

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

**Course: Maritime English**

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**Name:**

**Student number:**

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**FINAL EXAM**

**1. Complete the sentences with the correct form of the words in parentheses. (20 p.)**

- Drain off the water and clean more \_\_\_\_\_ (**effect**).
- Heat \_\_\_\_\_ (**lose**) may be reduced a lot with proper insulation.
- \_\_\_\_\_ (**fiber**) insulation materials are suitable for vibration environments.
- \_\_\_\_\_ (**abrade**) particles, such as cat fines, cause \_\_\_\_\_ (**abrade**).
- Combustion \_\_\_\_\_ (**efficient**), among other factors, influences the wear rate of the cylinder liner.
- The \_\_\_\_\_ (**recommend**) for a moderately corroded engine is a 70 BN cylinder oil.
- \_\_\_\_\_ (**sulphur**) acid is formed due to the \_\_\_\_\_ (**absorb**) of the \_\_\_\_\_ (**condensation**) present in the combustion process.
- An \_\_\_\_\_ (**expand**) valve regulates the \_\_\_\_\_ (**refrigerate**) in order to maintain the correct temperature.
- CalSil is a good \_\_\_\_\_ (**insulate**) compared to glass fiber.
- Permanent insulation is not \_\_\_\_\_ (**replace**). Its initial cost is less than \_\_\_\_\_ (**remove**) insulation.
- Is inert gas system \_\_\_\_\_ (**operation**)?
- Are the cargo hoses \_\_\_\_\_ (**connect**)?
- Insulation is critical for personnel \_\_\_\_\_ (**protect**), \_\_\_\_\_ (**reduce**) of ambient heat or fire \_\_\_\_\_ (**prevent**).

**2. Put an appropriate word from the list in the gaps that follow. There is one (1) extra word. (12 p.)**

*scuffing centrifuging misalignment contact clover leafing ovality deficiencies*

*micro-seizure grinding quills jacket monitoring bypassed*

- Irregularities in the liner and piston rings coming into \_\_\_\_\_ during operation are the cause of \_\_\_\_\_.
- \_\_\_\_\_ takes place between each pair of lubricating \_\_\_\_\_ due to high sulphur content in the fuel oil.
- \_\_\_\_\_ is a form of localised welding between the particles of piston rings and the liner surface.
- One way of \_\_\_\_\_ the condition of the cylinder liner is checking its \_\_\_\_\_.
- \_\_\_\_\_ is the most effective way of removing water and dirty particles from fuels.
- A \_\_\_\_\_ cooling water basic bypass system can determine the correct amount of cooling water to be \_\_\_\_\_.
- Deformation of piston rings and \_\_\_\_\_ may cause cylinder oil film \_\_\_\_\_.

**3. Choose the correct answer. (15 p.)**

-- Diesel engine lube oil diluted with diesel fuel oil is indicated by:

- a. decreased viscosity
- b. decreased pour point
- c. increased flash point
- d. increased viscosity

-- Heavy residual fuel oils are heated prior to centrifuging to:

- a. increase specific gravity
- b. separate fuel from lube oil
- c. reduce fuel weight
- d. reduce fuel viscosity

-- A decrease in the flash point of the diesel engine lube oil indicates that the lube oil is:

- a. contaminated with carbon
- b. diluted with water
- c. diluted with fuel oil
- d. contaminated with sludge

-- "Loop", "uniflow", "cross flow" are terms used to describe various types of:

- a. scavenging
- b. turbochargers
- c. control air circuits
- d. supercharging

-- Lube oil contamination will increase due to normal wear of engine components as a result of:

- a. abrasive particles
- b. metallic oxides
- c. corrosive acids
- d. any or all of the above

-- Which of the following operations will have a direct impact on the rate of wear in a cylinder liner?

- a. temperature of the scavenging air
- b. compression ratio of the piston
- c. quality of fuel injected
- d. amount of scavenge air in the cylinder

-- A piston is said to be at top dead centre when it is:

- a. closing the fuel ports
- b. farthest from the cylinder head
- c. nearest to the cylinder head
- d. opening the exhaust ports

-- Which of the listed substances can be satisfactorily removed from diesel oil by centrifuging?

- a. gasoline
- b. fuel oil
- c. lube oil
- d. sludge

-- The ignition quality of a diesel oil is indicated by the:

- a. octane number
- b. CCAI
- c. kinematic viscosity
- d. cetane number

-- Combustion knock will most likely occur as a result of using a fuel with:

- a. low ignition quality
- b. high volatility
- c. low ignition delay
- d. a high cetane number

-- A disadvantage of a 2-stroke/cycle diesel engine is:

- a. higher working temperatures of the piston and cylinder
- b. the use of scavenge air
- c. more power strokes per revolution
- d. more complicated valve gear

-- In a diesel engine, excessive cylinder liner wear will cause: I. increased blow-by II. wear between the piston rings and grooves

- a. I only is correct
- b. II only is correct
- c. both I and II are correct
- d. neither I or II are correct

-- A scored diesel engine cylinder liner will cause:

- a. rapid wear of piston rings
- b. combustion gases in the cooling water
- c. high firing pressure
- d. abnormally high cooling water temperature

-- A centrifuge will satisfactorily remove \_\_\_\_ from fuel oil.

- a. gasoline                      b. water                      c. lube oil                      d. sulphur compounds

-- Which of the following statements concerning cylinder liner wear is true?

- a. Liner wear is normally greatest in the middle of the cylinder  
b. Liner wear is distributed equally between the upper and lower portions of the cylinder  
c. Excessive but uniform liner wear will not cause wear between piston rings and grooves  
d. Excessive liner wear causes wear between piston rings and grooves

**4. Match the words from the list to their synonyms/definitions below. (13 p.)**

*fouled, perishable, contaminants, dilute, slow-steaming, lagging, faltering,*

*fabricate, modifications, implement, last, maladjusted, pump out*

-- sensitive:

-- apply:

-- wrongly fitted:

-- have a duration:

-- alterations:

-- manufacture:

-- discharge:

-- insulation:

-- lower fuel consumption during low-load operation:

-- dirty:

-- pollutants:

-- make a liquid thinner by adding water or other solvent:

-- irregular running of the engine:

**5. Complete the text using the past participles below. (12 p.)**

*gauged, inspected, specified, minimized, cleaned, overloaded,*

*corrected, increased, replaced, placed, taken, maintained*

Cylinder liner wear can be \_\_\_\_\_, if proper jacket temperature is \_\_\_\_\_

The cylinder liner must be \_\_\_\_\_ regularly, as it is \_\_\_\_\_ in the manual. The liner must be \_\_\_\_\_ and \_\_\_\_\_ before the gauging. If the temperature of the micrometer exceeds that of the liner, or vice versa, then the readings have to be \_\_\_\_\_. The liner wear is measured by a standard template, which consists of strategically positioned holes, in which the micrometer is \_\_\_\_\_ and the readings are \_\_\_\_\_. The wear rate of the liner will be \_\_\_\_\_, if the engine is \_\_\_\_\_. Generally, the liner has to be \_\_\_\_\_, when the wear is about 0.6-0.8 per cent of the bore diameter.

**6. Choose the correct refrigeration system component. (8 p.)**

- The **evaporator/drier/condenser** ensures that the refrigeration system stays dry and clean by removing any moisture and/or contaminants from the refrigerant.
- The **receiver/compressor/evaporator** cools down the air in the cargo hold or room by transferring latent heat to the refrigerant.
- The **relief/solenoid/expansion** valve provides automatic opening and closing of the liquid lines.
- The **condenser/compressor/receiver** is used to liquefy the refrigerant and to subcool it below the saturation temperature by circulating sea water, fresh water or air.
- The **receiver/compressor/evaporator** raises the pressure of the vapourised refrigerant causing its temperature to rise so that it becomes higher than that of the refrigerant.
- The **relief/solenoid/expansion** valve is controlled by a thermostat to regulate the flow of the refrigerant from the H.P. side of the system to the L.P. side.
- The **oily water separator/purifier/oil separator** removes oil traces from the refrigerant and ensures that the oil returns to the compressor oil pump.
- The **refrigerant tank/receiver/sump tank** serves to collect the cooled refrigerant, and is also used to drain out the refrigerant from the system for maintenance purposes.

**7. Complete the sentences with an appropriate preposition. There is 1 extra preposition. You can choose from the following: (10 p.)**

*in, by, at, on, to, with, before, into, up*

- Stand \_\_\_\_\_ oil clearance team and report.
- You have to dispose the sludge \_\_\_\_\_ the sludge tank.
- The spillage has been stopped and cleaned \_\_\_\_\_.
- When the engine runs unevenly and will not pick \_\_\_\_\_ rpm, the fuel filter may be blocked.
- There is leak \_\_\_\_\_ manifold connection.
- HFO has to be heated prior \_\_\_\_\_ centrifuging.
- Excessive liner wear will cause increased blow-\_\_\_\_\_.
- Treat oil spill \_\_\_\_\_ dispersants.
- One of the main purposes of a ship's refrigeration system is to keep cargo \_\_\_\_\_ good condition.
- Permanent insulation is cut and fitted \_\_\_\_\_ site.

**8. You will read an article about safe fuel changeover. Ten phrases have been extracted from the article. Write the correct number in front of the phrases. (10 p.)**

- |  |  |
|--|--|
| ---sufficient time for the fuel system to be flushed | ---sufficiently alkaline                 |
| ---when fuels may mix                                | ---when entering and leaving             |
| ---ensure that the optimum viscosity                 | ---a lower base number (BN)              |
| ---temperature change of 2°C per minute              | ---of grounding or collision             |
| ---can be carried out on board                       | ---of thermal shock to engine components |

**ExxonMobil has issued fuel-switching tips for vessels entering and leaving ECAs**

ExxonMobil has compiled five ‘top tips’ to help vessel operators switch fuels effectively ... [1]... emission control areas (ECAs) without introducing maintenance problems.

Typically, inadequate management of the fuel switch-over process can increase the risk ...[2]..., which can result in fuel pump seizures and engine shut-downs.

ExxonMobil advises marine operators to consider the following key tips:

- Have a clear switch-over procedure. It is important to ensure that the crew is familiar with the process. As an additional safety measure, the procedure should be tested prior to entering crowded and restricted channels where there is a higher risk ...[3]...
- Outline the best time to switch over. The optimal switch-over period is different for each vessel and operators must allow ...[4]... of all non-compliant fuel before arriving at an ECA limit.
- Avoid hazards; know the correct temperature and viscosity. The viscosity of heavy fuel oil (HFO), ECA fuels and marine gas oil (MGO) are very different. The appropriate temperature must be achieved to ...[5]... at the injectors is reached. HFO is injected at ~130°C and MGO needs to be cooled to ~30°C in order to reach the correct viscosity. Major engine manufacturers typically recommend a maximum ...[6]... to help avoid thermal shock.
- Understand compatibility. There is a risk of fuel incompatibility during the switching process ...[7]... This may clog filters, causing engine starvation and possible shut-down. In order to understand if fuels are compatible, an industry-standard spot test ...[8]... or a more thorough compatibility test can be requested from a reputable testing laboratory.
- Choose the correct lubricant. Cylinder oils need to be ...[9]... to neutralise any corrosive acidic sulphur in the fuel. However, when less sulphur is present, less sulphuric acid is produced. Too much alkalinity in the cylinder oil can lead to liner wear, while too little increases the risk of acid corrosion. When burning low sulphur fuels in slow speed engines, it is recommended that ...[10]... lubricant should be used.

(Retrieved: 23 June, 2016 from [www.mpropulsion.com](http://www.mpropulsion.com))

**GOOD LUCK!!!**