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| **Merchant Marine Academy of Macedonia- School of Engineers** |
| **Course: Maritime English Academic year:2021-22 Exam period: February** |
| **Semester: D Date: 10/02/22 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 |

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

*sounding condensation emerge interval disengage component device box*

*miscellaneous replenish excess obstruct trim ullage comply with dismantle*

-- part…………………

-- the difference between the fore and aft draughts………………..

-- refill………………..

-- the process of measuring the depth of a fluid in a tank………………..

-- come out………………..

-- let go……………….

-- chest……………….

-- several, various……………….

-- obey a rule, an order………………..

-- period of time between two events/activities………………..

-- the process of steam or warm air changing to liquid……………….

-- more than is acceptable or necessary………………..

-- take apart, disassemble………………..

-- apparatus …………………

-- block something so that things cannot move through easily………………..

**State whether the following sentences are True (T) or False (F). (10 p.)**

--- There are two bilge pumping systems.

--- When the ''finished with engine'' order is given from the bridge, change over from engine room control to bridge control.

--- Engines operating on high Sulphur fuels use special lubricants with high TBN to minimize the effects of Sulphur.

--- Lube oil that has been used is clean and does not need to be centrifuged.

--- The Chief Engineer can use new fuel oil, even if s/he has not received the analysis results.

--- Ballast is taken on board in order to increase the list of the ship.

--- The main purpose of the ballast system is to pump excess water out of the ship.

--- According to MARPOL regulations, the residue of oil in the water that is pumped overboard must not exceed 15 ppm.

--- A new blending on board concept makes it possible to add chemicals to the engine circulating oil and then use it as cylinder oil.

--- Low ignition quality can mean poor combustion and diesel knock.

**Complete the sentences with the correct form of the words in the parentheses. (15 p.)**

-- One of the world’s largest marine diesel engines burnt untested fuel containing cat fines which are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (**cat)** aluminium/ silicon fines.

-- Ejectors are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(rely)** in operation, as they don’t have any \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(move)** parts. This is why \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(maintain)** is minimal.

-- You have to obtain \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(permit)** from the bridge to test main engine ahead and astern on air.

-- Check the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(suitable)** of lube oil in the sump tank.

-- Sulphuric acid is highly \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(corrode)**.

-- Report \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(ready)** of the engine to the bridge.

-- The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(clean)** of cooling water has to be checked.

-- Homogenizers can also deal with \_\_\_\_\_\_\_\_\_\_\_\_ **(incompatible)** problems.

-- Cat fines are highly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(abrade).**

-- \_\_\_\_\_\_\_\_\_\_\_\_(**add)** are used to improve lube quality.

-- High \_\_\_\_\_\_\_\_\_\_\_\_(**accumulate**) of ash and other solid contaminants can be removed through a fine filter.

-- Are minimum of two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(alternate)** running and in parallel?

-- Stop \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(add)** running generator.

**Choose the correct answer. (30 p.)**

-- They are indicators of used lubricating oils in the fuel.

a) nickel and iron b) vanadium and silicon c) calcium, zinc and phosphorus

-- Governments and classification \_\_\_\_\_ have made up rules which have to comply with international SOLAS rules.

a) societies b) groups c) organizations

-- When you turn the engine with the turning gear, the \_\_\_\_\_\_\_\_\_ cocks must be open.

a) drain b) indicator c) valve

-- The percentage of this in the fuel can be translated into a corresponding energy loss. It may cause corrosion in the fuel system.

a) sulphur b) water c) vanadium

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

a) kinematic viscosity b) pour point c) density

-- They are responsible for exhaust valve corrosion, known as ''hot corrosion'', and turbocharger deposits.

a) aluminium and silicon b) vanadium and sodium c) calcium and zinc

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

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

-- The bilge system is a:

a) safety optional system b) non-safety system c) safety system required by law

-- It indicates the ignition quality of distillate fuels.

a) octane number b) CCAI c) cetane number

-- It is used to indicate and assess the stability and cleanliness of a fuel.

a) total sediment potential b) carbon residue c) ash content

-- It is indicative of the ignition delay of residual fuels.

a) CCAI b) cetane number c) octane number

-- One hour before arriving in port, you must shut and lock \_\_\_\_ direct overboard discharge.

a) sludge b) garbage c) sewage

-- In the bilge system, all suction lines are fitted with \_\_\_\_\_\_ valves which do not allow the liquid to flow back to the bilge well.

a) non-return b) safety c) throttle

-- It must be known for safe transport and storage and is set at 60o C (minimum value) as per SOLAS regulations.

a) flash point b) melting point c) boiling point

-- Depending on \_\_\_\_\_ and trim we choose which bilge well the water is collected in.

a) ballast b) speed c) list

-- They indicate the presence of tiny particles of aluminium and silicon used in the refining process and carried over into the residual fuels.

a) acids b) cat fines c) sediments

-- When the ship is about to arrive in port, you must close the \_\_\_\_for exhaust gas boiler and open bypass.

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-- It indicates the coke-forming tendencies of a fuel.

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-- Regardless of whether the service of an independent fuel analysis contractor is utilised or not, the C/E should take a continuous \_\_\_ sample at the manifold throughout the entire bunkering procedure.

a) drip b) drop c) drizzle

-- Chemical element which contributes to air pollution. Its compounds can severely damage the engine parts they come in contact with.

a) sulphur b) sodium c) vanadium

-- The \_\_\_\_ box is a kind of filter on the suction line head which prevents solid particles from entering the pumps and choking them.

a) strum b) filter c) sludge

-- Damage to \_\_\_\_\_\_electrical equipment occurred because the engine room was flooded by 2.5 m forward and 3m aft.

a) sunk b) emerged c) submerged

-- The corners of the lowest \_\_\_ of a ship constitute a bilge.

a) component b) compartment c) department

-- An automatic viscosity controller or viscometer should be in \_\_\_ working order to maintain correct viscosity of the fuel at the engine.

a) adequate b) proper c) enough

--Always order fuel according to the engine maker’s \_\_\_\_ using the industry fuel oil standard ISO 8217.

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-- During pre-departure preparations, you must check if the starting air \_\_\_ are running, and set to auto start.

a) bottles b) valves c) compressors

-- \_\_\_\_\_\_is the residue of the ship's cargo of fuel oil together with the water used to clean the tanks.

a) Sludge b) Slop c) Waste

-- Regarding bunkering, check the ship supplier’s paperwork to ensure the delivery \_\_\_ in terms of quality and specification with what has actually been ordered.

a) applies b) requires c) conforms

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

a) cloud point b) flash point c) pour point

-- It is expressed in kilograms per cubic meter and mainly affects the fuel separation.

a) specific gravity b) density c) kinematic viscosity

**Fill in the gaps with the following words**. **(15 p.)**

*shifting stringent flow pitch heeling discharge distribution priming*

*distillates rate adherence mud gravity mounted contaminated*

* ……………….box is a kind of filter on the suction line head which is a perforated basket, necessary to prevent ashes and other particles from entering the pumps and choking them.
* ……………….box is an appropriate box which contains valves, each of which controls the flow of bilge water from a bilge compartment or a bilge well.
* Several suction lines are …………….on a manifold.
* Heavy fuel (residuals and mixtures of residuals and …........................) must be purified in an efficient centrifuge before entering the service tank. There are several key points.

1. Ensure that the correct …............................disc is used.
2. Never exceed the flow ….....................recommended for the grade of fuel in use. The lower the flow rate the better the efficiency. Consider using two or three centrifuges in series/ parallel as purifier/clarifier.
3. Centrifuging is still recommended for the distillate fuels, MDO/MGO, as the fuel may be ..........................in the storage tanks.

* Present …………….of the propeller is 90 degrees.
* The most probable cause of the flooding was lack of communication between the deck side and the engine room and lack of ………………to proper procedures regarding the sounding of alarms.
* An anti-………………… system is used to minimize the list (in port).
* The rules for the ballast system are less …………..than the rules for bilge systems.
* Ejectors are self - ……………….and easily activated by turning on the …………..of the driving water.
* We will ………………double bottom tank.
* There are many reasons for taking ballast on board or …………ballast, once it is on board.

**Complete the following sentences with an appropriate word. The first letter is given. (15 p.)**

--**F**\_\_\_\_\_\_\_\_ and aft peak tanks, deep tanks, double bottom tanks and wing tanks are usually used for ballast water, depending on the ship’s size.

-- Open the priming plugs on the fuel valves and **r**\_\_\_\_\_\_\_\_\_\_\_\_\_ the pressure.

-- Pump up the **s**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ air reservoirs to their maximum pressure and

**d**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ them of water.

-- **F**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ up the fuel oil service tank with purified fuel oil.

--Bilge water is not exactly water, but a mixture or variety of **s**\_\_\_\_\_\_\_\_\_\_\_\_. It’s a mixture of fresh water, sea water, oil, sludge, chemicals and various other fluids.

-- Present **o**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the main engine is 1,000 kilowatts.

--The depth and the number of bilge **w**\_\_\_\_\_\_ depend on the ship’s size, its capacity and the amount of bilge it generates.

-- **E**\_\_\_\_\_\_\_\_\_\_\_ that power is available for deck machinery and bow thruster.

-- The bilge **h**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tank is a huge tank where bilge water is pumped into

from the bilge wells.

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