

**MERCHANT MARINE ACADEMY OF MACEDONIA
SCHOOL OF ENGINEERS**

Course: Maritime English
Academic year: 2015 – 2016
Semester: E' (Retakes)
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Exam period: September 2016
Date:
Exam paper grade:

FINAL EXAM

1. Fill in the gaps using the words below. (15 p.)

*lubricating hot dense alarm flash maintenance compartment permissible
explosion concentration rotating sample under speed overheated*

Accumulation of _____ mist in the crankcase of an engine can lead to fire or _____. It is important to keep this oil mist _____ control and for that reason oil mist detectors are used.

An _____ diesel engine can become the source of fire and extreme disorder if periodic _____ and proper practices are not carried out. Oil mist is created in the crankcase when the _____ oil is splashed by reciprocating and _____ parts of the engine. This oil mist reduces the _____ point of the oil, allowing it to catch fire in presence of a _____ spot. It is important that this _____ of oil is kept within _____ limits and in case its presence is detected, the engine should be stopped or the _____ reduced. But how can an engine detect that the level of oil mist has increased in the crankcase?

Oil mist detectors are used for this purpose. The crankcase _____ of each cylinder is connected to the OMD, which continuously checks the air _____ from each cylinder. If the amount of mist increases, OMD raises an _____.

2. Choose the correct alternative of the words in italics. (15 p.)

It is a bit difficult to read the early signs of a crankcase explosion. This is because the indications are *similar / different* to many other emergency situations. But there are few pre-explosion signs that can be read. Crankcase explosion will lead to:

- Sudden increase in the *inlet / exhaust* temperature
- Sudden *increase / decrease* in the load of the engine
- *Regular / irregular* running of the engine
- Incongruous noise of the engine
- Smell of the white mist.

In case of these indications, engine *load / speed* should be brought down immediately and the supply of fuel and air should be stopped. The system should then be allowed to cool down by *opening / closing* the indicator cocks and turning on the internal cooling system.

Crankcase explosions can be prevented by avoiding the generation of hot spots. They can also be prevented in the following ways:

- By providing proper lubrication to the reciprocating parts, thus avoiding high **temperatures / pressures**.
- By avoiding overloading of the engine
- By using bearings with **black / white** metal material which prevents rise in temperature.
- By using oil mist detector in the crankcase with proper **vision / visual** and audible alarm. Oil mist detectors raise an alarm if the **concentration / condensation** of oil mist rises above the permissible limit.
- Pressure **regulating / relief** valves should be fixed on the crankcase for the instant release of pressure. They should be periodically **temperature / pressure** tested.
- Crankcase doors should be made of strong and durable material. Vent **pipes / ports** shouldn't be too large and should be checked for any choke up.
- In the event of an explosion, the crankcase doors should never be opened until the system has totally **calmed / cooled** down.
- Fire extinguishing medium should be kept standby. In many systems, **exhaust / inert** gas flooding system is directly connected to the crankcase.

3. Fill in the gaps using the words below. (15 p.)

dilution centrifuge relief vent fresh crack filters drain

injection cylinder leakage intake excessive antifreeze viscosity

- When engines are stopped, you must _____ all starting-air lines because serious accidents may occur if pressure is left on.
- You must thoroughly _____ the fuel before using it, and you must keep the _____ clean and intact.
- Pressure-_____ mechanisms are fitted on enclosures in which _____ pressures may develop.
- When fuel reaches the _____ system, it should be absolutely free of water and foreign matter.
- Fuel _____ into the lubricating oil system will cause _____ of the lubricating oil with a consequent reduction in _____ and lubricating properties.
- Rapid cooling may _____ a cylinder liner and head or may cause a piston to seize within a _____.
- In freezing weather, you must carefully _____ all passages and pockets in the engine that contain _____ water and are subject to freezing, unless an _____ solution has been added to the water.
- _____ air must be kept as clean as possible.

4. Complete the sentences with the appropriate form of the words in parentheses. (20 p.)

- The 3rd engineer with the _____ (**assist**) of a crew member of the engine room proceeded to the _____ (**adjust**) of the _____ (**govern**).
- Materials which offer low _____ (**resist**) to electric current are called conductors.
- I have an important _____ (**appoint**) with the crew manager of Euronav, concerning a future _____ (**cooperate**) with them.
- The _____ (**maintain**) and _____ (**instruct**) manuals given by the engine _____ (**construct**) are kept in the engine room.
- When the lube oil becomes unfit for further usage, it needs either some kind of _____ (**treat**) or _____ (**replace**).

- The company's new container ship is under _____ (**construct**) but it won't be finished until 2016.
- International regulations try to reduce the _____ (**emit**) of ships' fuels.
- During our last voyage we took many _____ (**save**) measures due to the highly dangerous cargo we were carrying.
- _____ (**regular**) running of the engine may be an _____ (**indicate**) of the governor's _____ (**function**).
- During overhauling you should check all pipe _____ (**connect**).
- The effect of _____ (**vibrate**) on the engine structure is quite _____ (**harm**).

5. Write the opposites of the following words. (10 p.)

- | | |
|----------------|----------------|
| -- efficient | -- appropriate |
| -- compose | -- obey |
| -- legal | -- possible |
| -- assemble | -- equality |
| -- experienced | -- moral |
| -- manned | -- balance |
| -- responsible | -- honest |
| -- careful | |

6. Match the words to their definitions. There is one extra word. (10 p.)

skin hazardous impact exposed draft dependable humidity bulky
moisture effective ductwork

- current of cold air flowing through a room _____
- producing the desired result _____
- dangerous _____
- the total of all pipes or tubes _____
- an outer surface built over a structure _____
- amount of water vapour contained in the air _____
- left without protection; uncovered _____
- reliable _____
- have a powerful influence on sth/smb _____
- having great size or mass _____

7. Read the following article and answer the questions that follow. (15 p.)

Azipod saved over 700,000 tonnes of fuel, says ABB

by Paul Fanning

As part of its Azipod 25th anniversary celebrations, ABB has announced the total fuel savings of the entire installed Azipod fleet since being launched is estimated to be more than 700,000 tonnes. Assuming the average family car uses one tonne of fuel annually, this saving corresponds to the annual fuel consumption of 700,000 cars.

The gearless, steerable propulsion system reduces fuel consumption by up to 20 per cent and achieves decimeter accurate manoeuvrability without the aid of tugboats. It is installed on an extremely wide range of vessels, including the world's largest cruise ship (6,600 passengers), the most advanced icebreaker, one of the largest crane vessels in Asia, a 105m luxury super yacht, and most recently, an innovative cargo transfer vessel. According to Clarkson's Research, the leading shipbroker and research firm, the number of vessels with electric propulsion is growing at a pace of 12 per cent per year, three times faster than the world's fleet.

A pioneering technology leader, ABB is celebrating Azipod propulsion's 25th anniversary this year. The electrical propulsion system – where the electric motor with propeller is mounted inside a streamlined pod capable of 360 degrees movement beneath the ship – has evolved to become the industry standard for the marine industry. The system can drive and steer the ship at the same time.

The entire installed Azipod propulsion unit base has accumulated 12 million operating hours in merchant, offshore and special vessel segments. "Our engineers continue to innovate, like they did 25 years ago, to ensure Azipod propulsion meets the demands from a diverse range of ship owners. Much has changed in the shipping sector since we introduced the first Azipod but the desire for efficiency, manoeuvrability and reliability remains the same. The fact that Azipod propulsion remains the dominant force in podded electric propulsion shows our commitment to meet our customer's needs," said Juha Koskela, the managing director of ABB's Marine and Ports business.

(Retrieved: 26 August, 2016 from www.mpropulsion.com)

1. What do the total fuel savings of the entire installed Azipod fleet correspond to?
2. What are the advantages of Azipod regarding fuel consumption and manoeuvrability?
3. What types of vessels can Azipod be installed on?
4. When was the first Azipod propulsion system introduced in the shipping sector?

GOOD LUCK!!!