**MERCHANT MARINE ACADEMY OF MACEDONIA**

**SCHOOL OF ENGINEERS**

**Course: Maritime English**

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**FINAL EXAM**

**1. Fill in the gaps using the words in the list below. There is one (1) extra word. (15 p.)**

*turbine performance excitation moving parameters balancing*

*firing frequency stiff highlighted reduction breakdown*

*coupling turning bracing fatigue*

-- When the natural \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of vibration from an external source integrates with the engine vibration, the internal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ parts of the engine may be severely damaged.

-- Unusual changes in the ­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of any particular machinery, sudden increase or decrease in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, accidents, near misses, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of any equipment should be noted down and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the log book.

-- High levels of vibration may cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ damage to the engine.

-- If the engine has a power \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ connected to its crankshaft via a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gear, a flexible \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is used to compensate for the vibration that occurs during motion transfer.

-- A new \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ order for the current production engines offers a better distribution of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forces at certain harmonic orders.

-- One end of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is fitted at the upper part of the main engine, and the other end is attached to a very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ location in the hull of the ship.

-- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a way of controlling vibrations.

**2. Complete the sentences with the correct form of the words in parentheses. (20 p.)**

-- Amplitude and frequency are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(measure)** parameters that are used to describe vibration.

-- Ship machinery \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(install)** have two main sources of excitation: the main engines and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(propel)**.

-- The turbochargers are used to increase the air flow through the engine, and therefore the air \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(dense)**.

-- Any accidents, such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(collide)** or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(ground)**, should be noted down in the logbook.

-- Vibration analysis can be conducted by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(maintain)** engineers, who use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(rely)** methods that produce written data.

-- One type of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(torsion)** damper consists of an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(inert)** ring which is added to the crankshaft and is enclosed in a thin layer of a highly\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(viscosity)** fluid.

-- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(satisfy)** scavenging depends on efficient \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(evacuate)** of exhaust gases and minimum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(lose)** of fresh air through the exhaust \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(pass)**.

-- According to ISO criteria, vibrations of 4-5 mm/sec are tolerated, whereas values larger than 10 mm/sec are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(accept)**.

-- Scavenging is important, because it affects the overall \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(efficient)** of the engine, the power output and the fuel \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(consume)**.

-- High levels of vibration may cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(form)** or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(break)** of the engine components.

**3. Complete the following sentences with an appropriate preposition. You can choose from the following: (15 p.)**

 ***for, above, on, with, into, up, in, at, through, from, within***

-- Insulation techniques are used to keep the vibrations \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acceptable levels.

-- Installing a permanent type vibration meter on critical machines can give us signs of wear and tear to be rectified well \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ advance before the fault converts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ an expensive problem.

-- Loop-scavenged engines are fitted \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ exhaust ports located just \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the scavenge ports.

-- The lube oil should be checked regularly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ water and contaminants, as this combined with severe vibrations may speed\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the damage process.

-- In the engine room, there are many noise transmission paths \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which vibrational energy is transferred \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ one area to another.

-- The power output of an engine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a given speed is proportional to the mass flow rate of air.

-- The following entries must be filled in the engine logbook:

* the position of the ship \_\_\_\_\_\_\_\_\_\_\_\_\_ sea, \_\_\_\_\_\_\_\_\_\_\_\_\_ port or \_\_\_\_\_\_\_\_\_\_\_\_ anchorage.
* speed of the ship \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ knots.
* main engine rpm and load \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the engine.

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

*tamper breakdown counteract cavity velocity near miss resilient align*

*erratic detune aspirate feasible damp slacken aperture hazard*

-- the speed of something in a particular direction:

-- provide an ICE with air:

-- arrange in a straight line:

-- failure (of engine):

-- danger:

-- a narrowly avoided accident:

-- not regular, unpredictable:

-- an opening, hole or gap:

-- make changes to something without permission:

-- balance with an equal force so as to make ineffective:

-- change the frequency (of an oscillatory system) away from a state of resonance:

-- able to return to an original shape after being pushed, stretched, bent, etc:

-- loosen:

-- an empty space within a solid object, or between two surfaces:

-- able and possible to be done:

**5. You will read an article about fire in the engine room. Ten phrases have been extracted from the article. Write the correct number in front of the phrases. (15 p.)**

-- cause is oil leaking from pipes under high

-- is functioning so that any leakage

-- from being sprayed over a hot

-- frequently checked and immediately renewed

-- fine spray that will readily ignite upon contact

-- with fuel from the high-pressure line

-- has experienced it will undoubtedly agree

-- evacuate the engine room within

-- of the high risk and severe consequences

-- quick-closing valve mechanisms

As any seafarer who **...[1]...**, a fire at sea is a frightening experience. The fire brigade may be thousands of miles away! The most common ship fire is in the engine room, and the usual **...[2]...** pressure, specifically from the fuel pump discharge.

When a high-pressure fuel line fractures or a gland leaks, fuel oil is released as a **...[3]...** with a hot surface such as the engine exhaust. The resulting blaze is immediately fierce, and being constantly fed **...[4]...**, will rapidly become impossible to fight with extinguishers and hoses. It will probably be necessary to **...[5]...** a few minutes, and use the remote stops to stop the pump and shut off the fuel supply. Damage will be severe, with a high risk of loss of life, and the ship

may well be lost.

Because **...[6]...** from high-pressure oil line leaks, the fuel oil pump discharge lines are double-skinned so that any fuel leaks are contained and the leakages are safely drained into a tank. The integrity of the outer skin is essential to prevent any leaking oil **...[7]...** surface, and the subsequent fire.

**DO** regularly check the fuel oil drain tank and ensure the alarm **...[8]...** from the inner pipe is detected.

**DO** ensure that the outer protective skin of fuel oil pump discharge lines is **...[9]...** if any damage is found.

**DO** confirm that the remote stops and **...[10]...** work by regular testing, and that the ship’s crew know where they are and how to use them.

(Retrieved: 09 September, 2015 from www.britishmarine.com)

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

-- **S**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the process of removing exhaust gases from the cylinder after **c**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by blowing in fresh air.

-- **F**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the rate at which a sound (or electromagnetic wave) vibrates.

-- On 2-stroke engines, an electrically driven auxiliary **b**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is usually installed because the **a**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ provided at low engine speeds is not enough.

-- With supercharging, a large mass of air is supplied to the engine cylinder by blowing it under **p**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

-- In **u**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ -scavenged engines, the flow of scavenging air is in one direction.

-- The log book parameters are checked during **s**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and investigations related to any kind of accident in the engine room.

-- In loop-scavenged engines, the charge air passes over the piston **c**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and rises to form a loop within the cylinder, expelling the **e**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gases.

**7. Match the words to make appropriate collocations. (5 p.)**

-- bottom-end........................................ inspection

-- remaining........................................... crankpin

-- scored................................................ hours

-- PSC................................................... on board

-- running.............................................. seizure

-- natural............................................... bearings

-- track................................................... soundings

-- piston................................................. wing

-- bridge................................................ frequency

-- tank................................................... record

**GOOD LUCK!!!**