MERCHANT MARINE ACADEMY OF MACEDONIA
SCHOOL OF ENGINEERS

Course: Maritime English
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Name: **Exam paper grade:**
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FINAL EXAM (RETAKES)

1. Complete the text using the following words. (15 p.)

mineral, friction, metals, wear, heat, consult, distillation, performance, running, antifouling, sealing, coolant, corrosion, sticking, inadequate

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 _____.

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 using the words below. (15 p.)

assembly, distillation, needle, transition, holder, settling, insufficient, alkaline, atomizers, water, circulated, mixing, injection, viscosity, white

-- Incorrect _____ timing can cause lack of power or can cause the engine to produce _____ smoke as there is _____ temperature to properly burn the fuel.
-- In some cases, a _____ tank is used for the gradual _____ from HFO to MDO. This tank can hold a quantity of fuel which will be _____ and led to the engine.
-- In the _____ tank the fuel is constantly heated to decrease the _____ and thus quicken the separation of fuel from _____ and impurities.
-- The total base number (TBN) value of a specific oil indicates its _____ reserve.
-- The process through which marine fuels are obtained is called fractional _____
-- 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.

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.)

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

-- 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: _____
_____

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

Increase the VI of the oil
Limit the damage that is caused by friction
Reduce foam in the crankacase
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

6. Complete the sentences with the correct form of the words in parentheses. (12 p.)

-- This oil is too _____**(viscosity).** We should make it thinner by heating.
-- Most fuel _____ **(inject)** are operated hydraulically.
-- 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 oil is too _____**(viscosity).** We should make it thinner by heating.
-- This is an engine of high _____ **(efficient).**

7. Match the following words to their synonyms/definitions. (10 p.)

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

-- balancing/mixing tank:
-- oxidation leading to rust:
-- antifouling:
-- defective:
-- discharge of gases:
-- remove impurities, clean:
-- 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:

8. Match the questions to the answers. There is an extra answer. (10 p.)

1. Where are the fuels stored? -- Intermediate fuel oil.

2. How is the fuel cleaned? -- It adjusts the temperature of the fuel.

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

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

GOOD LUCK!!!

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