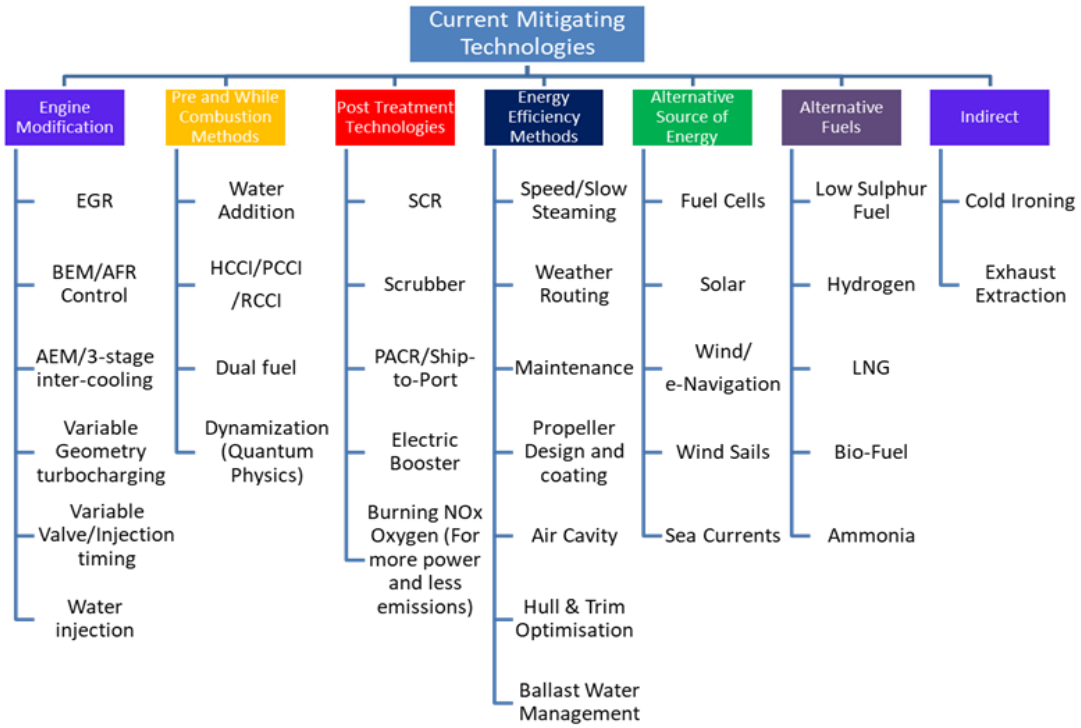
Green Ship

Maritime Energy Management System

Workbook



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Preface

In this workbook the questions are designed to help readers assess their understanding and learn from any mistakes. To further enhance learning, each multiple-choice question includes a confidence check, allowing learners to indicate how sure they are of their answers. If a learner selects the correct answer but reports less than 50% confidence, the answer is not marked as correct, highlighting the need for further review. Conversely, if a learner confidently selects an incorrect answer (with over 50% confidence), it indicates a gap in understanding, and the learner is advised to revisit the relevant chapter. For those seeking CPD certification and ECVET credit, an external assessment and an assignment are available. Samples of both the external assessment and the assignment are included in this workbook.

Contents

Chapter 1: Climate System and Combating Global Warming and Air Pollution

1. The stratosphere is the earth's blanket.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. The GHG is a product of human activity and not found in nature.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. UNEP's main purpose is to help the coordination between countries in order to be a unified response to the climate changes.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. The Kyoto Protocol is responsible for the reduction of the emissions for all kind of transportation.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. What is the major cause for the CO_2 production?

Select one:

a. Human activity ☐

b. Natural causes and human activity ☐

c. Natural causes ☐

d. Sun Radiation ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. What is the major cause for the CO_2 production?

Select one:

a. The Ozone layer ☐

b. Cooling agents ☐

c. FluoroCarbons ☐

d. All of the above ☐

How confident are you? More than 50% ☐ less than 50% ☐

7. When approximately did the production of CO_2, N_2O and CH_2 started to increase exponentially?

Select one:

a. The 1990s ☐

b. The 1970s ☐

c. The 1960s ☐

d. The 1980s ☐

How confident are you? More than 50% ☐ less than 50% ☐

8. What country is the main polluter on a global scale?

Select one:

a. Russia ☐

b. USA ☐

c. China ☐

d. Germany ☐

How confident are you? More than 50% ☐ less than 50% ☐

9. Main sources of human-related CO2 emissions is due to:

Select one:

a. Transportation ☐

b. Industrial and household uses ☐

c. Burning Fossil Fuels ☐

d. Deforestation ☐

How confident are you? More than 50% ☐ less than 50% ☐

10. Climate change is a common concern of human kind requiring a global response.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

11. According to IPCC, Carbon dioxide (CO2) gas influences the most of global warming.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 2: Ship-Board Operations and Energy Efficiency and references to Crew Responsibilities

1. The Chief Engineer is the second-in-command after the Captain.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. The trim of the ship is important when it comes to optimised ship handling.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. Around 85% of emissions come from containerships and tankers; however the most contaminants ships in ports are the cruise ships.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. Miscommunication between the departments of the ship is very uncommon.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. What needs to be considered for optimised ship handling?

Select one:

a. The ship's trim ☐

b. The ballast ☐

c. The use if rudder and autopilot ☐

d. All of the above ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. What type of ship uses their boiler the most?

Select one:

a. An oil tanker ☐

b. A bulk carrier ☐

c. A cruise ship ☐

d. A container ship ☐

How confident are you? More than 50% ☐ less than 50% ☐

7. Who is the second-in-command after the Captain?

Select one:

a. The Chief Officer ☐

b. The Chief Steward ☐

c. The Chief Engineer ☐

d. None of the above ☐

How confident are you? More than 50% ☐ less than 50% ☐

8. What do we take into consideration to measure the size of a ship?

Select one:

a. The type of the ship ☐

b. The height of the ship ☐

c. The weight of the ship ☐

d. None of the above ☐

How confident are you? More than 50% ☐ less than 50% ☐

9. The chief Engineer is responsible for matters concerning:

Select one:

a. Maintenance of all engineering equipment ☐

b. Maintenance of lifesaving and firefighting appliance ☐

c. Maintenance of the ship's hull ☐

d. Maintenance of all cargo loading equipment ☐

How confident are you? More than 50% ☐ less than 50% ☐

10. The ship's operation including planning, execution, controls and evaluations depends on the:

Select one:

a. Master of the ship ☐

b. Chief Officer of the ship ☐

c. Ship owner ☐

d. Chief engineer of the ship ☐

How confident are you? More than 50% ☐ less than 50% ☐

11. The most important person in terms of energy efficiency implementation and execution on-board the ship is the:

Select one:

a. The Chief Officer ☐

b. The Master ☐

c. Second Engineer ☐

d. Chief Engineer ☐

How confident are you? More than 50% ☐ less than 50% ☐

12. The purpose of a sustainable management of a fleet depends on:

Select one:

a. Ignoring voyage planning techniques on increased distance ☐

b. Reducing overall fleet costs including fuel costs ☐

c. Ignoring the environmental credentials of the ship ☐

d. Ignoring energy efficient technologies and low carbon fuels ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 3: Trim, Hull and Propeller Design and Optimisation

1. Normally on RoRo car carriers the optimum trim is

Select one:

a. Zero trim ☐

b. Positive trim ☐

c. Negative trim ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. Fouling is problem on propellers that:

Select one:

a. are constantly rotating ☐

b. are operating too close to surface ☐

c. have damaged coating ☐

d. are stationary for long time ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. Biological fouling is not depending on:

Select one:

a. Amount of algae in the water ☐

b. Ship speed and its operation profile ☐

c. Quality of hull coating ☐

d. Trim of the ship ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. The most accurate way to determine the need of hull cleaning is:

Select one:

a. Hull doesn't need cleaning ☐

b. There are regular cleaning intervals ☐

c. Using divers ☐

d. Performance monitoring ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. What is not explanation for the trim's effect to fuel consumption?

Select one:

a. Changes to propulsive efficiency ☐

b. Changes to wave resistance ☐

c. Changes to wetted surfaces ☐

d. Changes to wind resistance ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 4: E-Navigation and Weather Routing

1. The fuel consumption of a ship is higher in 100 m deep water than in 30 m deep water if the speed of the ship remains constant.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. What type of ship uses their boiler the most?

Select one:

a. Compass ☐

b. AIS ☐

c. Echo sounder ☐

d. GMDSS ☐

e. Radar ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. E-navigation may include on-line monitoring of ships' route to look for ways to reduce GHG emissions, fuel consumption and cost.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. “raster chart” is a copy of the paper chart and cannot be scaled up in too much without losing definition.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. One important goal of the implementation of e-navigation is to reduce the amount of ship/shore information exchange.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 5: Engines and Machinery Load and Utilisation Management

1. The regulation of the flow in a pump of constant flow, through closing the suction valve reduces the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. Efficiency concept is:

Select one:

a. To get the desirable effect ☐

b. To make the engine running ☐

c. To get the optimal desirable effect ☐

d. To get the engine to operate as we desire ☐

e. To get the engine to operate. ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. The engines of low speed have a highest fuel consumption than the engines of high speed.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. The regulation of the flow in a compressor of constant flow, through opening the suction valve reduces the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. The speed of the engines of high speed is between 121 and 399 rpm.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. The low-speed engines operate according to two stroke cycle.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

7. The operating power of the propulsion engines should be between?

Select one:

a. 20 or 30% of the MCR ☐

b. 30 or 40% of the MCR ☐

c. 40 or 50% of the MCR ☐

d. 50 or 70% of the MCR ☐

e. 80 or 90% of the MCR ☐

How confident are you? More than 50% ☐ less than 50% ☐

8. The specific fuel consumption of the engines is lower when it is working at low power output.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

9. The reduction of consumption of fuel on board, depends only on the technology.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

10. The electric motors with variable speed are less efficient.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

11. The regulation of the flow in a pump of constant flow, through closing the discharge valve reduces the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

12. In general, the fluid machinery fitted on board are oversized.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

13. The regulation of the flow in a compressor of constant flow, through closing the discharge valve reduces the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

14. The medium speed engines operate according to four stroke cycle.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

15. Why are the revolutions of the auxiliary engines constant?

Select one:

a. To reduce the wear of the bearings. ☐

b. To maintain the frequency. ☐

c. To maintain the voltage. ☐

d. To maintain the electric current. ☐

e. To maintain the output power ☐

How confident are you? More than 50% ☐ less than 50% ☐

16. The regulation of the flow in a compressor of constant flow, through closing the suction valve reduces the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

17. The speed of the engines of low speed is between 40 and 120 rpm.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

18. What does MCR mean?

Select one:

a. Maximum Continuous Rating. ☐

b. Maximum Charge Rating. ☐

c. Minimum Continuous Rating. ☐

d. Minimum Continuous Rating. ☐

How confident are you? More than 50% ☐ less than 50% ☐

19. The load of the auxiliary engines depends on?

Select one:

a. Displacement and speed. ☐

b. Frequency of the electric current. ☐

c. Electrical needs of the equipment. ☐

d. Displacement of the ship. ☐

e. Speed of the ship. ☐

How confident are you? More than 50% ☐ less than 50% ☐

20. The electric motors must work above of 40% of load to get the maximum efficiency.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

21. The high speed engines operate according to four stroke cycle.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

22. The operating power of the propulsion engines should be between?

Select one:

a. The Master ☐

b. The Chief Engineer ☐

c. The DPA ☐

d. The owner ☐

e. All of above ☐

How confident are you? More than 50% ☐ less than 50% ☐

23. The regulation of the flow in a pump of constant flow, through opening the discharge valve reduces the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

24. Who is responsible for the reduction of consumption fuel on board of the ship?

Select one:

a. The Master ☐

b. The Chief Engineer ☐

c. The Chief Mate ☐

d. The Boatswain ☐

e. All of above ☐

How confident are you? More than 50% ☐ less than 50% ☐

25. Do the electric motors with variable speed have less consumption of electricity?

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

26. The consumption of fuel of auxiliary engines is lower working two auxiliary engines with sharing the load than with only one auxiliary engine working with all the load?

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

27. The regulation of the flow in a pump of constant flow, through opening the suction valve reduces the energy consumption?

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

28. The medium speed engines operate according to two stroke cycle.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

29. The speed of the engines of high speed is between 400 and 1000 rpm.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

30. The specific fuel consumption of the engines is lower when it is working at high power output.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

31. The engines of medium speed have a highest fuel consumption than the engines of low speed.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

32. The regulation of the flow in a compressor of constant flow, through opening the discharge valve reduces the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

33. Who is responsible for the reduction of consumption fuel on board of the ship?

Select one:

a. The Master ☐

b. The Chief Engineer ☐

c. The Donkeyman ☐

d. The Greaser ☐

e. All of above ☐

How confident are you? More than 50% ☐ less than 50% ☐

34. The environmental temperature of all inhabited spaces of the cruise ship must be not less of.

Select one:

a. 18 ºC degrees ☐

b. 20 ºC degrees ☐

c. 21 ºC degrees ☐

d. 23 ºC degrees ☐

e. 24 ºC degrees ☐

How confident are you? More than 50% ☐ less than 50% ☐

35. For safety reasons, all the redundant essential services like lubrication or refrigeration must be operating continuously.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 6: Fuel Management

1. The impurities of the fuel are: sulphur, nitrogen and water.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. The control of fuel consumed on board can be measured by:

Select one:

a. Flow measure ☐

b. Sounding the tanks ☐

c. All above ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. The impurities of the fuel are: sulphur, solids and water.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. For what have we taken a sample of the fuel during bunker operation?

Select one:

a. To keep on board in the chief engineer's cabin. ☐

b. To analyse in case of problems when the fuel is burned in the engines ☐

c. To send to the owners ☐

d. To analyse in the next port ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. The acid rain is provoked by SOx from combustion.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. The quality of the fuel is standardized under the standard ISO 8217.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

7. The fuel produced by the cracking process has impurities like aluminium and silicon.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

8. To avoid the clogging of the pipes and filters the new fuel on board must be stored into the empty tanks.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

9. Before use, the fuel stored on board needs to be treated to remove the solids and the water contents in it.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

10. To avoid the clog of the pipes and filters the new fuel on board never must be blended with the fuel stored in the tanks.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

11. The measures that can be taken to improve the energy efficiency regarding the management of the fuels used on board are:

Select one:

a. Carry the fuel needed for each trip. ☐

b. Avoid carrying unnecessary fuel and the possible stratification of it ☐

c. Maintain the fuel stored to the minimum temperature possible inside of the tank ☐

d. Control of good performance of the viscometer ☐

e. All above ☐

How confident are you? More than 50% ☐ less than 50% ☐

12. The chief engineer must measure every day the fuel burned by the main and auxiliary engines, and boilers.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

13. The aluminum and silicon content in the fuel can provoke wear and damage in the pistons and cylinder liners of the engines.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

14. What is the standard that the fuel used on board must be compliant with:

Select one:

a. IMO ☐

b. BS ☐

c. ISO ☐

d. ASME ☐

How confident are you? More than 50% ☐ less than 50% ☐

15. The purpose of heating the fuel between 60-70 ºC degrees in the settling tank is to remove some parts of water and solids in suspension.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

16. The fuel in the injections and combustions systems is to heat it to get:

Select one:

a. Low temperature ☐

b. Low viscosity ☐

c. High temperature ☐

d. High viscosity ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 7: Technical Update and Retrofit

1. The waste heat recovery reduces the fuel consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. The efficiency of the MEWIS DUCT makes it suitable in vessels sailing to speeds lower 19 knots.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. The duct propeller reduces the fuel consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. Devices like the MEWIS DUCT fitted forward of the propeller reduce the power propulsion.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. The duct propeller reduces the propulsion power.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. The devices fitted aft of the propeller reduce the friction losses.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

7. The waste heat recovery reduces the atmosphere contamination.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

8. The forward bulbous reduces the propulsion power.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 8: Boilers and Steam System

1. The insulation of the steam pipes reduces the heat loss and the consumption of fuel.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. The surface and bottom water extractions of the boilers are made to eliminate the salts and solids contented in the water.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. The boilers on board of the ships produce steam only for heating the fuel used by the engines.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. For what have we taken a sample of the fuel during bunker operation?

Select one:

a. Through a waste heat recovery steam generator plus fuel. ☐

b. Through a gas turbine ☐

c. Through a diesel engine ☐

d. Through a fuel steam boiler ☐

e. Through a waste heat recovery steam generator ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. An increase of the temperature of the exhaust gases of the auxiliary boilers is indicating a bad transmission of heat and, therefore, a fouling of the pipes.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. The boilers on board of the ships produce steam only for heating the fuel used by the engines.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

7. The temperature of the exhaust gases informs us the cleaning state of the steam and water pipes.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

8. The maximum efficiency of the boilers is when are working with a workload higher than 80%.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

9. The surface and bottom water extractions of the boilers are made to eliminate only the salts contented in the water.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

10. The auxiliary boilers on board of the ships produce steam to heat the cargo carried, heating the ship, generate electricity and heating the fuel used by the engines.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 9: Port Operations, Air Emissions and Efficiency Measures

1. What is the most effective system for reducing ship in-port air pollutants?

Select one:

a. Using alternative fuels ☐

b. Using On-Shore Power Supply ☐

c. Using existing engine technology ☐

d. Using after treatment technologies ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. Just In Time (JIT) normally refers to process Improvements that:

Select one:

a. Reduce ship crews working hours ☐

b. Reduce Unnecessary waiting and the idle periods of ship operations ☐

c. Reduce Unnecessary towage services ☐

d. Reduce Unnecessary auxiliary engine loads and boiler burnings ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. In port areas, air emissions and energy consumptions are primarily due to:

Select one:

a. Cargo loading and unloading devices ☐

b. Buildings and energy needed for these building ☐

c. Ships ☐

d. Harbour crafts that provide additional services to port and shipping companies ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. Efficiency concept is?

Select one:

a. To get the desirable effect ☐

b. To get that engine operate ☐

c. To get that the engine operate as we desirable ☐

d. To make that the engine running ☐

e. To get the optimal desirable effect ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. NOx is a GHG.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. SOx is a GHG.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

7. CO_2 is a GHG.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

8. The specific fuel consumption of the engines is lower when it is working at low power output.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

9. The specific fuel consumption of the engines is lower when it is working at high power output.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

10. What mean IFO?

Select one:

a. Indispensable Fuel Oil ☐

b. Intermediate Fuel Oil ☐

c. International Fuel Oil ☐

d. Indicated Fuel Oil ☐

How confident are you? More than 50% ☐ less than 50% ☐

11. What means the number after IFO-380?

Answer:

---

12. What is the Intermediate Fuel Oil?

Select one:

a. Marine diesel oil ☐

b. Diesel oil ☐

c. Gasoline ☐

d. Marine diesel oil plus marine fuel ☐

How confident are you? More than 50% ☐ less than 50% ☐

13. What is the most efficiency way to generate electricity on board of the ship?

Select one:

a. Through a PTO from the main engine ☐

b. Through a genset diesel ☐

c. Through a PTI coupled to the main engine ☐

d. Through a genset gas turbine ☐

How confident are you? More than 50% ☐ less than 50% ☐

14. What is the most efficiency way to generate steam on board of the ship?

Select one:

a. Through a gas turbine. ☐

b. Through a waste heat recovery steam generator ☐

c. Through a waste heat recovery steam generator plus fuel ☐

d. Through a diesel engine ☐

How confident are you? More than 50% ☐ less than 50% ☐

15. Who is responsible for the reduction of fuel consumption on board of the ship?

Select one:

a. The Master ☐

b. The Chief Engineer ☐

c. The Donkeyman ☐

d. The Greaser ☐

e. All of above ☐

How confident are you? More than 50% ☐ less than 50% ☐

16. The reduction of consumptions of fuel on board, depend only of the technology.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

17. The engine of medium speed has higher fuel consumption than the engine of low speed.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

18. The engine of low speed has higher fuel consumption than the engine of high speed.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

19. The speed of the engines of low speed is between 40 and 120 rpm.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

20. The speed of the engines of high speed is between 121 and 399 rpm.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

21. The speed of the engines of high speed is between 400 and 1000 rpm.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

22. The low-speed engines operate according two stroke cycle.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

23. The medium speed engines operate according two stroke cycle.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

24. The high-speed engines operate according four stroke cycle.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

25. The medium speed engines operate according four stroke cycle.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

26. What means MCR?

Select one:

a. Maximum Charge Rating ☐

b. Minimum Continuous Rating ☐

c. Maximum Continuous Rating ☐

d. All of above ☐

How confident are you? More than 50% ☐ less than 50% ☐

27. The operating power of the propulsion engines will be between

Select one:

a. 50 or 70% of the MCR ☐

b. 30 or 40% of the MCR ☐

c. 80 or 90% of the MCR ☐

d. 40 or 50% of the MCR ☐

e. 20 or 30% of the MCR ☐

How confident are you? More than 50% ☐ less than 50% ☐

28. The load of the propulsion engines of the ship depends on:

Select one:

a. Cargoes of the ship ☐

b. Displacement of the ship ☐

c. Ballast of the ship ☐

d. Speed of the ship ☐

e. Displacement and speed ☐

How confident are you? More than 50% ☐ less than 50% ☐

29. The load of the auxiliary engines depends on:

Select one:

a. Electrical needs of the equipment ☐

b. Displacement of the ship ☐

c. Frequency of the electric current ☐

d. Displacement and speed ☐

e. Speed of the ship ☐

How confident are you? More than 50% ☐ less than 50% ☐

30. The revolutions of the auxiliary engines are constant to:

Select one:

a. maintain the voltage ☐

b. maintain the output power ☐

c. maintain the electric current ☐

d. maintain the frequency ☐

e. reduce the wear of the bearings ☐

How confident are you? More than 50% ☐ less than 50% ☐

31. Why do we take a sample of each fuel supply during bunker operation?

Select one:

a. To send it to the owner ☐

b. To keep it in the engine room ☐

c. To know the quality of the fuel in the case of problems in the operation of the engines ☐

d. To know the quality of the fuel ☐

How confident are you? More than 50% ☐ less than 50% ☐

32. The output power of the propulsion engines depend of the V^3 of the ship.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

33. The consumption of fuel of the propulsion engines depend of the V^3 of the ship.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

34. The consumption of the fuel of auxiliary engines is lower working two auxiliary engines with sharing the load than only one auxiliary engine working with all loads.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

35. For safety reasons, all the redundant essential services like lubrication or refrigeration must be operating continuously.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

36. The regulation of the flow in a pump of constant flow, through opening the suction valve reduce the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

37. The regulation of the flow in a pump of constant flow, through closing the suction valve reduce the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

38. The regulation of the flow in a pump of constant flow, through opening the discharge valve reduce the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

39. The regulation of the flow in a pump of constant flow, through closing the discharge valve reduce the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

40. The regulation of the flow in a compressor of constant flow, through opening the suction valve reduce the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

41. The regulation of the flow in a compressor of constant flow, through closing the suction valve reduce the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

42. The regulation of the flow in a compressor of constant flow, through opening the discharge valve reduce the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

43. The regulation of the flow in a compressor of constant flow, through closing the discharge valve reduce the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

44. In general, the fluid machinery fitted on board are oversizing.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

45. For the year 2020 the maximum sulphur content in the international maritime transport will be 0,5% m/m.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

46. The maximum sulphur content in EU ports is 0,1% m/m.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

47. The maximum sulphur content in the SECAs is 0,1% m/m.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

48. The sedimentation tanks are used exclusively for heating the fuel.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

49. The sedimentation tanks are used to remove, though natural process the water and solid waste and heating the fuel.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

50. The fuel passes directly from the sedimentation tanks to daily tank.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

51. The fuel is heated to reduce its viscosity.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 10: Cargo and Ballast Management

1. Which factors are not linked the amount of ballast water discharge/uptake in a port?

Select one:

a. Type of vessel ☐

b. Weather condition ☐

c. Ship loading planning ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. E-navigation may include on-line monitoring of ships' route to look for ways to reduce GHG emissions, fuel consumption and cost.

Select one:

a. Ship Owner ☐

b. Stevedore ☐

c. Exporter ☐

d. Packing Unit ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. As economies of scale basis, overall energy efficiency may also be improved for smaller vessels with access to more ports and cargo types and able to fill cargo holds to full capacity.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. The ship loading management has implications for ship energy efficiency.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. Which type of ships have a good deal of scope for improving stability and changing trim using ballast tanks?

Select one:

a. IMO Type I Chemical Tanker ☐

b. Bulk Carrier ☐

c. Container Ship ☐

d. Crude Oil Carrier Tanker ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. The measured load-lines on a ship is defined as the measurement from the uppermost continuous watertight deck to the ships waterline at its mid-point.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

7. Reefer containers are usually equipped by default with water-cooled condensers, some are designed to run as air-cooled units.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

8. How many methods are there for ballast water exchange which have been evaluated and accepted by the IMO?

Answer:

_____

_____

Chapter 11: Ship Maintenance and Energy Efficiency

1. Which type of ships have a good deal of scope for improving stability and changing trim using ballast tanks?

Select one:

a. Designing and implementation of a management system ☐

b. Database containing register of all equipment onboard ☐

c. Providing required resources ☐

d. Fix-it upon damage ☐

e. Employing competent crew ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. "Marine growths create a rough surface on the hull which …… resistance of the vessel and …… the fuel consumption. "

Select one:

a. Increases / Decreases ☐

b. Increases/ Increases ☐

c. Decreases / Decreases ☐

d. Decreases / Increases ☐

e. None of the above ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. "Corrective maintenance is defined as activities undertaken to detect, isolate, and rectify a fault so that the failed equipment, machine, or system can be restored to its required function. "

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 12: Energy Efficiency Management and Operational Measures

1. Which of the following is not enough itself to identify the energy efficiency of a vessel?

Select one:

a. Fuel Consumption ☐

b. IEEC ☐

c. EEOI ☐

d. Attained EEDI ☐

e. Required EEDI ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. Which of the following is not mandatory while preparing SEEMP?

Select one:

a. Raising awareness and providing training for crew ☐

b. EEOI Goal setting ☐

c. Ship-Specific Measures ☐

d. Determination of current ship energy usage ☐

e. Company-Specific Measures ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. "A smaller EEOI value means a more energy efficient ship. "

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 13: Environmental Concerns and IMO Response

1. The International Maritime Organization (IMO) is a UN body.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. IMO has developed tools and policy guidelines to maintain environment high standards and provide to implement and apply these instruments.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. The International Convention for the Prevention of Pollution from Ships (MARPOL) was adopted and entered in force on 2 November 1973.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. The Chapter 4 of Annex VI Marpol Convention concerns many regulations on energy efficiency for ships.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. Around 90% of world trade is carried by the international shipping industry.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. Which is the main and easiest method to reduce greenhouse gas emissions from international shipping?

Select one:

a. Using fuels with less emissions ☐

b. Using technologies to reduce and reduce emissions ☐

c. Use of renewable energy sources ☐

d. Improvement of operational energy efficiency ☐

How confident are you? More than 50% ☐ less than 50% ☐

Chapter 14: International Energy Management Standards

1. ISO 5001 is designed according to other ISO management system standards, in particular it is based on ISO 9001 (Quality Management System) and ISO 14001 (Environmental Management System).

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. The EEDI is not mandatory for new ships.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. ISO is not involved in the certification and does not issue certificates. This is performed by external certification bodies competent to certify organizations for conformance to ISO 50001.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. ISO 19030, a new standard conceived to:

Select one:

a. enable ship owners and operators to compare hull and propeller solutions, and select the most efficient option for their vessels and enhancing environmental performance and vessel efficiency. ☐

b. enable ship owners and operators to monitor hull and propeller solutions ☐

c. enable ship owners and operators to improve propeller cleaning ☐

d. Improvement of operational energy efficiency ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. The Energy Efficiency Operational Indicator (EEOI) is:

Select one:

a. a measures to identify energy efficiency ☐

b. a monitoring mechanism to measure the fleet efficiency performance over the time ☐

c. a monitoring tool for managing ship and fleet efficiency performance over time ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. Please, mention at least two tasks/aspects that the head office and on board ship has to take care.

Answer:

_____

_____

_____

_____

_____

_____

7. E-navigation may include on-line monitoring of ships' route to look for ways to reduce GHG emissions, fuel consumption and cost.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

8. One important goal of the implementation of e-navigation is to reduce the amount of ship/shore information exchange.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

9. “raster chart” is a copy of the paper chart and cannot be scaled up in too much without losing definition.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

7. Which of the following equipment is NOT connected to the ship’s ECDIS?

Select one:

a. AIS ☐

b. Compass ☐

c. Echo sounder ☐

d. GMDSS ☐

e. Radar ☐

How confident are you? More than 50% ☐ less than 50% ☐

Final Assessment

1. What is the standard that the fuel used on board must be compliant with:

Select one:

a. IMO ☐

b. BS ☐

c. ISO ☐

d. ASME ☐

How confident are you? More than 50% ☐ less than 50% ☐

2. The load of the auxiliary engines depends on?

Select one:

a. Displacement and speed. ☐

b. Frequency of the electric current. ☐

c. Electrical needs of the equipment. ☐

d. Displacement of the ship. ☐

e. Speed of the ship. ☐

How confident are you? More than 50% ☐ less than 50% ☐

3. What needs to be considered for optimised ship handling?

Select one:

a. The ship's trim ☐

b. The ballast ☐

c. The use if rudder and autopilot ☐

d. All of the above ☐

How confident are you? More than 50% ☐ less than 50% ☐

4. Who is the second-in-command after the Captain?

Select one:

a. The Chief Officer ☐

b. The Chief Steward ☐

c. The Chief Engineer ☐

d. None of the above ☐

How confident are you? More than 50% ☐ less than 50% ☐

5. ISO 5001 is designed according to other ISO management system standards, in particular it is based on ISO 9001 (Quality Management System) and ISO 14001 (Environmental Management System).

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

6. The fuel produced by the cracking process has impurities like aluminium and silicon.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

7. The medium speed engines operate according to four stroke cycle.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

8. To avoid the clog of the pipes and filters the new fuel on board never must be blended with the fuel stored in the tanks.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

9. Efficiency concept is:

Select one:

a. To get the desirable effect ☐

b. To make the engine running ☐

c. To get the optimal desirable effect ☐

d. To get the engine to operate as we desire ☐

e. To get the engine to operate. ☐

How confident are you? More than 50% ☐ less than 50% ☐

10. What is not explanation for the trim's effect to fuel consumption?

Select one:

a. Changes to propulsive efficiency ☐

b. Changes to wave resistance ☐

c. Changes to wetted surfaces ☐

d. Changes to wind resistance ☐

How confident are you? More than 50% ☐ less than 50% ☐

11. The efficiency of the MEWIS DUCT makes it suitable in vessels sailing to speeds lower 19 knots.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

12. Miscommunication between the departments of the ship is very uncommon.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

13. Who is responsible for the reduction of consumption fuel on board of the ship?

Select one:

a. The Master ☐

b. The Chief Engineer ☐

c. The Donkeyman ☐

d. The Greaser ☐

e. All of above ☐

How confident are you? More than 50% ☐ less than 50% ☐

14. The regulation of the flow in a pump of constant flow, through opening the suction valve reduces the energy consumption.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

15. The low-speed engines operate according to two stroke cycle.

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

16. Which type of ships have a good deal of scope for improving stability and changing trim using ballast tanks?

Select one:

a. IMO Type I Chemical Tanker ☐

b. Bulk Carrier ☐

c. Container Ship ☐

d. Crude Oil Carrier Tanker ☐

How confident are you? More than 50% ☐ less than 50% ☐

17. Main sources of human-related CO2 emissions is due to:

Select one:

a. Transportation ☐

b. Industrial and household uses ☐

c. Burning Fossil Fuels ☐

d. Deforestation ☐

How confident are you? More than 50% ☐ less than 50% ☐

18. “A smaller EEOI value means a more energy efficient ship. “

Select one:

True ☐

False ☐

How confident are you? More than 50% ☐ less than 50% ☐

19. The revolutions of the auxiliary engines are constant to:

Select one:

a. maintain the voltage ☐

b. maintain the output power ☐

c. maintain the electric current ☐

d. maintain the frequency ☐

e. reduce the wear of the bearings ☐

How confident are you? More than 50% ☐ less than 50% ☐

20. The purpose of a sustainable management of a fleet depends on:

Select one:

a. Ignoring voyage planning techniques on increased distance ☐

b. Reducing overall fleet costs including fuel costs ☐

c. Ignoring the environmental credentials of the ship ☐

d. Ignoring energy efficient technologies and low carbon fuels ☐

How confident are you? More than 50% ☐ less than 50% ☐