


Merchant Marine Academy of Macedonia- School of Engineers		
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Semester: C'	Date:	Instructors: A. Birbili, E. Xenitidou, M. Tsompanoglou
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	Exam paper grade:	Instructor's signature

Fill in the gaps with the following words- pour point depressants / VI improvers/ detergents/ anti-foamants/ dispersants/ corrosion inhibitors/ corrosion depressants/ anti-oxidants

- They allow the lube oil to flow at cold temperatures and to be easily pumped.....
- They prevent the deterioration of oil due to high operating temperatures, and also due to the presence of water, metal particles and other impurities.
- They reduce internal rust and corrosion by neutralising the acids formed during combustion.....
- They partially prevent the lube oil from becoming less viscous as the temperature increases. They are also responsible for better oil flow at low temperatures.....
- They are used to protect engine parts from friction and loss of metal material during boundary lubrication conditions.....
- They help to keep metal components clean.....
- They are used to keep particles of soot and other contaminants suspended in the oil.....
- They help to reduce the formation of oil bubbles in the crankcase.....

Match the terms to the appropriate explanation. There are two extra terms. ash content / specific gravity/ cetane number / hydrogen sulphide / viscosity / water and sediment / heating value / density / carbon residue / flash point / pour point / sulphur

10 points

- A measure of the density or weight of the fuel. It also serves as a rough check on viscosity, carbon content and other qualities:
- 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:

- The temperature at which the fuel vapours ignite when they are exposed to a flame:
.....
- The lowest temperature at which the fuel oil is observed to flow:
.....
- An indication of the ignition quality of diesel oil:
- The amount of heat given off on complete combustion of one pound of fuel:
.....
- Non-combustible solid material in the fuel which scratches the rubbing surfaces it comes in contact
with:
- The measure of the resistance of the fuel to movement. The higher it is, the more difficult it is for the fuel to flow:
- Content in water and solid particles. The higher it is, the more possible it is to cause erratic combustion and corrosion:.....

Match the following words to their synonyms/explanations.

secure alongside bunker hose fenders manifold drip

bunker barges sounding disputed double-hulled tanker

ΕΔΩ ΘΑ ΠΡΟΣΘΕΣΩ ΚΑΙ ΑΛΛΑ

- small tanker which delivers marine fuel to ships, usually in port.....
- the fuel delivery connection.....
- moor next to
- tanker constructed with the bottom and sides having two complete layers of watertight hull surface
- a kind of bumpers placed between two vessels or a vessel and the dock to prevent damage during the mooring process
- an argument or disagreement, especially an official one
- flexible tube designed to carry marine fuel
- the procedure of taking sample of the fuel delivered by continuously drawing it throughout the bunkering operation is called
.....sampling
- the process of measuring the depth of a fluid from the surface of the fluid to the bottom of the tank

ΑΥΤΗ ΚΑΙ Η ΠΙΟ ΚΑΤΩ ΘΑ ΑΛΛΑΞΟΥΝ ΟΙ ΛΕΞΕΙΣ ΑΛΛΑ ΠΑΡΟΜΟΙΑ ΘΑ ΕΙΝΑΙ ΣΤΟ ΣΤΥΛ

Fill in the gaps with the following words to make synonyms. THERE ARE TWO EXTRA WORDS: *fortify/*

adjust/ insulate/ grade/ inadmissible/ atomiser/ purchaser/ emission/ friction / effective/ surplus/ sink

05 points

strengthen wrap up or protect against
heat.....
the person who buys something..... settle down.....
excess..... rubbing between two metal
surfaces..... discharge of gases..... brought into
force..... regulate..... opening
through which fuel is sprayed

Match the following words to form the correct collocations (phrases): *emergency/ drain/ VI / nozzle/ injector/*

inlet/ needle/ pumping/ fractional/ sounding/ three- way / pressure/ gudgeon/ drip/ double **15 points**

.....assemblytank
.....distillation
..... improverrate
.....holder
..... chamber fuelpipe
.....stem
..... samplingpin
..... hulled
.....pipebutton
.....valve

Fill in the gaps with the appropriate derivative words.

10 points

ΑΝ ΒΡΩ ΑΡΚΕΤΑ ΘΑ ΒΑΛΩ, ΑΥΤΑ ΕΙΝΑΙ ΤΑ ΠΑΛΙΑ

-ADD in the lubricating oil improve its quality.
- The TBN value of the lube oil eliminates its
.....CORROSION influence of the acid.
- WearPREVENT limit the wear due to friction.
- The.....CENTRIFUGE separator separates water and
.....IMPURE from the fuel.
- Empty theCONTAIN of this box on the floor.
-SULPHUR acid can cause damage.
- This is an engine of highEFFICIENT.
- This oil is tooVISCOSITY. We should make it thinner by heating.

9. ChemicalSTABLE is an important specification of lubricating oils.

Underline the correct alternative.

20 points

Water and thick particles sink down in the **storage tank/ settling tank/ service tank.**

The **3-way/ non-return/ safety valve** allows us to change from HFO to MDO.

The **temperature indicator/ density controller/ viscosity regulator** adjusts the fuel oil temperature in order to provide the correct viscosity for combustion.

A **pressure regulating/ 3-way/ relief valve** ensures a constant-pressure supply to the engine-driven fuel pumps.

The sump/ storage/ mixing tank is used to collect the recirculated fuel oil.

The **purifier/strainer/ settling tank** separates water and impurities from the fuel by means of centrifugal force.

The **transfer/ booster/ feed pump** increases the pressure of the fuel just before it is delivered to the engine.

ΤΑ ΠΑΡΑΚΑΤΩΕΙΝΑΙ ΤΑ ΠΑΛΙΑ, ΘΑ ΒΑΛΩ ΤΑ ΠΑΝΩ, ΚΑΠΟΙΑ ΑΠΟ ΚΑ'ΤΩ ΚΑΙ ΘΑ ΒΡΩ ΚΑΙΝΟΥΡΙΑ

-The crosshead and the guides are lubricated by **cylinder oil/ circulating lube oil/ turbine oil.**

-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/ Automotive Engineers** has **distributed/ classified / divided** oil viscosity from SAE 10 to SAE 250.

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

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

-The *acid / base* neutralising capacity of oil is represented by its TBN value, which indicates the oil's **residual/ acid / alkaline** reserve. The *higher / lower* the TBN is, the more acid neutralising capacity the oil has.

-The higher the viscosity of a fuel oil, the **more/ less** heating it needs to reduce it.

-The element which causes oxidation to the engine is **ash/ sulphur/ silicon.**

-The acronym CCAI stands for **calculated calcium aroma indication/ cracked carbon atom index/ calculated carbon aromaticity index.**

-The heating value of a fuel is commonly expressed in **r.p.m./ b.t.u./p.p.m.**

-The cylinder oil is drawn from the **sump/ storage/ drain** tank to a **small/ medium/ big** service tank by separate pumps. From there, the oil is supplied to lubricators by gravity and is led through the drillings onto the liner surface where grooves **distribute/ attribute/ divide** around the liner, and the piston **rings/ rod** spread it up and down the surface of the liner.

Fill in the gaps of the following passage about lubrication with the following words- eliminate/distillation/ sludge/ friction /fortified /residues / particles/purifier/ antifouling/ treatment/ performance /settling/ cooling means 10 points

With lubrication we ensure better of the engine and reduction of wear due to It also acts as a of the metal surfaces because it absorbs a considerable amount of heat. It keeps the metal surfaces clean due the property of lubricating oil, The types of lubricating oils used in marine diesel engines are generally mineral oils, coming from the of crude oil after its These minerals are with chemicals which enhance their functional properties.

Heavy fuel oil is much cheaper than Marine diesel oil but it producesand dirtier exhaust gases. It cannot be pressed through injectors withoutIt needs purifying towater and dirt, too big to pass.

The fuel is stored on board in tanks, the bunkers. From there the heavy oil is pumped into a where water and dirt settle down. Then it is fed through a heater and next through awhere the oil is separated from all heavy particles. and dirtier exhaust gases.