

**MERCHANT MARINE ACADEMY OF MACEDONIA
SCHOOL OF ENGINEERS**

Course: Maritime English

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Student number:

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FINAL EXAM (RETAKES)

1. Complete the text using the words given below (15 p.):

circulating, four, twelve, sump, guides, crosshead, pressure,

bearing, supply, cooler, autoclean, filters, piston, drains, lubricates

In the lubrication of ME with _____ LO, the oil is taken from the ME LO circulating tank through _____ by screw-type pumps. It passes through a _____ and _____ filters, and ends in the main engine at a pressure of about _____ bars. It lubricates the main crankshaft _____, the crankshaft and camshaft drive.

A separate _____ is led to the _____ by high _____ pumps at a pressure of about _____ bars. It _____ the crosshead and the _____. Some of the oil travels back through the piston rod and cools the _____.

The used oil _____ into the circulating tank or the _____ tank.

2. Read the following passage on the properties of lube oils and underline the correct alternative. (10 p.)

The properties of lubricating oils are *similar to / different from* those of fuel oils.

Viscosity is the *least / most* important property of lube oils.

The Society of Automotive *Engines / Engineers* SAE has *classified / divided* oil viscosity from SAE 10 to SAE 250.

SAE 10 to SAE 20 oils are very *thin / thick* and are suitable for *low / high* temperatures.

SAE 30 to SAE 50 oils having a medium to high viscosity are *unsuitable / suitable* for diesel engines. The viscosity index, VI, of the oil is of equal importance because it indicates how stable the oil is to variations of temperature.

Chemical stability is an important specification of lube oil, too. The *acid / base* neutralising capacity of oil is represented by its total base number (TBN) value, which indicates the oil's *acid / alkaline* reserve. The *higher / lower* the TBN is, the more acid neutralising capacity the oil has.

3. Fill in the gaps with the right word from the list. (15 p.)

injectors, capacity, particles, sludge, atomisers, suspending, injurious,

sulphur, fortified, eliminate, assembly, erratic, acid, drillings, coagulate

- Heavy fuel oil produces _____ and dirtier exhaust gases. It contains more _____ than diesel and, having a higher viscosity, it cannot be pressed through _____ without heating. It also needs purifying to _____ water and dirt _____.
- Sulphur can be very _____ to engine parts during combustion because it changes into _____.
- High water content in fuel causes _____ combustion and corrosion.
- Sediment is formed when _____ solid particles in the fuel _____ and sink down.
- Each service tank has the _____ to provide the engine with fuel for 24 hours.
- Lube oils are _____ with chemicals.
- _____ in the crankshaft take the oil to the crankpin and bottom end bearings.
- The nozzle _____ has one or more _____ through which the fuel is sprayed into the combustion chamber.

4. The following list of terms includes the most important parameters of fuel oils for diesel engines. Match the terms to the appropriate explanation. There are two extra terms. (10 p.)

cetane number, hydrogen sulphide, viscosity, sulphur, ash content, specific gravity, water and sediment, heating value, density, carbon residue, flash point, pour point

- Content in water and solid particles. The higher it is, the more possible it is to cause erratic combustion and corrosion: _____
- The lowest temperature at which the fuel oil is observed to flow: _____
- An indication of the ignition quality of the fuel: _____
- The amount of heat given off on complete combustion of one pound of fuel: _____
- The temperature at which the fuel vapours ignite when a flame is applied to it: _____
- The measure of the resistance of the fuel to movement. The higher it is, the more difficult it is for the fuel to flow: _____
- Chemical element which can be very injurious to engine parts during combustion because it changes into acid: _____
- Unburned carbon during combustion which can deposit on engine parts: _____
- Non-combustible solid material in the fuel which scratches the rubbing surfaces it comes in contact with: _____
- A measure of the density or weight of the fuel. It also serves as a rough check on viscosity, carbon content and other qualities: _____

5. Match the following list of lub-oil additives to their functions. (8 p.)

antioxidants, corrosion inhibitors, viscosity index improvers, wear preventers, pour point depressants, detergents, dispersants, antifoamants

- 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
 Increase the VI of the oil
 Limit the damage that is caused by friction

6. Match the words to their definitions/explanations below (12 p.)

*dismantle, emissions, defective, stalling, antifouling, adequate,
 sludge, friction, centrifuge, scale, corrosion, purify*

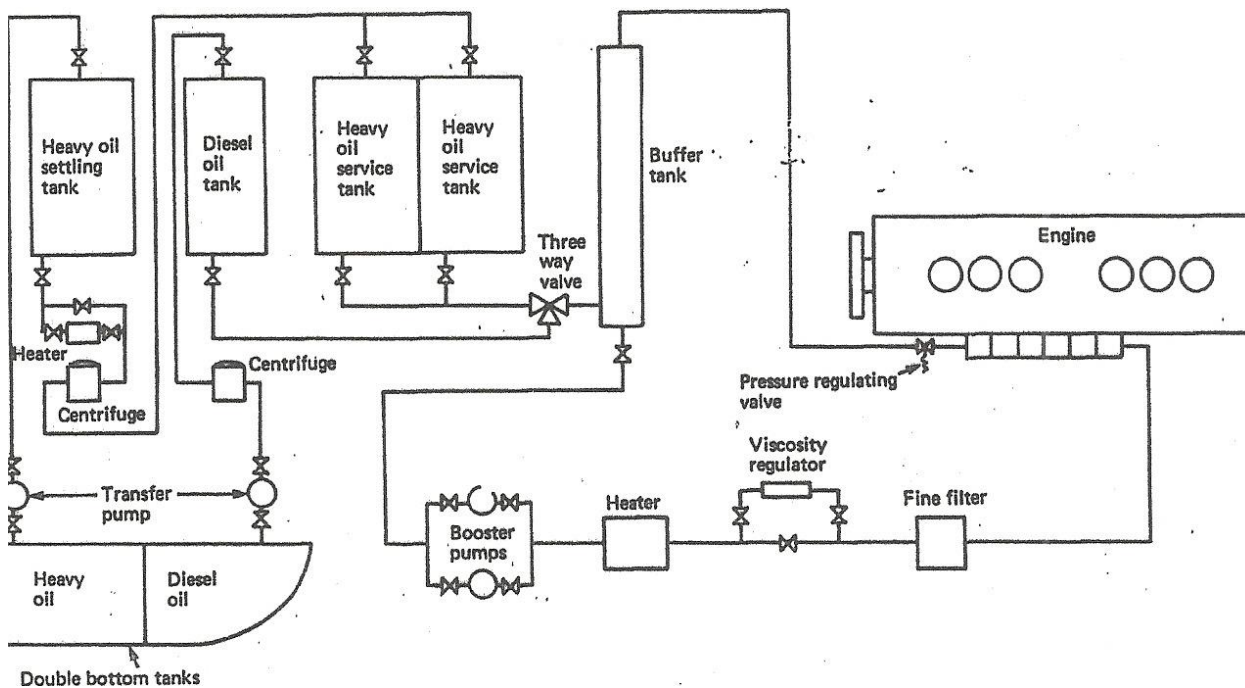
oxidation leading to rust:
 fighting dirt:
 rubbing between two metal surfaces:
 reduction of revolutions, eventual stopping of the engine:
 discharge of gases:
 disperse through outward movement:
 remove impurities, clean:
 deposits of salts:
 disassemble:
 enough:
 faulty:
 mud, dirt:

7. Complete the sentences with the correct form of the words in parentheses. (10 p.)

- The _____ (**remove**) of air from the cylinders is done with the help of air cocks.
- Chemical _____ (**stable**) is an important specification of lubricating oils.
- The HFO _____ (**purify**) separates water and _____ (**impure**) from the fuel.
- _____ (**add**) in the _____ (**lubricate**) oil improve its quality.
- _____ (**sulphur**) acid is very _____ (**corrosion**).
- This is an engine of high _____ (**efficient**).
- This oil is too _____ (**viscosity**). We should make it thinner by heating.
- Most fuel _____ (**inject**) are operated hydraulically.

8. Insert the appropriate word (or words) in the gaps to complete the text on a typical fuel oil system. (10 p.)

From the storage tank, the HFO is pumped into the _____ tank, where water and heavy dirt sink down. Then it is fed through a _____ and next through a _____, where the oil is cleaned. Water and dirt go to the _____ tank. Then the clean oil is pumped into the HFO _____ tanks which are in duplicate, as one is in use, while the other is on standby. From there the oil, after passing through the _____ tank, is pumped by high pressure pumps into a _____ and right after into a _____, which automatically adjusts the temperature of the oil. Finally, the oil is discharged through a fine _____ to the main engine fuel pump suctions. A _____ valve allows us to operate the engine on diesel oil.



9. Write a paragraph comparing HFO and MDO in relation to their use and properties. (10 p.)

GOOD LUCK!!!

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