

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

**Course: Maritime English**

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**FINAL EXAM**

**1. Complete the text using the words below. There is one extra word. (15 p.)**

*grooves, circumferentially, film, lubricators, return, rings, neutralizes, wear, storage, friction, combustion, service, drillings, pumps, corrosion, fuel*

The lubrication of the cylinder is very important, first because it forms an oil \_\_\_\_\_ between piston rings and cylinder liner, thus reducing \_\_\_\_\_, and secondly because it \_\_\_\_\_ the acid products of \_\_\_\_\_ and reduces cylinder \_\_\_\_\_ considerably. The cylinder oil is drawn from the cylinder oil \_\_\_\_\_ tank to a small \_\_\_\_\_ tank by separate \_\_\_\_\_. From there, the oil is supplied to \_\_\_\_\_ by gravity and is led through \_\_\_\_\_ onto the liner surface, where \_\_\_\_\_ distribute it \_\_\_\_\_ around the liner, and the piston \_\_\_\_\_ spread it up and down the surface of the liner. There is no \_\_\_\_\_ of the used oil, because it is finally burnt with the \_\_\_\_\_.

**2. Fill in the gaps using the words below. There are two extra words. (15 p.)**

*injurious, capacity, fortified, erratic, acid, drillings, mixing, injection, assembly, sufficient, needle, transition, holder, insufficient, alkaline, atomizers, grooves*

-- Sulphur can be very \_\_\_\_\_ to engine parts during combustion, because it changes into \_\_\_\_\_.

-- High water content in fuel causes \_\_\_\_\_ combustion and corrosion.

-- 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 \_\_\_\_\_ stem and its return spring of the fuel injector are fitted in the injector \_\_\_\_\_.

-- The nozzle \_\_\_\_\_ has one or more \_\_\_\_\_ through which the fuel is sprayed into the combustion chamber.

-- Incorrect \_\_\_\_\_ timing can cause lack of power or can cause the engine to produce white smoke, as there is \_\_\_\_\_ temperature to properly burn the fuel.

-- In some cases, a \_\_\_\_\_ tank is used for the gradual \_\_\_\_\_ from HFO to MDO.

-- The total base number (TBN) value of a specific oil indicates its \_\_\_\_\_ reserve.

3. 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.)

ash content   specific gravity   cetane number   hydrogen sulphide   viscosity

water and sediment   heating value   density   carbon residue   flash point

pour point   sulphur

- 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: \_\_\_\_\_
- 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: \_\_\_\_\_

4. Write down the additives which enhance the following properties of lub-oils. (7.5 p.)

- Limit the damage due to friction: **w**\_\_\_\_\_ **preventers**
- Lower the freezing point of oil: **p**\_\_\_\_\_ **- point depressants**
- Keep the engine parts clean: **d**\_\_\_\_\_
- Reduce foam in the crankcase: **anti - f**\_\_\_\_\_
- Prevent the corrosion of metal surfaces: **corrosion i**\_\_\_\_\_

5. Complete the sentences with the correct form of the words in parentheses. (11 p.)

- The TBN value of a lube oil eliminates the \_\_\_\_\_ (**corrode**) influence of acid.
- The \_\_\_\_\_ (**remove**) of water and foreign particles in the lube oil is done in a centrifugal \_\_\_\_\_ (**separate**).
- Most fuel \_\_\_\_\_ (**inject**) are operated \_\_\_\_\_ (**hydraulic**).
- The HFO \_\_\_\_\_ (**purify**) separates water and \_\_\_\_\_ (**impure**) from the fuel.
- \_\_\_\_\_ (**add**) in the \_\_\_\_\_ (**lubricate**) oil improve its quality.
- This oil is too \_\_\_\_\_ (**viscosity**). We should make it thinner by heating.
- This is an engine of high \_\_\_\_\_ (**efficient**)

**6. Match the following words to their synonyms/definitions. (11 p.)**

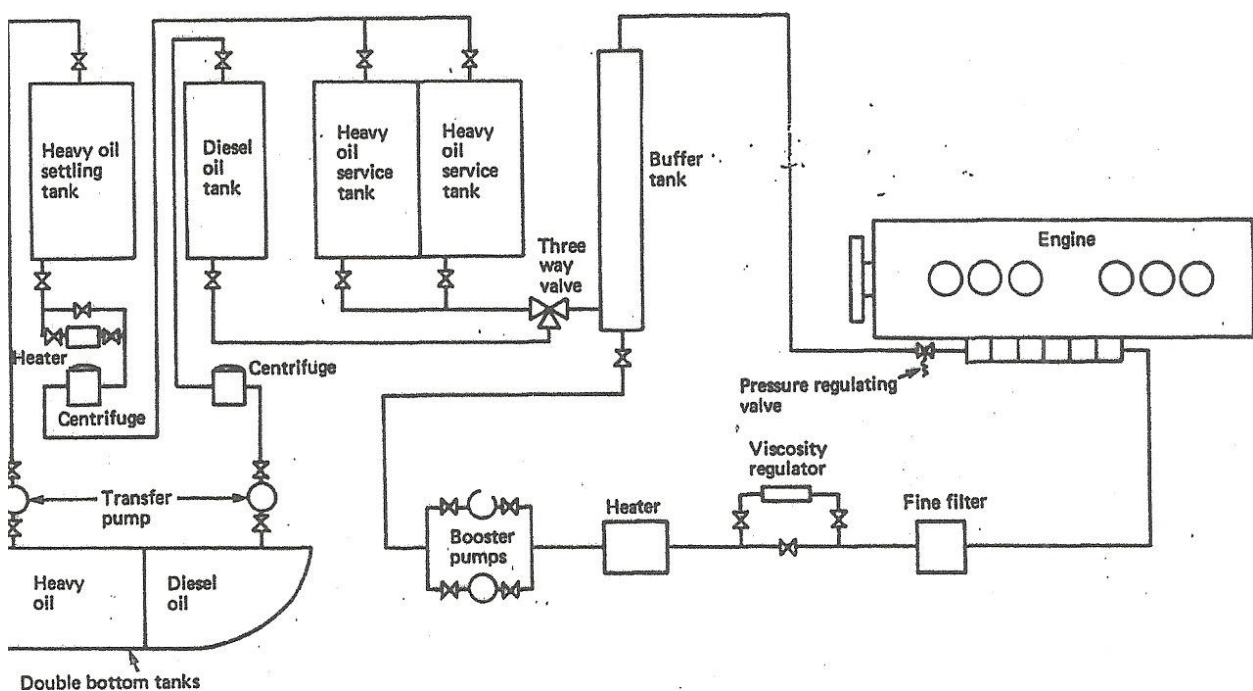
*seizing, faulty, purify, buffer tank, centrifuge, fighting dirt, emission, stalling, corrosion, tenacity, atomizer*

- major damage of bearings due to insufficient lubrication:
- sticking property:
- opening through which the fuel is sprayed:
- reduction of revolutions, eventual stopping of the engine:
- balancing/mixing tank:
- disperse through outward movement:
- oxidation leading to rust:
- antifouling:
- defective:
- discharge of gases:
- remove impurities, clean:

**7. Fill in the gaps with an appropriate word. (10.5 p.)**

- The acronym CCAI stands for Calculated C\_\_\_\_\_ Aromaticity Index.
- Fuels are stored in the s\_\_\_\_\_ tanks.
- Marine fuels come from c\_\_\_\_\_ oil.
- The fuels that are refined petroleum products are called d\_\_\_\_\_ fuels, whereas the fuels that come from the residues of distillation are called r\_\_\_\_\_ fuels.
- The viscosity regulator controls the t\_\_\_\_\_ of the fuel.
- The booster pump raises the p\_\_\_\_\_ of the fuel.

**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!!!*