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Instructors: A. Birbili, M. Tsompanoglou

Name:
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FINAL EXAM

1. Fill in the gaps with a word from the list. There are two extra words. (15 p.)

strainers, non-return, ballast, homogenizer, regulations, return, ejector, anti-heeling draught, incompatibility, pumps, overboard, separator, trim, centrifuging, well, vacuum

- According to MARPOL _____, bilge water must first pass through an oily water _____ before being discharged overboard.
- A(n) _____ is used to disperse any water and sludge which could remain in the fuel after _____. It is also a good way to deal with _____ problems.
- During a(n) _____ operation at night, while at a shipyard in order to _____ the vessel for drydocking, it was discovered that the engine room was flooded.
- When the PPM of oil particles in the mixture comes down to the permissible limit, it can be thrown _____.
- Bilge wells are periodically emptied by pumping out the bilge with the help of bilge _____.
- All suction lines are fitted with _____ valves which do not allow the liquid to flow back to the bilge _____.
- A(n) _____ creates a _____ by the speed of the water flowing through it.
- Bilge wells are always provided with _____ to prevent solid particles from entering and choking the bilge pump.
- A(n) _____ system is used to minimise the list of the vessel in port.

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

- 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.
- The bilge-line arrangement is a safety **optional** / **compulsory** system since it is required by law.
- **Sulphur** / **carbon residue** may cause corrosion in the fuel system.
- **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.
- **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**.

3. Complete the following sentences with an appropriate word. (9 p.)

- Do not exceed a _____ of 4 bars.
- Present _____ of the main engine are 100 per minute.
- Present **o** _____ **t** of the main engine is 1000 kilowatts.
- Present **p** _____ of propeller is 90 degrees.
- Do not exceed a minimum _____ of 20 degrees centigrade.
- B _____ water helps the ship's stability.

4. Match the following parameters tested in fuel with their definitions There are two extra words. (10 p.)

carbon residue, cat fines, elements, water, flash point, pour point, sulphur, ash, density, viscosity, sediment, ignition properties. (2 more are given)

- 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:
- 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:

5. Match the questions to the answers. There is an extra question. (10 p.)

1. Which fuel property must you know to protect the vessel from fire? -- Viscosity.
2. What causes fouling of the gasways? -- Special lubricants with high TBN.
3. Which solid particles are particularly responsible for abrasive wear? -- Ash.
4. Which parameter is not actually a measurement of HFO quality? -- The flash point.

5. What do engines designed for operation on high sulphur fuels use to minimise the effects of sulphur? -- By using a grinding tool.
6. Which areas will suffer high wear if cat fines rates are not reduced? -- Carbon residue.
7. How can you remove cat fines? -- Fuel pumps and injectors, the liners and piston rings.
8. What can replace the traditional cylinder oil? -- The pour point.
9. How can you remove vanadium deposits from turbocharger nozzle ring? -- Cat fines.
10. Which fuel property determines the requirements for tank heating and transferring? -- Blended lube oil.
11. Which parameter represents the incombustible components of fuel oil?

6. Place the following procedures under the correct heading. (10 p.)

1. Make a visual inspection of the steering gear room.
2. Start additional generator.
3. Open vent for exhaust gas boiler.
4. Open indicator cock and turbocharger drain valve.
5. Drain the air receivers.
6. Activate the arrival program if UMS to stop the lube oil pump or stop manually in manned engine room.
7. Ensure that power is available for deck machinery and bow thruster.
8. Close the dampers for exhaust gas boiler and open bypass.
9. Close main air starting valve.
10. Engage turning gear and turn engine for 10 minutes.

What to do when a ship is about to arrive in port.

Things to do after the ship has arrived in port.

7. Match the words from the list to their synonyms/definitions below. (12 p.)

accumulation, excess, saline, condensation, insufficient, contaminate, replenish, impede, perforated, heeling, sounding, dismantle

- due to:
- more than necessary:
- the process of steam turning into liquid:
- with holes:
- take apart, disassemble:
- stop:
- refill:
- the process for calculating the total quantity of fluid in a tank:
- build-up:
- list:
- pollute:
- not enough:

8. Complete the sentences with the correct form of the words in parentheses. (12 p.)

- Check the _____ (**suitable**) of lub-oil in the sump tank.
- *N/A* in the checklist stands for *not* _____ (**apply**).
- Water in the lube oil system can cause _____ (**corrode**).
- Is main engine warmed up through _____ (**sufficient**)?
- The versatile _____ (**apply**) of marine water ejectors makes them an important part of a ship's engine _____ (**equip**).
- The actual fuel _____ (**consume**) depends on the _____ (**efficient**) of the engine.
- Poor combustion can cause _____ (**accumulate**) of _____ (**viscosity**) residues in the scavenging air chambers.
- Obtain _____ (**permit**) from the bridge to test main engine ahead and astern.
- Report _____ (**ready**) of the engine to the bridge.

9. Complete the sentences with an appropriate preposition. (12 p.)

- Warm _____ the engine gradually.
- Have all the preparations been done prior _____ arrival in port?
- The pour point shows the lowest temperature _____ which the fuel should be stored and pumped.
- Call the Watch Engineer if the revolutions of the main engine are _____ 90 _____ minute.
- The valves used for the bilge system are screwed _____ non-return valves.
- Check all shut _____ valves of all systems for correct position.
- Start _____ all cooling water and lub-oil pumps.
- The temperature is too high, it is 20 degrees _____ normal.

- Decide whether the harbour manoeuvres should be carried out on diesel oil or _____ heavy fuel oil.
- Ejectors are simple in design and reliable in operation and due _____ their excellent suction capability they are frequently used _____ various marine applications.