MERCHANT MARINE ACADEMY OF MACEDONIA
SCHOOL OF ENGINEERS

Course: Maritime English
Academic year: 2016 – 2017 **Exam period: June 2017**
Semester: E (Retakes-Old students) **Date:**
Name: **Exam paper grade:**
Student number:
Instructor: A. Birbili

FINAL EXAM

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

cavitation injection rotating overheated drain prevent water explosion

maintenance solution lubricating fresh warning pressures principle

-- In freezing weather, you must carefully _____ all passages and pockets in the engine that contain _____ water and are subject to freezing, unless an antifreeze _____ has been added to the water.
-- When fuel reaches the _____ system, it should be absolutely free of water and foreign matter.
-- _____ is the formation and bursting of vapour bubbles in _____ near a moving propeller blade in regions of low pressure due to Bernoulli's _____.
-- The cylinder relief valve is designed to relieve _____ in excess of 10% to 20% above normal.
-- The oil mist detector does not reduce or _____ the formation of mist, but it only gives _____ in case concentration rises above the level at which an _____ can take place.
-- Oil mist is created in the crankcase when the _____ oil is splashed by the reciprocating and _____ parts of the engine.
-- An _____ diesel engine can become a source of fire and extreme havoc if periodic _____ and proper practices are not carried out.

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

sensitivity relief vent steps filters power samples release

pressure dirty centrifuge bilges mist fire wear

-- When engines are stopped, you must _____ all starting-air lines because serious accidents may occur if _____ is left on.
-- You must keep the engine clean at all times and take _____ to prevent oil or fuel from accumulating in the _____ or in other areas in order to prevent _____ hazards.
-- You must thoroughly _____ the fuel before using it, and you must keep the _____ clean and intact.
-- Cavitation can waste _____, generate considerable noise, create vibration and _____, and cause damage to the propeller.
-- The _____ of the oil mist detector should be checked on a regular basis. As all the _____ contain a small amount of _____, the lenses and mirrors tend to get _____ and thus require periodic cleaning.

-- Pressure _____ valves should be provided with wire mesh to prevent the _____ of flames inside the engine room.

3. 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.

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

-- 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 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.

-- The company's new container ship is under _____ **(construct)** but it won't be finished until 2016.
-- _____ **(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)**.
-- 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.

5. Write the opposites of the following words. Then use five (05) of them to fill in the gaps. (10 p.)

-- efficient
-- compose
-- legal
-- assemble
-- experienced
-- appropriate
-- obey
-- possible
-- equality
-- moral

-- The crew members of the engine room had to _____ the cylinder liner in order to overhaul it.
-- If you _____ the orders, you'll be severely punished.
-- Due to _____ operating conditions, the engine slowed down.
-- By electrolysis, you can _____ water into hydrogen and oxygen.
-- It is _____ to dump oil and other harmful substances into the sea.

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

choke *disperse* *adverse* *restricted* *durable* *condense*

momentum *range* *periodic* *accumulate* *fatal*

causing or resulting in death _____
vary between limits _____
build up _____
able to last, long-lasting _____
scatter or spread in different directions _____
clog _____
the quantity of movement in a body _____
(of a gas) become liquid, esp. by becoming cooler _____
happening at regular times _____
limited _____

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 that the total fuel savings of the entire installed Azipod fleet 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!!!