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| **Merchant Marine Academy of Macedonia- School of Engineers** |
| **Course: Maritime English Academic year: 2023-2024 Exam period: June** |
| **Semester: C' Date:18/06/22 Instructors: A. Birbili, E. Xenitidou** |
| **Student’s name:** |
| **Student’s number:** |
| **Exam paper grade: Instructor’s signature**  ÎÏÎ¿ÏÎ­Î»ÎµÏÎ¼Î± ÎµÎ¹ÎºÏÎ½Î±Ï Î³Î¹Î± ship engine design |

**Read the following text which refers to cylinder lubrication and fill in the gaps with the following words. There are two extra words: 10 points**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| drain | return | combustion | distribute | drillings | remove |
| neutralizes | spread | storage | friction | wear | gravity |

The lubrication of the cylinder is very important, first because it forms an oil film 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 smaller service tank by separate pumps. From there, the oil is supplied to lubricators by …………. and is led through …………….. onto the liner surface where grooves ……………… it circumferentially around the liner and down the surface of the liner, and the piston rings …………. it up and down the surface of the liner. There is not ……….. of the used oil because it is finally burnt with the fuel.

**Fill in the gaps with the correct words. The first letter is given. 15 points**

- Water and thick particles sink down in the **s**………………… tank.

- **S**…………… is extremely harmful to metal surfaces when it turns into acid.

-The correct choice of lubricating oil is essential and we should always consult the engine constructor’s **m**………………….

-The clean oil is pumped into the heavy oil **s**……………….tank. From there the oil is pumped by a **b**……………..pump, or high pressure pump, into a **h**…………….. and right after into a viscosity **r**……………

-Marine fuels come from **c**……………….. oil after its distillation.

- The procedure of taking sample of the fuel delivered by continuously drawing it throughout the bunkering operation is called **d**………………. sampling.

- The oil in the circulating tank is constantly centrifuged through a **s**…………… to remove any water and foreign particles which may be in it.

**Find the correct form of the word in capital letters.** **10 points**

1. Fuels that are refined petroleum products are called ………………………DISTIL
2. HFO is a highly ………………………..VISCOSITY liquid.
3. Water is very …………………….CORRODE.
4. When something is unacceptable, it is ………………………ADMIT.
5. ........................... RESIDUE fuels come from residues.
6. ………………….ADD in the lubricating oil improve its quality.
7. Something that is able to be applied or done is …………………..APPLY.
8. Discharge of gases or smoke is ……………………EMIT.
9. The HFO purifier separates water and …………………… IMPURE from the fuel.
10. …………………..SULPHUR acid can cause damage.

**Match the following terms to their synonyms. 15 points**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| precise | adjust | building up, gathering | improve | delay |
| corrosion | scored | sediment | strainer | insulate |
| purification | statutory | mud, dirt | treatment | eliminate |

-- sludge:………………………………………………………………

-- get rid of, expel:………………………………………………………

-- with deep scratches: …………………………………………………

-- enhance:……………………………………………………………

-- mechanical wear due to rust:……………………………………..

-- accurate:……………………………………………………………

-- filter: …………………………………………………………

-- brought into force:………………………………………………….

-- accumulation:………………………………………………………

-- lag:………………………………………………………………….

-- regulate:……………………………………………………………

-- deposit:……………………………………………………………

-- wrap up or protect against heat or cold: ……………………………

-- process of improving quality:………………………………………

-- distillation, cleaning ……………………………………………….

**Write if the following sentences are True or False. 10 points**

SAE 10 to SAE 20 oils are suitable for high temperatures. …………..

HFO has low viscosity. …………..

Grade indicates the quality of the fuel. …………..

MDO is never used for manoeuvring. …………..

The higher the viscosity, the more heating is needed to reduce it. …………..

Around the flash point the fuel can hardly be pumped and needs heating. ………….

High water content in the fuel does not affect combustion. …………..

High specific gravity does not necessarily imply highly viscous fuel. …………..

Sediment is formed when suspending solid particles in the fuel

coagulate and sink down. …………..

Carbon deposits can be formed in every part of the engine. ………….

**Choose the correct word to fill in the gaps. (15 points)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| antifouling | consumption | holder | sealed | fitted |
| stem | fenders | dispute | released | insufficient |
| spring | piloting | assembly | stalling | absorb |

* An adequate number of Yokohama ……………….. are placed on the supply tanker depending on weather conditions.
* A fuel injector consists of three parts. The injector ……………………, the needle with its …………….. and return ……………. and the lowest part of the fuel injection valve which is the nozzle ……………..
* Bunker samples are ………………….. for later verification of supplied product quality, in case a …………………….. arises.
* Fuel is an important criterion for the choice of the engine, since more than 50% of the total running cost of the ship is due to fuel ……………………………
* Incorrect injection timing can cause lack of power or cause the engine to produce white smoke as there is ……………..temperature to properly burn the fuel. A faulty injection pump can be the culprit behind a …………… engine or a rough running engine. In 4 stroke diesel engines besides the main fuel injector there may be a ……………… injector as well, …………….. on the cylinder cover.
* Lubrication is very important for many reasons. It may act as a cooling means of the metal surfaces because it can ……………… a considerable amount of heat which is ………………. It also keeps the metal surfaces clean due to the ………………….. property of lubricating oil.

**Choose the correct answer: (25 points)**

--Lubrication of the main engine is done with….

a.cylinder oil b.circulating lube oil c. turbine oil

--The heating value of a fuel is commonly expressed in …….

a. r.p.m. b. b.t.u. c. p.p.m.

--The main function of the fuel injectors is to inject and ……………….. in a form of spray a certain amount of fuel in the combustion chamber.

a. disperse b.settle down c. stall

--Fuel injectors are ……………………..into single atomizer and multi atomizer injectors.

a. determined b.distinguished c. consisted

--Excess is …

a. disperse b. boost c. surplus

--Major damage of bearing due to insufficient lubrication is…

a. fouling b.enhancement c. seizing

--Lubrication of the bearings is done with….

a. cylinder oil b. circulating lube oil c. turbine oil

-- A measure of the fluidity of a fuel at a certain temperature.

a. kinematic viscosity b. pour point c. cloud point

-- It indicates the ignition quality of diesel oil.

a. carbon residue b. CCAI c. cetane number

-- It shows the amount of heat given off on complete combustion of one pound of fuel.

a. specific gravity b. temperature value c. heating value

-- A measure of the density or weight of the fuel.

a. density b. specific gravity c. kinematic viscosity

-- The lowest temperature at which the fuel is observed to flow.

a. pour point b. cloud point c. flash point

-- It indicates the tendency of the fuel to form carbon deposits during combustion.

a. carbon residue b. ash content c. aluminium and silicon

-- It represents the incombustible metals present in the fuel.

a. ash content b. acid number c. carbon residue

-- The temperature at which the fuel vapours ignite when they are exposed to a flame. It must be known for safe transport and storage.

a. burning point b. flash point c. boiling point

-- The word --- shows the quality of fuel and indicates how well a fuel will burn in the cylinders.

a. class b. grade c. index

-- Any fuel whose grade lies between HFO and MDO is called --- fuel oil.

a. medium b. intermediate c. residual

-- Which of the following words is **not** a synonym to the others?

a. deposit b. residue c. froth d. sediment

-- Sticking property, adhesion is ---.

a. fouling b. tenacity c. seizing

-- They keep sludge, carbon and other deposits suspended in the oil.

a. dispersants b. depressants c. detergents

-- They increase the VI of the oil.

a. Viscosity inhibitors b. viscosity index improvers c. viscosity index preventers

--They limit the damage that is caused by friction.

a. corrosion inhibitors b. wear inhibitors c. wear preventers

--They keep the engine parts clean of deposits.

a. dispersants b. depressants c. detergents

--They lower the freezing point of oil. They are pour point …………

a. dispersants b. depressants c. detergents

-- They prevent the corrosion of metal surfaces.

a. corrosion inhibitors b. corrosion preventers c. corrosion antioxidants

 