


Merchant Marine Academy of Macedonia- School of Engineers		
Course: Maritime English	Academic year: 2022-23	Exam period: February
Semester: C	Date:	Instructors: A. Birbili, E. Xenitidou, M. Tsompanoglou
Student's name:		
Student's number:		
	Exam paper grade:	Instructor's signature

**Read the following passage and fill in the gaps with the appropriate word: gravity, erratic, sulphur, particles, capacity, consumption, treatment, fortified, decrease, eliminate 10 points**

- ❖ High water content in the fuel causes..... combustion and corrosion.
- ❖ In most fuel systems the settling tanks and daily service tanks are also called .....tanks.
- ❖ The daily service tanks have the ..... to provide the engine with fuel for 24 hours .
- ❖ Fuel is an important criterion for the choice of the engine, since more than 50% of the total running cost of the ship is due to fuel ..... Marine diesel oil is the best because it produces less dirt and does not need special ....., but it is expensive. It may be used when the vessel is manoeuvring. Heavy fuel oil is much cheaper but it produces sludge and dirtier exhaust gases. It contains more ..... than diesel and, having a higher viscosity, it cannot be pressed through injectors without treatment. It needs heating to .....viscosity and purifying to..... water and dirt particles, too big to pass through the injector. Heating is done in fuel heaters mostly by electric heating, and cleaning is done in separators, centrifuges, where water and heavy ..... are separated from the fuel.
- ❖ Lube oils are ..... with chemicals to improve their properties.

**Fill in the gaps with the appropriate derivative words.**

**10 points**

1. Something that is able to be applied or done is .....APPLY.
2. Discharge of gases or smoke is .....EMIT.
3. The .....REMOVE of water and foreign particles in the lube oil is done in a centrifugal .....SEPARATE.
4. ....SULPHUR acid can cause extensive damage.
5. The TBN value of cylinder oil shows its ability to neutralise the.....CORRODE influence of acids.
6. The person who buys something is the ..... PURCHASE.
7. Additives in the ..... LUBRICATE oil improve its quality.
8. HFO is a highly .....VISCOSITY liquid.
9. Something that is brought into force or is valid is also .....EFFECT.

Match the questions to the answers. There is an extra answer.		10 points
1. What is the function of the buffer tank?		• Residual fuels
2. Which fuels are mainly used in marine diesel engines?		• Crude oil.
3. What does the booster pump do?		• MDO and HFO
4. What do marine fuels come from?		• Distillate fuels..
5. Where are the fuels stored?		• Intermediate fuel oil.
6. How is the fuel cleaned?		• It adjusts the temperature of the fuel.
7. How do we call any fuel whose grade lies between HFO and MDO?		• By a centrifugal separator.
8. How do we call the fuels that are refined petroleum products?		• It allows the used oil from the engine to be mixed with a new charge.
9. What is the function of the settling tank?		• It raises the pressure of fuel
10. What does the viscosity regulator do?		• In the storage tanks
		• It allows water and thick particles to sink down.

**Match the following list of lub-oil additives to their functions: antioxidants, corrosion inhibitors, viscosity index improvers, wear preventers, pour point depressants, detergents, dispersants, anti-foamants**

**8points**

- |   |       |
|---|-------|
| Keep the engine parts clean of deposits                     | ..... |
| Increase the VI of the oil.                                 | ..... |
| Limit the damage that is caused by friction                 | ..... |
| Reduce foam in the crankcase                                | ..... |
| Lower the freezing point of oil                             | ..... |
| Prevent the oxidation of oil                                | ..... |
| Prevent the corrosion of metal surfaces                     | ..... |
| Keep sludge, carbon and other deposits suspended in the oil | ..... |

**Match the following words to form the correct collocations (phrases): constructor's / drain/ VI / nozzle/ injector/ inlet/ needle/ pumping/ viscosity/ sounding/ three- way / pressure/ gudgeon/ drip/ double**  
**15 points**

- |                |             |                |           |
|----------------|-------------|----------------|-----------|
| ..... chamber  | fuel        | .....pipe      | .....stem |
| ..... sampling | .....pin    | .....hulled    |           |
| .....pipe      | .....manual | .....valve     |           |
| .....assembly  | .....tank   | .....regulator |           |
| .....improver  | .....rate   | .....holder    |           |

**Underline the correct alternative.**

**20 points**

1. Bunker samples are .....for later verification of supplied product quality in case a dispute arises.  
A. distilled                      B. locked                      C. pumped                      D.sealed
2. The pumping ..... is up to 600 m<sup>3</sup>/ h.  
A. flow                      B. rate                      C. excess                      D. emission
3. An adequate number of Yokohama ..... are placed on the supply tanker depending on weather conditions.  
A. manifolds                      B. fenders                      C. hoses                      D. pipes
4. After the manifold is opened, the supplier hands over the .....stop button to the vessel.  
A. emergency                      B. drip                      C. sampling                      D. urgent
5. The bearings of the engine are lubricated with...  
A. cylinder oil                      B.circulating lube oil                      C. turbine oil                      D. grease
6. A measure of density or weight of the fuel. It also serves as a rough check on viscosity, carbon content and other qualities.  
A. specific gravity                      B. density                      C. CCAI                      D. viscosity
7. Through what process do marine fuels come from?  
A. purification                      B. fractional distillation                      C. homogenizing                      D. centrifuging
8. ....is oxidation leading to rust.  
A. corrosion                      B. scoring                      C. emission                      D. grinding
9. The amount of heat given off on complete combustion of one pound of fuel.  
A. cetane number                      B. heating value                      C. flash point                      D. boiling point
10. The temperature at which the fuel vapours ignite when a flame is applied.  
A. flash point                      B. pour point                      C. viscosity                      D. heating value
11. Unburned carbon during combustion which can deposit on engine parts.  
A. sulphur                      B. carbon sediment                      C. carbon residue                      D. carbon dioxide
12. An indication of the ignition quality of the fuel.  
A. heating value                      B. flash point                      C. cetane number                      D. pour point
13. Mud, dirt is .....  
A. sludge                      B. residue                      C. crude                      D. carbon
14. Deposit is .....  
A. froth                      B. scoring                      C. sediment                      D. corrosion
15. The lowest temperature at which the fuel will flow.  
A. flash point                      B. pour point                      C. viscosity                      D. heating value
16. Chemical element which can be very injurious to engine parts during combustion because it changes into acid.  
A. sulphur                      B. carbon                      C. ash                      D. cetane
17. Non-combustible solid material in the fuel which scratches the rubbing surfaces it comes in contact with.  
A. carbon dioxide                      B. sulphur                      C. acid                      D. ash content
18. It is expressed in kilograms per cubic metre and mainly affects the fuel separation.  
A. specific energy                      B. density                      C. acid number                      D. viscosity
19. It detects all acids present. If it is elevated it may be an indicator of other harmful components.  
A. sediment                      B. cat fines                      C. acid number                      D. TBN

20. The injection is done by the fuel injectors which are .....on the cylinder head.  
A. fitted                                      B. boosted                                      C. spread                                      D. defined

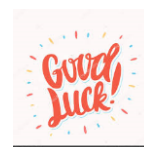
**Match the following words to their synonyms/definitions: buffer tank, centrifuge, accumulate, regulate, stalling, residue, tenacity, surplus, seizing, faulty, insulate, purify**      12 points

- reduction of revolutions, eventual stopping of the engine:.....
- balancing/mixing tank: .....
- disperse through outward movement: .....
- what remains, what is left: .....
- build up, gather: .....
- wrap up or protect against heat.....
- major damage of bearings due to insufficient lubrication:.....
- sticking property: .....
- excess.....
- defective: .....
- control, adjust:.....
- remove impurities, clean:.....

**Complete the text using the following words: mineral, friction, metals, wear, heat, consult, distillation, performance, running, antifouling, sealing, coolant, corrosion, sticking, inadequate.**

15 points

The main task of lubrication is to reduce \_\_\_\_\_ between the moving parts of an engine. In this way we ensure better \_\_\_\_\_ of the engine and reduction of \_\_\_\_\_ due to friction. Lubrication also acts as a \_\_\_\_\_, because it absorbs a considerable amount of \_\_\_\_\_ which is released from friction. Furthermore, it assists the piston rings in \_\_\_\_\_ the combustion chamber. Moreover, it protects the surfaces from \_\_\_\_\_, even when the engine is out of \_\_\_\_\_, thanks to the good tenacity lubricants have on \_\_\_\_\_. Finally, it keeps the metal surfaces clean due to the \_\_\_\_\_ property of lubricating oil. Correct lubrication of the engine is of great importance because \_\_\_\_\_ lubrication would lead to the seizing of bearings and \_\_\_\_\_ of the engine. The correct choice of lubricating oil is essential too, and we should always \_\_\_\_\_ the engine constructor's manual as to the recommended type of oil for the particular engine. The types of lubricating oils used in marine diesel engines are generally \_\_\_\_\_ oils, coming from the residues of crude oil after its \_\_\_\_\_.



**Read the following passage and fill in the gaps with the appropriate word: gravity, erratic, sulphur, particles, capacity, consumption, treatment, fortified, decrease, eliminate 10 points**

- ❖ Fuel is an important criterion for the choice of the engine, since more than 50% of the total running cost of the ship is due to fuel ..... Marine diesel oil is the best because it produces less dirt and does not need special ....., but it is expensive. It may be used when the vessel is manoeuvring. Heavy fuel oil is much cheaper but it produces sludge and dirtier exhaust gases. It contains more ..... than diesel and, having a higher viscosity, it cannot be pressed through injectors without treatment. It needs heating to .....viscosity and purifying to..... water and dirt particles, too big to pass through the injector. Heating is done in fuel heaters mostly by electric heating, and cleaning is done in separators, centrifuges, where water and heavy ..... are separated from the fuel.
- ❖ In most fuel systems the settling tanks and daily service tanks are also called .....tanks.
- ❖ The daily service tanks have the ..... to provide the engine with fuel for 24 hours .
- ❖ Lube oils are ..... with chemicals to improve their properties.
- ❖ High water content in the fuel causes..... combustion and corrosion.

**Fill in the gaps with the appropriate derivative words.**

**10 points**

10. Additives in the ..... LUBRICATE oil improve its quality.
11. HFO is a highly .....VISCOSITY liquid.
12. The TBN value of cylinder oil shows its ability to neutralise the.....CORRODE influence of acids.
13. The person who buys something is the ..... PURCHASE.
14. Something that is brought into force or is valid is also .....EFFECT.
15. Something that is able to be applied or done is .....APPLY.
16. Discharge of gases or smoke is .....EMIT.
17. The .....REMOVE of water and foreign particles in the lube oil is done in a centrifugal .....SEPARATE.
18. ....SULPHUR acid can cause extensive damage.

**Match the questions to the answers. There is an extra answer.**

**10 points**

<b>11.</b> What is the function of the buffer tank?		• Distillate fuels.
<b>12.</b> Which fuels are mainly used in marine diesel engines?		• It allows the used oil from the engine to be mixed with a new charge.
<b>13.</b> What does the booster pump do?		• MDO and HFO
<b>14.</b> What do marine fuels come from?		• Residual fuels.
<b>15.</b> Where are the fuels stored?		• Intermediate fuel oil.
<b>16.</b> How is the fuel cleaned?		• It adjusts the temperature of the fuel.

17. How do we call any fuel whose grade lies between HFO and MDO?		<ul style="list-style-type: none"> <li>It raises the pressure of fuel</li> </ul>
18. How do we call the fuels that are refined petroleum products?		<ul style="list-style-type: none"> <li>Crude oil.</li> </ul>
19. What is the function of the settling tank?		<ul style="list-style-type: none"> <li>By a centrifugal separator.</li> </ul>
20. What does the viscosity regulator do?		<ul style="list-style-type: none"> <li>It allows water and thick particles to sink down</li> </ul>
		<ul style="list-style-type: none"> <li>In the storage tanks.</li> </ul>

**Match the following list of lub-oil additives to their functions: antioxidants, corrosion inhibitors, viscosity index improvers, wear preventers, pour point depressants, detergents, dispersants, anti-foamants**

**8points**

- Increase the VI of the oil. ....
- Limit the damage that is caused by friction .....
- Reduce foam in the crankcase .....
- Keep the engine parts clean of deposits .....
- Lower the freezing point of oil .....
- Prevent the oxidation of oil .....
- Prevent the corrosion of metal surfaces .....
- Keep sludge, carbon and other deposits suspended in the oil .....

**Match the following words to form the correct collocations (phrases): constructor's / drain/ VI / nozzle/ injector/ inlet/ needle/ pumping/ viscosity/ sounding/ three- way / pressure/ gudgeon/ drip/ double**

**15 points**

- .....assembly
- .....improver
- .....chamber
- .....sampling
- .....pipe
- .....tank
- .....rate
- fuel .....
- .....pipe
- .....pin
- .....manual
- .....regulator
- .....holder
- .....stem
- .....hulled
- .....valve

**Underline the correct alternative.**

**20 points**

20. An adequate number of Yokohama ..... are placed on the supply tanker depending on weather conditions.  
 A. manifolds                      B. fenders                      C. hoses                      D. pipes
21. After the manifold is opened, the supplier hands over the .....stop button to the vessel.  
 A. emergency                      B. drip                      C. sampling                      D. urgent
22. Bunker samples are .....for later verification of supplied product quality in case a dispute arises.  
 A. distilled                      B. locked                      C. pumped                      D.sealed
23. The pumping ..... is up to 600 m<sup>3</sup>/ h.  
 A. flow                      B. rate                      C. excess                      D. emission

24. Mud, dirt is .....  
A. sludge                      B. residue                      C. crude                      D. carbon
25. The bearings of the engine are lubricated with...  
A. cylinder oil                      B. circulating lube oil                      C. turbine oil                      D. grease
26. A measure of density or weight of the fuel. It also serves as a rough check on viscosity, carbon content and other qualities.  
A. specific gravity                      B. density                      C. CCAI                      D. viscosity
27. Through what process do marine fuels come from?  
A. purification                      B. fractional distillation                      C. homogenizing                      D. centrifuging
28. ....is oxidation leading to rust.  
A. corrosion                      B. scoring                      C. emission                      D. grinding
29. Deposit is .....  
A. froth                      B. scoring                      C. sediment                      D. corrosion
30. The lowest temperature at which the fuel will flow.  
A. flash point                      B. pour point                      C. viscosity                      D. heating value
31. Chemical element which can be very injurious to engine parts during combustion because it changes into acid.  
A. sulphur                      B. carbon                      C. ash                      D. cetane
32. The temperature at which the fuel vapours ignite when a flame is applied.  
A. flash point                      B. pour point                      C. viscosity                      D. heating value
33. Unburned carbon during combustion which can deposit on engine parts.  
A. sulphur                      B. carbon sediment                      C. carbon residue                      D. carbon dioxide
34. Non-combustible solid material in the fuel which scratches the rubbing surfaces it comes in contact with.  
A. carbon dioxide                      B. sulphur                      C. acid                      D. ash content
35. The amount of heat given off on complete combustion of one pound of fuel.  
A. cetane number                      B. heating value                      C. flash point                      D. boiling point
36. An indication of the ignition quality of the fuel.  
A. heating value                      B. flash point                      C. cetane number                      D. pour point
37. It is expressed in kilograms per cubic metre and mainly affects the fuel separation.  
A. specific energy                      B. density                      C. acid number                      D. viscosity
38. It detects all acids present. If it is elevated it may be an indicator of other harmful components.  
A. sediment                      B. cat fines                      C. acid number                      D. TBN
20. The injection is done by the fuel injectors which are .....on the cylinder head.  
A. fitted                      B. boosted                      C. spread                      D. defined

**Match the following words to their synonyms/definitions: buffer tank, centrifuge, accumulate, regulate, stalling, residue, tenacity, surplus, seizing, faulty, insulate, purify      12 points**

major damage of bearings due to insufficient lubrication:.....

sticking property: .....

reduction of revolutions, eventual stopping of the engine:.....

balancing/mixing tank: .....

disperse through outward movement: .....

what remains, what is left: .....

build up, gather: .....

defective: .....

control, adjust:.....

remove impurities, clean:.....

wrap up or protect against heat.....

excess.....

**Complete the text using the following words: mineral, friction, metals, wear, heat, consult, distillation, performance, running, antifouling, sealing, coolant, corrosion, sticking, inadequate.**

**15 points**

The main task of lubrication is to reduce \_\_\_\_\_ between the moving parts of an engine. In this way we ensure better \_\_\_\_\_ of the engine and reduction of \_\_\_\_\_ due to friction. Lubrication also acts as a \_\_\_\_\_, because it absorbs a considerable amount of \_\_\_\_\_ which is released from friction. Furthermore, it assists the piston rings in \_\_\_\_\_ the combustion chamber. Moreover, it protects the surfaces from \_\_\_\_\_, even when the engine is out of \_\_\_\_\_, thanks to the good tenacity lubricants have on \_\_\_\_\_. Finally, it keeps the metal surfaces clean due to the \_\_\_\_\_ property of lubricating oil. Correct lubrication of the engine is of great importance because \_\_\_\_\_ lubrication would lead to the seizing of bearings and \_\_\_\_\_ of the engine. The correct choice of lubricating oil is essential too, and we should always \_\_\_\_\_ the engine constructor's manual as to the recommended type of oil for the particular engine. The types of lubricating oils used in marine diesel engines are generally \_\_\_\_\_ oils, coming from the residues of crude oil after its \_\_\_\_\_.

