

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

**Course: Maritime English III**

**Academic year: 2024 – 2025**

**Student's name:**

**Student's number:**

**Semester: C**

**Exam period: September**

**Date: 02/09/2025**

**Instructors: A. Birbili, M. Tsompanoglou**

**Exam paper grade:**

**FINAL EXAM**

**1. Complete the sentences with the appropriate form of the words in parentheses. (10 p.)**

- Fuels that are refined petroleum products are called \_\_\_\_\_ (**distil**).
- Something that is brought into force or is valid is also \_\_\_\_\_ (**effect**).
- Incorrect \_\_\_\_\_ (**inject**) timing can cause lack of power, or can cause the engine to produce white smoke as there is \_\_\_\_\_ (**sufficient**) temperature to properly burn the fuel.
- \_\_\_\_\_ (**add**) in the lubricating oil improve its quality.
- The TBN value of lube oil eliminates the \_\_\_\_\_ (**corrode**) influence of acids.
- The centrifugal \_\_\_\_\_ (**separate**) removes water and \_\_\_\_\_ (**impure**) from the fuel.
- Empty the \_\_\_\_\_ (**contain**) of this box on the floor.
- Chemical stability is an important \_\_\_\_\_ (**specify**) of lubricating oils.

**2. Fill in the gaps with a word from the list. There are two (2) extra words. (12 p.)**

fuel	assembly	case	contains	stem
chamber	screwed	consists	atomisers	adjusted
holder	fitted	hollow	seat	

A fuel injector \_\_\_\_\_ of three main parts: the injector \_\_\_\_\_, the needle with its \_\_\_\_\_ and return spring, and the nozzle \_\_\_\_\_. Inside the holder there is a centrally formed cylindrical \_\_\_\_\_ where the needle stem and its return spring are \_\_\_\_\_. The nozzle assembly is \_\_\_\_\_ at the bottom of the injector holder, and it may have one or more \_\_\_\_\_ through which the \_\_\_\_\_ is sprayed into the combustion \_\_\_\_\_. The pressure chamber is a \_\_\_\_\_ space inside the assembly which ends to a tapered \_\_\_\_\_ where the injector needle ends too.

**3. Complete the sentences with an appropriate word. The first letter is given. (21 p.)**

- **D** \_\_\_\_\_ sampling is a method used primarily in the maritime industry to collect a representative fuel oil sample during the entire bunkering operation.
- The **p** \_\_\_\_\_ separates water and dirt particles from the fuel by means of centrifugal force.
- Water and thick particles sink down in the **s** \_\_\_\_\_ tank.
- Marine fuels come from **c** \_\_\_\_\_ oil.
- The acronym CCAI stands for Calculated **C** \_\_\_\_\_ Aromaticity Index.
- The **b** \_\_\_\_\_ tank is used to collect the recirculated fuel oil.

- Wear preventers are used to protect the engine parts from **f**\_\_\_\_\_.
- One of the objectives of lubrication is to cool the **m**\_\_\_\_\_ surfaces as lube oil can absorb a considerable amount of **h**\_\_\_\_\_.
- After the manifold is opened, the supplier hands over the emergency **s**\_\_\_\_\_ button to the vessel.
- **V**\_\_\_\_\_ is the most important property of lube oils.
- HFO is much cheaper than diesel oil, but it produces **s**\_\_\_\_\_ and dirtier exhaust gases.
- The oil is supplied to the engine at a **p**\_\_\_\_\_ of about 4 bar, and lubricates the main crankshaft **b**\_\_\_\_\_ first.

**4. Match the words to their synonyms / definitions. There is one (1) extra word. (15 p.)**

erosion	antifouling	insulate	manifold
scored	centrifuge	seizing	residue
particle	tenacity	distil	fouled
treatment	corrosion	bunker hose	stalling

- process for improving quality: \_\_\_\_\_
- wrap up, protect against heat or cold: \_\_\_\_\_
- reduction of revolutions, eventual stopping of the engine: \_\_\_\_\_
- sticking property, adhesion: \_\_\_\_\_
- disperse through outward movement: \_\_\_\_\_
- what remains leftover: \_\_\_\_\_
- flexible tube designed to carry marine fuel: \_\_\_\_\_
- major damage due to insufficient lubrication: \_\_\_\_\_
- tiny solid material: \_\_\_\_\_
- dirty: \_\_\_\_\_
- with deep scratches: \_\_\_\_\_
- refine: \_\_\_\_\_
- mechanical wear due to acids, rust: \_\_\_\_\_
- the fuel delivery connection: \_\_\_\_\_
- fighting dirt: \_\_\_\_\_

**5. State whether the following sentences are True (T) or False (F). (6 p.)**

- Around the pour point, the fuel can hardly be pumped and needs heating.
- Most fuel injectors are operated hydraulically.
- The properties of lube oils are similar to those of fuel oils.
- The viscosity index indicates how stable the oil is to variations of temperature.
- The cylinder oil service tank is bigger than the cylinder oil storage tank.
- Marine diesel oil is mainly used for manoeuvring and in ECAs.
- The camshaft is lubricated by cylinder oil.
- The booster pump increases the temperature of the fuel just before it is delivered to the engine.
- Heavy fuel oil is less viscous than diesel oil.
- The higher the CCAI, the earlier the ignition takes place.
- Carbon deposits can be formed in every part of the engine.
- The fuel resists to flowing when its viscosity is low.

**6. Complete the text on a typical fuel oil system using the following words. There are two (2) extra words. (12 p.)**

suctions	mixing	cooler	filter	centrifuge
settling	viscosity regulator	three-way	service	regulating
sludge	non-return	heater	storage	

From the \_\_\_\_\_ tanks, the HFO is pumped into the \_\_\_\_\_ tank, where water and heavy dirt sink down. Then it is fed through a heater to a \_\_\_\_\_ where the fuel is cleaned from all foreign particles. Water and dirt go to the \_\_\_\_\_ tank. Then, the clean fuel is pumped into the HFO \_\_\_\_\_ tank. From there the fuel, after passing through the \_\_\_\_\_ tank, is pumped by booster pumps into a \_\_\_\_\_ and right after into a \_\_\_\_\_, which automatically adjusts the temperature of the fuel. Finally, the fuel is discharged through a fine \_\_\_\_\_ to the main engine fuel pump \_\_\_\_\_. A pressure \_\_\_\_\_ valve ensures a constant pressure supply to the engine-driven fuel pumps. A diesel oil tank is also installed in the system and a \_\_\_\_\_ valve allows us to change over from HFO to diesel oil whenever the vessel is about to enter an ECA.

**7. The following abbreviations can be seen at different points in the fuel oil system. What do they mean? (10 p.)**

- TI:
- VAH:
- DAH:
- LAL:
- PI:

**8. Circle the correct answer. (14 p.)**

- Pour point --- allow the lube oil to flow at cold operating temperatures.
  - a. depressants                      b. dispersants                      c. improvers
- --- help to keep metal components clean.
  - a. Antifouling agents              b. Depressants                      c. Detergents
- The piston --- spread the cylinder oil up and down the liner surface.
  - a. rods                                  b. rings                                  c. pins
- SAE 10 to SAE 20 oils are very --- and are unsuitable for diesel engines.
  - a. viscous                              b. thin                                  c. thick
- The acronym SAE stands for:
  - a. Society of Automotive Engines
  - b. Society of Automotive Engineers
  - c. School of Automotive Engineers
- A --- indicator is used for monitoring filter contamination.
  - a. pressure                              b. density                              c. differential pressure
- --- indicates the ignition quality of diesel oil.
  - a. Carbon residue                      b. CCAI                                  c. Cetane number
- --- shows the amount of heat given off on complete combustion of one pound of fuel.
  - a. Specific gravity                      b. Temperature value                      c. Heating value
- --- are used to keep particles of soot and other contaminants suspended in the oil.
  - a. Detergents                              b. Dispersants                              c. Depressants

- A measure of the density or weight of the fuel is ---.
- density
  - specific gravity
  - kinematic viscosity
- --- is indicative of the ignition delay of residual fuels.
- CCAI
  - Cetane number
  - Flash point
- --- represents the incombustible metals present in the fuel.
- Ash content
  - Acid number
  - Carbon residue
- The word --- shows the quality of fuel and indicates how well a fuel will burn in the cylinders.
- class
  - grade
  - index
- The temperature at which the fuel vapours ignite when they are exposed to a flame is the ---  
It must be known for safe transport and storage.
- burning point
  - flash point
  - boiling point
- --- prevent the deterioration of oil due to high operating temperatures, and also due to the presence of water, metal particles and dirt.
- Anti-foamants
  - Antifouling agents
  - Antioxidants
- The acronym ECA stands for:
- Emission Control Area
  - Exhaust Control Area
  - Emission Carbon Area
- While in operation, the lube oil normally passes through mechanical --- to remove solid foreign particles.
- seals
  - valves
  - filters
- Corrosion --- reduce internal rust and corrosion on metal surfaces by forming a tenacious oil film on them.
- inhibitors
  - depressants
  - preventers
- --- partially prevent the lube oil from becoming less viscous as the temperature increases.
- Pour point improvers
  - VI preventers
  - VI improvers
- The crosshead and the guides are lubricated by ---.
- cylinder oil
  - circulating lube oil
  - turbine oil

