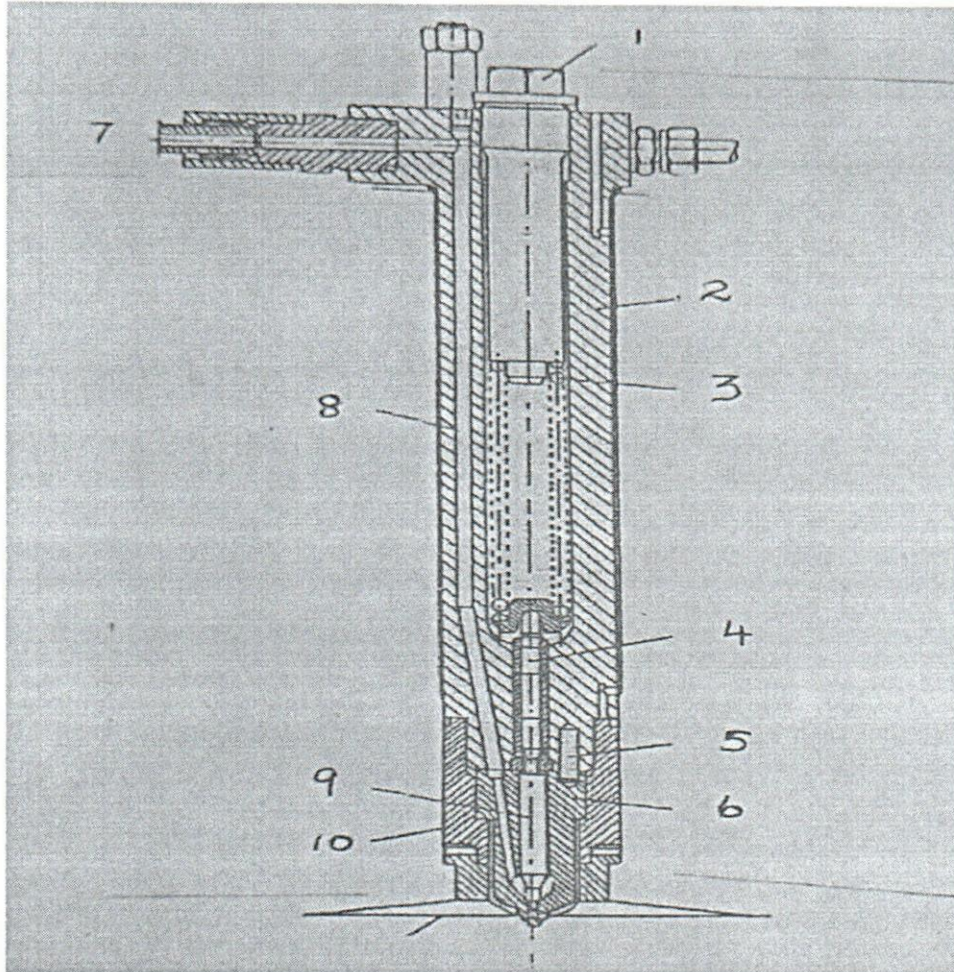
- 3)
- a) Draw a 4 stroke engine timing diagram and name it (08 marks)
  - b) What is overlapping period (02 marks)
  - c) What is the purpose of overlapping period (02 marks)
  - d) Define purified and clarifier (04 marks)
  - e) Write down 4 boiler mountings. (04marks)
- 4)
- a) State four types of emergencies applicable for ship. (04 marks)
  - b) State 4 kinds of watches (04marks)
  - c) Draw a fire triange and name it (03 marks)
- (c) Briefly explain following terms. (09 marks)
- 1) Muster station
  - 2) Muster list
  - 3) Ventilation flap



5)

a. Name the following of the fuel injector

(10 marks)



b) Write down 4 types of portable fire extinguishers

(04 marks)

c) Write down 3 measuring tools

(03marks)

d) Write down 3 entries to be written in the engine room log book

(03marks)

*For library*

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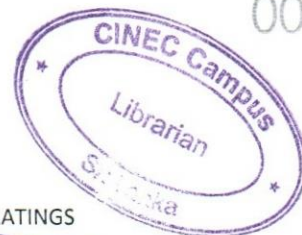
CINEC CAMPUS

Department of Marine Engineering

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

COURSE CODE: ED 0273-P1 (REPEAT EXAM)

ENGINEERING KNOWLEDGE – 1



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

Date: 2021.11.10

Pass mark 50%

Time allocated: 1Hrs

---

- 1) which pump is most suitable to transfer sludge?  
a) centrifugal pump    b) mono pump                      c) Axial flow pump                      d) Rotary vane pump
- 2) 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
- 3) 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
- 4) Identify the purpose of relief valves
  - a) Use to relief excess temperature
  - b) Use to regulate flow
  - c) Use to relief excess pressure
  - d) All of above
- 5) 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 above
- 6) 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
- 7) An accident mean
- a) A result of unsafe act.
  - b) A result of unsafe condition
  - c) A result of short cut
  - d) A and B both are correct
- 8) what are the types of fire detectors in the engine room
- a) smoke detectors
  - b) heat detectors
  - c) flame detectors
  - d) all above
- 9) which area is covered by MARPOL Annex V
- a) Prevention of pollution by sewage
  - b) Prevention of pollution by garbage
  - c) Prevention of pollution by oil
  - d) Prevention of air pollution
- 10) Which one of following is **not** a measuring tool?
- a) In side caliper
  - b) Center punch
  - c) Vernier caliper
  - d) Steel ruler



11) which statement is **not** correct about maintenance of bilge system

- a) mud box strainers should be cleaned
- b) suction filter of the pump should be cleaned
- c) bilge wells have to be maintained in oil free condition
- d) Bilge wells to be filled with sea water.

12) 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

13) Which is not a part of 4 stroke diesel engine

- a) Gudgeon pin
- b) exhaust valve
- c) Crosshead bearing
- d) main bearing

14) What is your first action in case of fire in E/R

- a) Immediately try to extinguish the fire
- b) Close ventilation flaps
- c) Keeping machineries under observation
- d) Immediately raise the fire alarm

15) 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

16) What is the correct practice regarding the Synchronous scope, after synchronizing the generators?

- a) Kept switched on
- b) switched off
- c) no need of paying attention
- d) None of above



17) After one-hour notice is given is it required to synchronize the clocks of bridge and ECR?

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- a) Yes
- b) No
- c) Occasionally
- d) Not applicable

18) Which of the following pump is most suitable for transferring oil?

- a) Axial flow pump
- b) Centrifugal pump
- c) 2 stage Centrifugal pump
- d) Gear wheel pump

19) A large bore, low-speed, main propulsion diesel engine uses direct sea water cooling for

- a) cylinder heads
- b) Exhaust valves
- c) scavenging air
- d) injectors

20) Which one of following is an emergency on board?

- a) Flooding
- b) Grounding
- c) Bad weather
- d) All of above

21) 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

22) In a plate type cooler corrugations are provided to

- a) Increase surface area
- b) Promote turbulence
- c) Increase strength
- d) All of above

- 23) Lubricating oils are used in an engine for
- Reduce friction
  - Transfer heat
  - Prevent corrosion
  - All of above
- 24) What is the SI unit for pressure? ( $P=F/A$ )
- NM
  - Nm-1
  - Nm-2
  - Nm-3
- 25) During bunkering which flag should be hoisted in the main mast
- Blue flag
  - White flag
  - No smoking sign
  - Red flag
- 26) What is the SI unit for energy?
- a) Joule (J)    b) watt (W)    c) Ampere (A)    d) Kelvin (K)
- 27) Emergency Bilge suction valve
- Is connected to the main S.W pump
  - Is connected to the bilge pump
  - Is connected to the sludge pump
  - Is connected to the fuel transfer pump
- 28) Which is not a part of a centrifugal pump?
- Impeller
  - Wear ring
  - driven wheel
  - Mechanical seal
- 29) Select the correct statement regarding the loss of suction in a centrifugal pump
- Air entering suction side
  - Suction lift too much
  - Suction strainer blocked
  - All above are correct

30) Which one is not a self-priming pump?

- a) Centrifugal pump
- b) Gear pump
- c) Screw pump
- d) Reciprocating pump

31) Which one is not a metal joining process?

- a) Welding
- b) Casting
- c) Brazing
- d) Soldering

32) Which is possible in an enclosed space?

- a) Lack of Oxygen
- b) Presence of toxic gases
- c) Presence of flammable gases
- d) All of above

33) which one is an advantage of carbon dioxide use as fixed firefighting medium?

- a) No cooling effect
- b) Limited supply
- c) Less harm to equipment
- d) Space with the fire must be enclosed prior to opening carbon dioxide



CINEC Campus (Pvt) Ltd

Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (21-01 &amp; 21-02)

ENGINEERING KNOWLEDGE – II

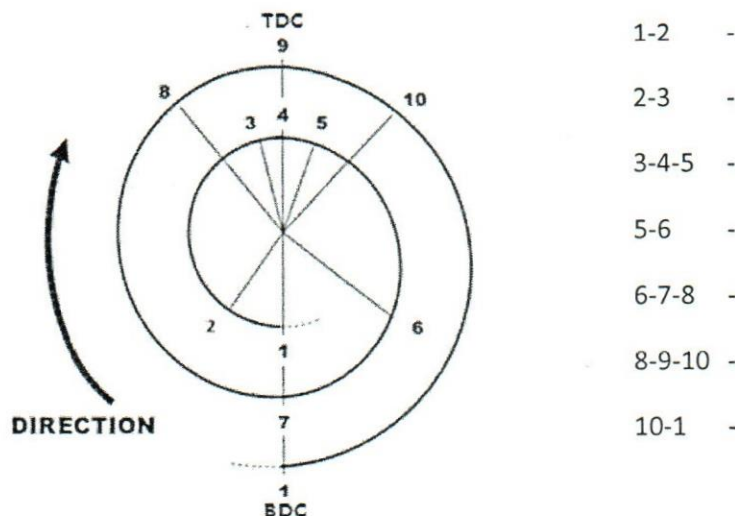


- Answer **ALL FIVE** questions
- Date: 30.12.2021

Pass mark 50%

Time allocated: 03 Hrs

- 1)
- Draw & explain the basic refrigeration cycle. (10 marks)
  - Draw & name a working fresh water generator. (10 marks)
- 2)
- With regards to MARPOL 73/78 regulation state the 6 annexes of Marpol convention. (06 marks)
  - Name **four** special areas defined under marpol annex-1. (04 marks)
  - Name **four** types of portable fire extinguishers used on board. (04 marks)
  - State **three** emergencies that can be happened on board a ship (03 marks)
  - What are the main factors defined in the fire triangle to generate a fire. (03 marks)
- 3)
- Note down the main points of the following four-stroke marine diesel engine timing cycle as per the number listed below. (07 marks)

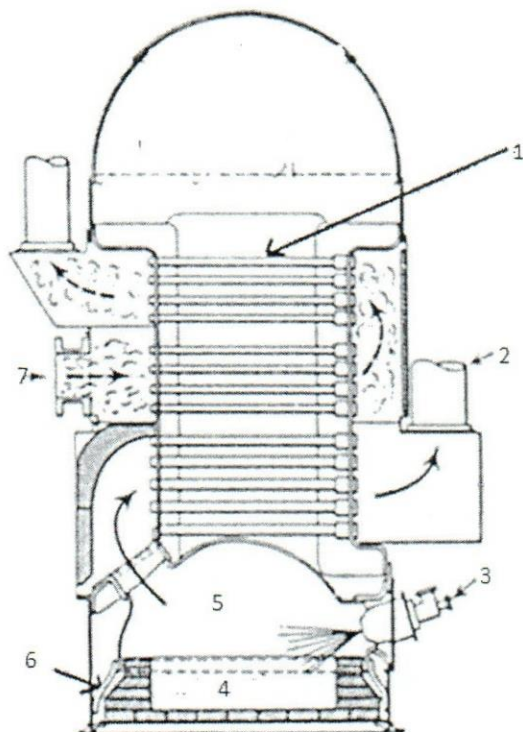




- b) Write down six personal protective equipment. (PPE) (06 marks)  
 c) Draw two-stroke timing diagram & name it. (07 marks)

4)

- (a) State *five* boiler alarms. (05 marks)  
 (b) Draw & explain the procedure of boiler gauge glass blowdown. (08marks)  
 (c) Name the followings of the boiler (07 marks)



5)

- a) State four types of pumps using onboard. (04 marks)  
 b) Draw a double acting reciprocating pump & name it (10 marks)  
 (c) State the following terms. (06 marks)
- 1) SOPEP
  - 2) SOLAS
  - 3) EPIRB
  - 4) EEBD
  - 5) LSA
  - 6) FFA



CINEC CAMPUS  
Department of Marine Engineering  
EDUCATION & TRAINING COURSE: PRE-SEA TRAINING FOR ENGINE RATINGS  
COURSE CODE: ED 0273-P1 (BATCH 20-01)  
ENGINEERING KNOWLEDGE – 1

- This paper consists of THIRTY THREE questions and the marks will be awarded,  
1<sup>st</sup> question - Four (04) marks                      Other questions -Three (03) marks each
  - Answer ALL questions
- Date: 2021.02.27    Pass mark 50%
- Time allocated: 1Hrs
- 

- 1) Which is not a part of a purifier?
  - a) Plunger
  - b) Sliding bowl
  - c) Bowl
  - d) Gravity disc
- 2) After 1 January 2020 LSFO Sulphur content should be?
  - a) 1.5
  - b) 3.5
  - c) 0.5
  - d) 4
- 3) Hacksaw blade cuts on the,
  - a) Forward stroke
  - b) Return stroke
  - c) Both forward and return stroke
  - d) Direction of the force
- 4) 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.
- 5) Which one of following is **not** a measuring tool?
- a) In side caliper
  - b) Center punch
  - c) Vernier caliper
  - d) Steel ruler
- 6) What is the function of A/C compressor?
- a) Compressed refrigerant gas
  - b) Condensed refrigerant gas
  - c) Compressed refrigerant liquid
  - d) Condensed refrigerant vapor
- 7) Which one is not a function of lubricating oil?
- a) It reduces friction and there by reduces wear
  - b) It carries away some of the heat generated inside the cylinder & other areas
  - c) It increases the acidity in the cylinder
  - d) It brings hard scale to suspension form
- 8) Reasons for less production of fresh water in FWG
- a) High shell temperature
  - b) Vacuum is less than required
  - c) Loss of suction by condensate pump
  - d) All above
- 9) Which statement is correct about maintenance of bilge system
- a) Mud box strainers should be cleaned
  - b) Suction filter of the pump should be cleaned
  - c) Bilge wells has to be maintained in oil free condition
  - d) All above

10) Which one is incorrect regarding emergency power? Emergency power is supplied to

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

11) What can you find on fire plan

- a) Location of escape routes
- b) Location of hydrant and fire hoses
- c) Fire pumps
- d) location of engine control room

12) 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

13) Which substance is an air pollutant?

- a) SOX
- b) NOX
- c) Volatile organic compounds
- d) All above

14) Identify the fixed firefighting system that can be found on board

- a) Fire main
- b) CO<sub>2</sub> battery system
- c) Hyper mist system
- d) All above

15) When there is no water in the boiler

- a) supply water to the boiler
- b) close main steam stop valve
- c) stop burner
- d) increase air supply



- 16) In oil record book each completed page need to be signed by
- a) chief engineer
  - b) master
  - c) duty engineer
  - d) company superintendent
- 17) Emergency stops for main engine are located at
- a) Bridge
  - b) Engine control room
  - c) Emergency maneuvering stand
  - d) All above place
- 18) preventive actions to be taken against uptake fires
- a) regular soot blow of economizer
  - b) use proper grade of oil
  - c) avoid low load operation of the engine
  - d) all above
- 19) Which is not a part of 4 stroke diesel engine
- a) Gudgeon pin
  - b) exhaust valve
  - c) Crosshead bearing
  - d) main bearing
- 20) boiler alarm will activate when
- a) Boiler pressure is high
  - b) flame failure
  - c) low water level in the boiler
  - d) all above
- 21) When CO<sub>2</sub> alarm is given by a siren/bell while working in the engine room,
- a) Should inform Chief engineer
  - b) Should report at the muster
  - c) Should vacate from the engine room
  - d) Should report to the engine control room

- 22) What is your first action in case of fire in E/R
- a) Immediately try to extinguish the fire
  - b) Close ventilation flaps
  - c) Keeping machineries under observation
  - d) Immediately raise the fire alarm
- 23) 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
- 24) 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
- 25) 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
- 26) At least how many safety valves should be fitted to a marine boiler
- a) 1
  - b) 2
  - c) 4
  - d) 3
- 27) Quick closing valves are not situated in
- a) Fresh water line
  - b) HFO lines
  - c) Lub oil lines
  - d) Diesel oil lines
- 28) Emergency fire pump should not be situated in
- a) Bow thrust room
  - b) Engine room
  - c) Steering compartment
  - d) Pump room

- 29) What is the use of volute casing of a Centrifugal pump
- a) Convert pressure energy into kinetic energy
  - b) Convert potential energy into pressure energy
  - c) Convert kinetic energy into pressure energy
  - d) None of above
- (30) What is the danger of an enclosed space
- a) Low oxygen levels
  - b) Toxic gases
  - c) Poor lighting
  - d) All above
- (31) What is MARPOL 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
- (32) CO<sub>2</sub> is used as a fire extinguishing medium, because
- a) It does not support combustion
  - b) Non-corrosive
  - c) Non-conductive
  - d) All above
- (33) 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

Library

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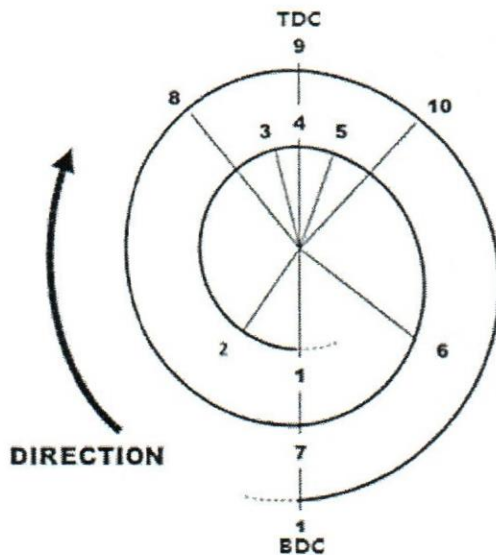
CINEC Campus (Pvt) Ltd  
Department of Marine Engineering  
EDUCATION & TRAINING COURSE: PRE-SEA TRAINING COURSE FOR ENGINE RATINGS  
COURSE CODE: ED 273 P1 (20-01)  
ENGINEERING KNOWLEDGE – II

- Answer **ALL FIVE** questions
- Date: 27.02.2021

Pass mark 50%

Time allocated: 03 Hrs

- 1) a) Note down the main points of the following four-stroke marine diesel engine cycle as per the number listed below. **(07 marks)**



- 1-2 -
- 2-3 -
- 3-4-5 -
- 5-6 -
- 6-7-8 -
- 8-9-10 -
- 10-1 -

- b) State two main engine shut down alarms. **(04 marks)**  
c) Write down the six daily log book entries. **(06 marks)**  
d) Write down the scavenging methods of two-stroke marine diesel engine. **(03 marks)**



2)

(a) Draw & explain marine oily water separator. (10 marks)

(b) With regards to MARPOL 73/78 regulation,

1) State six annexes regards to MARPOL 73/78 regulation for the prevention of pollution. (05 marks)

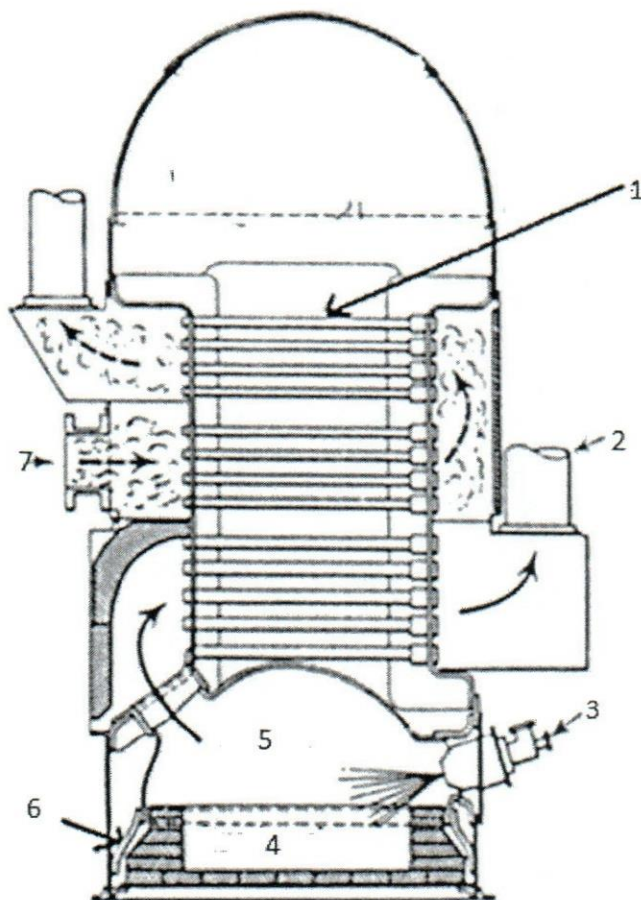
2) State the regulations enforced for pumping out engine-room bilges outside the special areas. (05 marks)

3)

(a) State *five* boiler alarms. (05 marks)

(b) Draw & explain the procedure of boiler gauge glass blow down. (08marks)

(c) Name the followings of the boiler (07 marks)



4) (a) Draw & explain the basic refrigeration cycle. (10 marks)

(b) Draw & name a working fresh water generator. (10 marks)

5) (a) State four types of pumps using onboard. (04 marks)

(b) Write down six personal protective equipment. (PPE) (06 marks)

(c) State the following terms. (10 marks)

- i) SOPEP
- ii) SOLAS
- iii) EPIRB
- iv) EEBD
- v) LSA
- vi) FFA
- vii) MARPOL
- viii) ILO
- ix) LSHFO
- x) HSHFO



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Department of Marine Engineering

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

COURSE CODE : ED 273 P1(BATCH 20-02)

ENGINEERING KNOWLEDGE – 1

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

Date: 29/03/2021

Pass mark 50%

Time allocated: 1Hrs

1. The main cause of eye injury are
  - a) Infrared rays-Gas
  - b) Ultra-Violet rays-electric welding
  - c) Exposure to particles and foreign bodies
  - d) All of above
2. Scale formation in a freshwater generator evaporator can lead to,
  - a) Impaired heat transfer
  - b) Reduced capacity
  - c) Increased shell temperature
  - d) All the above
- (3) E.E.B.D (emergency escape breathing device) use for
  - a) Extinguished the fire
  - b) Entering to the enclosed space
  - c) Escaping areas of hazardous
  - d) All of above
- (4) Which one is an advantage of carbon dioxide use as fixed firefighting medium?
  - a) No cooling effect
  - b) Limited supply
  - c) Less harm to equipment
  - d) Space with the fire must be enclosed prior to opening carbon dioxide

5) Which pump is most suitable to transfer sludge?

- a) Centrifugal pump    b) mono pump    c) Axial flow pump    d) Rotary vane pump

6) 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

7) 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

8) Identify the purpose of relief valves

- a) Use to relief excess temperature  
b) Use to regulate flow  
c) Use to relief excess pressure  
d) All of above

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

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

(10) 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 above

(11) in large 2 stroke marine engines cam shaft is normally driven by

- a) chain drive    d) External electrically driven timed motor  
b) gear drive  
c) both A and B



(12) 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

(13) An accident mean

- a) A result of unsafe act.
- b) A result of unsafe condition
- c) A result of short cut
- d) A and B both are correct

(14) MARPOL regulations controls,

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

15) which area is covered by MARPOL Annex V

- a) Prevention of pollution by sewage
- b) Prevention of pollution by garbage
- c) Prevention of pollution by oil
- d) Prevention of air pollution

(16) Which of the following pump is most suitable for transferring oil?

- a) Axial flow pump
- b) Centrifugal pump
- c) 2 stage Centrifugal pump
- d) Gear wheel pump

(17) Which of the following is **not** a boiler mounting?

- a) Mechanical seal
- b) Main steam stop valve
- c) Gauge glass
- d) Safety valve

(18) Which fire extinguisher is most suitable for dealing with oil fires?

- a) Wet chemical
- b) Foam
- c) Dry Powder
- d) Water

(19) Hacksaw blade cuts on the,

- a) Forward stroke
- b) Return stroke
- c) Both forward and return stroke
- d) Direction of the force

(20) 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.

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

- a) Inside caliper
- b) Center punch
- c) Vernier caliper
- d) Steel ruler

(22) what is the function of A/C compressor?

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

(23) Which one is not a function of lubricating oil?

- a) It reduces friction and there by reduces wear
- b) It carries away some of the heat generated inside the cylinder & other areas
- c) It increases the acidity in the cylinder
- d) It brings hard scale to suspension form

24) Reasons for less production of fresh water in distillation plant

- a) High shell temperature
- b) Vacuum is less than required
- c) Loss of suction by condensate pump
- d) All above

25) Which statement is correct about maintenance of bilge system?

- a) Mud box strainers should be cleaned
- b) Suction filter of the pump should be cleaned
- c) bilge wells has to be maintained in oil free condition
- d) All above

26) What can you find on fire plan

- a) Location of escape routes
- b) Location of hydrant and fire hoses
- c) fire pumps
- d) navigation lights

27) 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) Lifeboat starting procedure

28) Identify the fixed firefighting system that can be found on board

- a) Fire main
- b) CO<sub>2</sub> battery system
- c) Hyper mist system
- d) All above

29) when there is no water in the boiler

- a) supply water to the boiler
- b) close main steam stop valve
- c) stop burner
- d) increase air supply

30) turbo charger turbine side should be water washed at

- a) Low loads
- b) Full loads
- c) can do at any load
- d) when engine is stooped

31) In oil record book each completed page need to be signed by

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

32) Emergency stops for main engine are located at

- a) Bridge
- b) engine control room
- c) emergency maneuvering stand
- d) all above places

33) Which is not a part of 4 stroke diesel engine

- a) Gudgeon pin
- b) exhaust valve
- c) Crosshead bearing
- d) main bearing



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CINEC CAMPUS

Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (BATCH 20-02)

ENGINEERING KNOWLEDGE – II

- Answer **ALL FIVE** questions
- Date: 29/03/2021

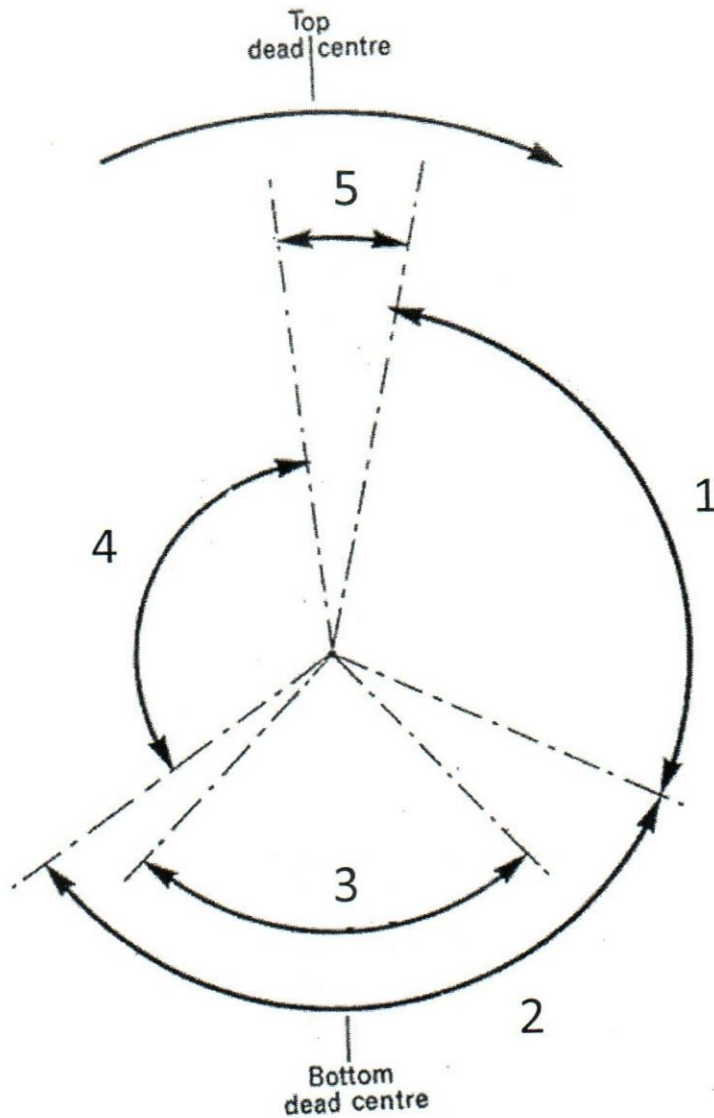
Pass mark 50%

Time allocated: 03 Hrs

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- 1) a) Briefly explain the fire triangle. **(03 marks)**
- b) State 3 main fire extinguishing methods. **(03 marks)**
- c) Briefly describes the following terms,
- i. I.M.D.G code **(02 marks)**
  - ii. M.S.D.S **(02 marks)**
  - iii. fire drill **(02 marks)**
  - iv. hot work permit **(02 marks)**
- d) write down 4 personnel protective equipment **(04 marks)**
- e) write down 2 harmful gases percent in enclosed space **(02 marks)**
- 2) a) Explain the four-stroke marine diesel engine cycles with the aid of sketches. **(10 marks)**
- b) Note down the main points of the following two stroke marine diesel engine cycle. **(5 marks)**





c) List three advantages of the central cooling system. (03 marks)

d) write down two characteristics of lubricating oil. (02 marks)

3 a) Sketch and briefly explain working principle of an oily water separator. (10 marks)

b) With regards to MARPOL 73/78 regulation,

1. State six annexures regards to **MARPOL 73/78** regulation for the prevention of pollution. (06marks)

2. Explain the following,

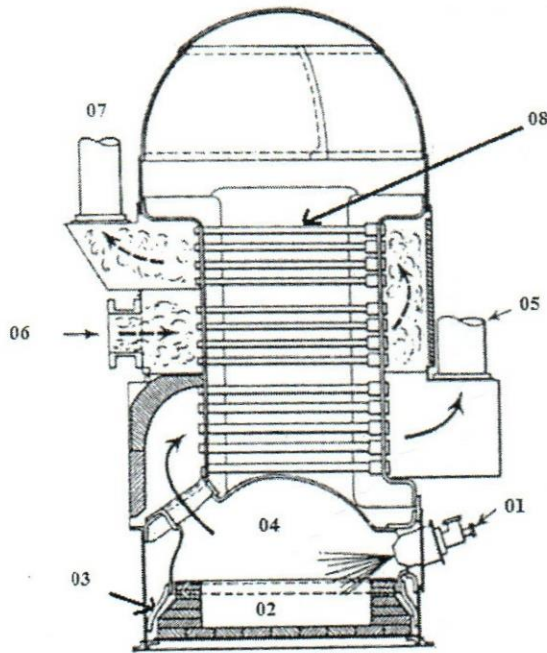
- i. Importance of blowing down a boiler.
- ii. Importance of soot blowing.

**(02 marks)**

**(02 marks)**

4(a) Draw and explain the working process of a centrifugal pump. **(06 marks)**

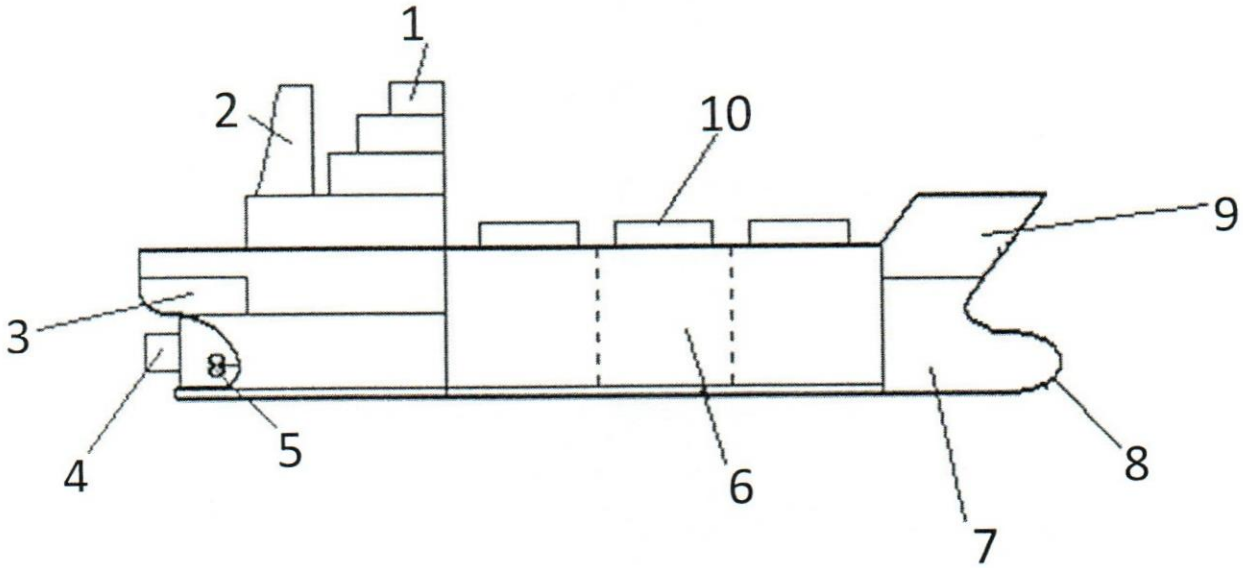
(b) Name the components of the below composite boiler. **(08 marks)**



(c) What are the main components of steering gear system and describe one of it. **(06 marks)**

5(a) Draw the basic refrigeration cycle and explain the duties of main components. **(10 marks)**

(b) Name the following parts of a ship. **(10 marks)**





Department of Marine Engineering

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

COURSE CODE: ED 273 P1 (BATCH 20-001 J)

ENGINEERING KNOWLEDGE – I

- Answer **ALL** questions (each 4 marks)
- Date: 2020.09.05

Pass mark 50%

Time allocated: 01 Hr

---

1. Hydrocarbon gasses are,
  - a) Flammable
  - b) Toxic
  - c) May be present in crude oil cargo tanks
  - d) All of above
2. Before enter the enclose space,
  - a) Space should be ventilated
  - b) Space tested for flammable and toxic gasses
  - c) Permit-to-work system should be used
  - d) All of above
3. If gas cylinder leaks from out let valve, cannot be stopped
  - a) Repair the valve
  - b) Fully open the outlet valve to expel gas
  - c) Take to the open deck away from heat origination and slowly discharge to atmosphere
  - d) None of above
4. Which is not come under log book types,
  - a) Chef engineer log book
  - b) Oil record book
  - c) Auxiliary engine
  - d) Refrigeration and A/C
5. Engine can be standby mode , when the vessel,
  - a) Arrival / departure port
  - b) Restricted waters
  - c) Restricted visibility
  - d) All of above
6. The main cause of eye injuries are
  - a) Exposure to particles foreign bodies
  - b) Infrared rays – gas welding
  - c) Ultra violet rays – electric welding
  - d) All of above
7. MARPOL annex IV states
  - a) Prevention of pollution by oil
  - b) Prevention of pollution by garbage



- c) Prevention of pollution by sewage
  - d) Prevention of pollution by air
8. Which is not a part of marine 2 stroke engine
- a) Cross head
  - b) Stuffing box
  - c) Inlet valve
  - d) Inlet ports
9. Which type of fire extinguisher is most suitable for oil fire?
- a) Foam
  - b) CO<sub>2</sub>
  - c) Water
  - d) Dry powder
10. Which is not a positive displacement pump?
- a) Gear pump
  - b) Piston pump
  - c) Centrifugal pump
  - d) Vane pump
11. Which is not an emergency on board ship
- a) Flooding
  - b) Abandon vessel
  - c) Sailing
  - d) Fire
12. Which one is not a boiler mounting
- a) Gauge glass
  - b) Main steam valve
  - c) Blow down valve
  - d) Isolating valve
13. Things not found in SOPEP locker
- a) Saw dust
  - b) Absorbing pad
  - c) Fire axe
  - d) Shovel
14. Which of the following is an enclosed space
- a) Bridge
  - b) Galley
  - c) Cabin
  - d) Chain locker
15. Operating of forcing additional air under pressure in the engine cylinder is known as
- a) Scavenging
  - b) Turbulence
  - c) Super charging
  - d) Pre-ignition
16. Name of the instrument to measure flammable an vapor is
- a) Oxygen analyzer
  - b) AVO meter
  - c) Explosimeter
  - d) Feeler gauge
17. On the expiry of the permit - to - work during work with enclosed space
- a) Everyone should leave the space
  - b) Inform the chief engineer
  - c) Stay in the space until get new permit
  - d) None of above

18. What precautions you will take to prevent fire accident in engine room
- Prevention of oil leak
  - Sprits , paints should not keep in the engine room
  - Rated capacity of wires and fuses should not exceeded
  - All of above
19. During survival craft drill , before launch the craft , engine should not run for long time while testing the engine; Reason for it,
- We must shorten the time
  - Engine and propeller shaft gland may over heated
  - To save the fuel economically
  - None of above
20. Hunting gear is a,
- Cargo handling gear
  - Feedback mechanism of a rudder control
  - System of reversing gear
  - Gear system of a purifier
21. When there is no water in the boiler
- Supply water to the boiler
  - Close main stop valve
  - Stop burner
  - Increase air supply
22. State about the use of tail stock,
- Center drilling on the work pieces
  - Operating the work piece at the end of center drill
  - Drilling and reaming process on the work piece
  - All of above
23. Which is not a scavenging method,
- Loop scavenging
  - Cross scavenging
  - Turbo scavenging
  - Uniflow scavenging
24. The purpose of sign and notice
- To make the place beautiful
  - Information and warning hazards
  - To read when you are nothing to do
  - To decorate the wall
25. Reason for tappet clearance is
- For proper injection
  - For proper fuel atomization
  - For their mal expansion of valves
  - For proper lubrication



CINEC CAMPUS

Department of Marine Engineering

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

COURSE CODE: ED 0273-P1 (BATCH 19-05)

ENGINEERING KNOWLEDGE – 1

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

- Answer ALL questions

Date: 01.08.2020

Pass mark 50%

Time allocated: 1Hrs

- 
- 1) Which of the following pump is most suitable for transferring oil?
    - a) Axial flow pump
    - b) Centrifugal pump
    - c) 2 stage Centrifugal pump
    - d) Gear wheel pump
  - 2) A large bore, low-speed, main propulsion diesel engine uses direct sea water cooling for
    - a) cylinder heads
    - b) Exhaust valves
    - c) scavenging air
    - d) injectors
  - 3) Which one of following is an emergency on board?
    - a) Flooding
    - b) Grounding
    - c) Bad weather
    - d) All of above
  - 4) 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
  - 5) In a plate type cooler corrugations are provided to
    - a) Increase surface area
    - b) Promote turbulence
    - c) Increase strength
    - d) All of above

- 6) Lubricating oils are used in an engine for
- Reduce friction
  - Transfer heat
  - Prevent corrosion
  - All of above
- 7) What is the SI unit for pressure? ( $P=F/A$ )
- NM
  - Nm-1
  - Nm-2
  - Nm-3
- 8) During bunkering which flag should be hoisted in the main mast
- Blue flag
  - White flag
  - No smoking sign
  - Red flag
- 9) What is the SI unit for energy?
- Joule (J)
  - watt (W)
  - Ampere (A)
  - Kelvin (K)
- 10) Emergency Bilge suction valve
- Is connected to the main S.W pump
  - Is connected to the bilge pump
  - Is connected to the sludge pump
  - Is connected to the fuel transfer pump
- 11) Which is not a part of a centrifugal pump?
- Impeller
  - Wear ring
  - driven wheel
  - Mechanical seal
- 12) Select the correct statement regarding the loss of suction in a centrifugal pump
- Air entering suction side
  - Suction lift too much
  - Suction strainer blocked
  - All above are correct
- 13) Which one is not a self-priming pump?
- Centrifugal pump
  - Gear pump
  - Screw pump
  - Reciprocating pump



14) Which one is not a metal joining process?

- a) Welding
- b) Casting
- c) Brazing
- d) Soldering

15) Which is possible in an enclosed space?

- a) Lack of Oxygen
- b) Presence of toxic gases
- c) Presence of flammable gases
- d) All of above

16) which one is an advantage of carbon dioxide use as fixed firefighting medium?

- a) No cooling effect
- b) Limited supply
- c) Less harm to equipment
- d) Space with the fire must be enclosed prior to opening carbon dioxide

17) which pump is most suitable to transfer sludge?

- a) centrifugal pump
- b) mono pump
- c) Axial flow pump
- d) Rotary vane pump

18) 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

19) 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

20) Identify the purpose of relief valves

- a) Use to relief excess temperature
- b) Use to regulate flow
- c) Use to relief excess pressure
- d) All of above

21) 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 above

22) 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

23) An accident mean

- a) A result of unsafe act.
- b) A result of unsafe condition
- c) A result of short cut
- d) A and B both are correct

24) what are the types of fire detectors in the engine room

- a) smoke detectors
- b) heat detectors
- c) flame detectors
- d) all above

25) which area is covered by MARPOL Annex V

- a) Prevention of pollution by sewage
- b) Prevention of pollution by garbage
- c) Prevention of pollution by oil
- d) Prevention of air pollution

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

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

27) which statement is **not** correct about maintenance of bilge system

- a) mud box strainers should be cleaned
- b) suction filter of the pump should be cleaned
- c) bilge wells have to be maintained in oil free condition
- d) Bilge wells to be filled with sea water.

28) 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

29) Which is not a part of 4 stroke diesel engine

- a) Gudgeon pin
- b) exhaust valve
- c) Crosshead bearing
- d) main bearing

30) What is your first action in case of fire in E/R

- a) Immediately try to extinguish the fire
- b) Close ventilation flaps
- c) Keeping machineries under observation
- d) Immediately raise the fire alarm

31) 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

32) What is the correct practice regarding the Synchronous scope, after synchronizing the generators?

- a) Kept switched on
- b) switched off
- c) no need of paying attention
- d) None of above

33) After one-hour notice is given is it required to synchronize the clocks of bridge and ECR?

- a) Yes
- b) No
- c) Occasionally
- d) Not applicable



CINEC Campus (Pvt) Ltd

Department of Marine Engineering

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

COURSE CODE: ED 0273 P1(BATCH 19-05) (FINAL EXAM)

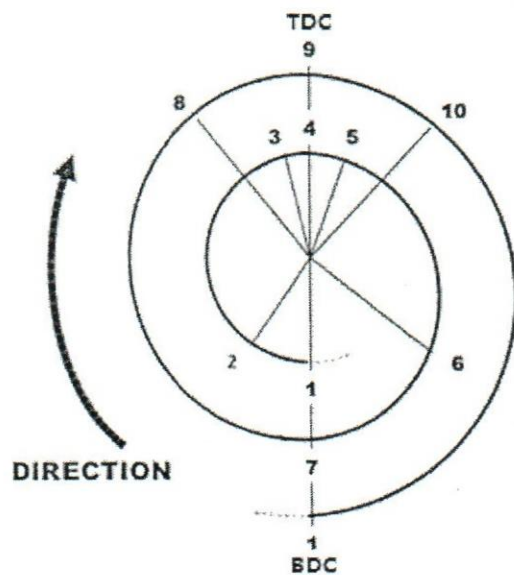
ENGINEERING KNOWLEDGE – II

- Answer **ALL FIVE** questions
- Date: 01.08.2020

Pass mark 50%

Time allocated: 03 Hrs

- 1) a) Note down the main points of the following four-stroke marine diesel engine cycle as per the number listed below. **(07 marks)**



- |        |   |
|--------|---|
| 1-2    | - |
| 2-3    | - |
| 3-4-5  | - |
| 5-6    | - |
| 6-7-8  | - |
| 8-9-10 | - |
| 10-1   | - |

- b) State two main engine shut down alarms. **(04 marks)**
- c) Write down the six daily log book entries. **(06 marks)**
- d) Write down the scavenging methods of two-stroke marine diesel engine. **(03 marks)**



- 2) a) State **five** boiler alarms. (05 marks)  
b) Draw & explain the procedure of boiler gauge glass blow down . (10 marks)  
c) Write down the boiler mountings. (05 marks)
- 3) With regards to MARPOL 73/78 regulation,  
a) State **six** annexes regards to MARPOL 73/78 regulation for the prevention of pollution. (06 marks)  
b) State **four** special areas under MARPOL annex 1. (04 marks)  
c) Draw & explain marine oily water separator. (10 marks)
- 4) With regards to the "Watch at Sea", write down the daily checks to be done of the following (4 checks each).  
a) Main engine (2-stroke) (04 marks)  
b) HFO Purifier (04 marks)  
c) Air compressor (04 marks)  
d) Auxilary engine(generator) (04 marks)  
e) Provision reefer compressor (04 marks)
- 5) a) What is safe work practice (04 marks)  
b) State six personal protective equipment (06 marks)  
c) State three unsafe conditions in engine room (03 marks)  
d) Draw & explain double acting reciprocating pump (piston p/p) (07 marks)