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Name:
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FINAL EXAM

1. Fill in the gaps with a word from the list. There is one word that is not needed. (15 p.)

strainers, centrifuging, choking, activated (p.p), overboard, well, disperse, flow, self-priming, vacuum, suction, reduction, permissible, versatile, non-return, 2-way

- A homogenizer is used to _____ any water and sludge which could remain in the fuel after _____.
 - All suction lines are fitted with _____ valves which do not allow the liquid to flow back to the bilge _____.
 - Ejectors are _____ and easily _____. They have an excellent _____ capability and their _____ application makes them a significant part of a ship's engine room equipment.
 - An ejector creates a _____ by the _____ of the water flowing through it.
 - Bilge wells are always provided with _____ to prevent solid particles from entering and _____ the bilge pump. Absence of strainers might lead to a _____ in the bilge pump outlet pressure.
- When the PPM of oil particles in the mixture comes down to the _____ limit, it can be thrown _____.

2. Complete the following text on ballast system with appropriate words. The first letter is given. (15 p.)

The ballast system is used to **p**_____ seawater in or out of the ballast **t**_____. The basic reason for taking ballast on board or shifting **b**_____ once it is on board, is to improve the **s**_____ of the ship, especially when the ship does not carry **c**_____. An anti-heeling system is used to minimize the list in port that can occur during cargo handling. Pumps with large **c**_____ (1000 cubic metres/hour) are installed between two tanks (one on the port side and another one on the **s**_____ side). These pumps can transfer **w**_____ from one tank to the other at great **s**_____. In contrast to the valves of the bilge system, which are non-**r**_____ valves, the ones of the ballast system are two-**w**_____ valves, as the tanks must be able to be filled and emptied.

3. Match the following parameters tested in fuel with their definitions: (10 p.)

water, flash point, pour point, carbon residue, cat fines, sulphur, ash, density, viscosity, sediment

- It is a measure of fuel's resistance to flow:
- It represents the incombustible components of fuel oil:

- It must be known for safe transport and storage of the fuel (expressed in degrees centigrade):
- The lowest temperature at which the fuel will flow (expressed in degrees centigrade):
- Its compounds can be very corrosive to cylinder liners and piston rings:
- Small particles of the catalyst:
- It consists of hydrocarbon sludge and is contained in all fuels:
- It is expressed as per cent by volume; it may cause corrosion in the fuel system:
- It mainly affects the fuel separation:
- It indicates the coke-forming tendencies of a fuel:

4. Complete the following sentences regarding what to do when a ship is about to arrive in port with appropriate verbs. (10 p.)

- I** _____ **m** Chief Engineer regarding arrival.
S _____ additional generator.
S _____ the steam turbine and shaft generator, if fitted.
E _____ **e** that power is available for deck machinery and bow thruster.
M _____ **e** a visual inspection of the steering gear room.
C _____ the dampers from exhaust gas boiler and open bypass.
S _____ **t** and **l** _____ **k** sewage direct overboard discharge and start sewage plant or **o** _____ valve for sewage holding tank.
C _____ over to high sea suction from low sea suction.
D _____ the air receivers.

5. Circle the correct alternative. (10 p.)

- The bilge-line arrangement is a safety **optional / compulsory** system since it is required by law.
- **Water / carbon residue** may cause corrosion in the fuel system.
- **Density / total sediment potential** is used to indicate and assess the stability and cleanliness of a fuel.
- **Sodium / vanadium** is normally present in the fuel as salt water contamination and can be removed by centrifuging.
- When you turn the engine with the **steering gear / turning gear**, the indicator cocks must be **open / closed**.
- The engine must be warmed up **quickly / gradually** by means of the **circulating / fuel** pumps.
- **Viscosity / density** is related to fuel quality.
- The Calculated **Carbon / Calcium** Aromaticity Index is used as an indication of the ignition quality of a fuel.
- **Ash / aluminium and silicon** are small particles of the catalyst used in the refining process.
- Temperatures below the **pour point / flash point** of a fuel lead to wax formation.

6. Match the words from the list to their synonyms below. There is one word that is not needed. (12 p.)

accumulate, wear, excessive, condense, sounding, contamination, replenish, impede, heeling, trim, insufficient, dismantle, saline

- with salt:
- too much, more than necessary:
- the process of steam turning into liquid:
- damage:

- take apart, disassemble:
- stop:
- refill:
- the process for calculating the total quantity of fluid in a tank:
- build up:
- list:
- pollution:
- not enough:

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

- Cat fines are highly _____ (**abrasion**).
- The use of homogenisers is a good way to deal with _____ (**incompatible**) problems.
- _____ (**catalyst**) fines are highly _____ (**abrade**).
- Check the _____ (**suitable**) of lub-oil in the sump tank.
- Report _____ (**ready**) of the engine to the bridge.
- The versatile _____ (**apply**) of marine water ejectors makes them an important part of a ship's engine _____ (**equip**).
- *N/A* in the checklist stands for *not* _____ (**apply**).
- Water in the lube oil system can cause _____ (**corrode**).
- Small amounts of water can _____ (**accumulation**) in the ship as a result of _____ (**condense**), pipe leakages, washing or rain.
- The _____ (**corrode**) effect of _____ (**sulphur**) acid is counteracted by adequate _____ (**lubricate**).

8. Complete the sentences with an appropriate preposition. You can choose from the following: (13 p.)

on, above, before, out, after, to, up, with, in, by, of

- Several suction lines are mounted _____ a manifold.
- The holds are usually provided _____ four bilge wells.
- Both the main bilge line and the suction lines are made _____ galvanized steel.
- The preparation for departure checklist must be filled _____ prior _____ commencement of stand- _____.
- Fuel is known to form deposits _____ hot spots, i.e. in the piston undercrown space.
- The level of cat fines should not exceed 10ppm _____ the centrifuge.
- Increased fouling of gasways could result _____ the use of inadequately cleaned fuel oil.
- Installation of homogenizers _____ the centrifuge is not advisable.
- Bilge wells are periodically emptied by pumping _____ the bilge with the help of bilge pumps.
- The temperature is too high, it is 20 degrees _____ normal.
- Decide whether the harbourmanoeuvres should be carried out on diesel oil or _____ heavy fuel oil.