**MERCHANT MARINE ACADEMY OF MACEDONIA**

**SCHOOL OF ENGINEERS**

**Course: Maritime English**

**Academic year: 2021 – 2022 Name:**

**Exam period: June Student number:**

**Semester: E΄ Date: 16/06/2022**

**Instructors:** **A. Birbili, M. Tsompanoglou Exam paper grade:**

**FINAL EXAM**

**1. Fill in the gaps using the words from the list. There are two (02) extra words.**

**(15 p.)**

***uniflow expelling bearing firing mounting bracing loop resonator***

***compartments neat rod excitation diffuser stiff liner mandatory crown***

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

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

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

-- The log book must be kept \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and clean without oil smudges or over-writing.

-- In \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-scavenged engines, the charge air passes over the piston \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and rises to form a circle within the cylinder, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the exhaust gases through exhaust ports cut in the same side of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ above the scavenge ports.

-- In the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ where the noise level is excessively high, the use of ear defenders is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

-- Elastomer-based \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ systems are used to suppress or attenuate noise and vibration in ships.

-- Additional noise reduction measures may include a Helmholtz \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lining in the scavenge air pipe and/or a low noise \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the turbocharger compressor.

**2. Complete the following sentences with an appropriate word. In most cases the first letter is given. (15 p.)**

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

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

-- Poor combustion, lube oil contamination, piston **r**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ wear, as well as high mean **t**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the cylinder, are some of the problems resulting from incomplete scavenging.

-- The pressurised air supplied by the turbocharger is cooled to increase its **d**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ before entering the cylinder.

**--** 5-cylinder auxiliary engines are more probable to cause **v**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ problems than 6 or 8-cylinder engines.

**--** Detunersare used to alter the **f**\_\_\_\_\_\_\_\_\_\_\_\_ of the vibrating components thus reducing the vibration of the engine.

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

**--** A basic part of the cycle of a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ combustion engine is the gas exchange process.

**3. Match the following words to their synonyms/explanations. There is one (01) extra word. (15 p.)**

***fretting, slacken, near miss, breakdown, resilient, aperture, feasible, scored***

***stiff, fracture, align, reverberate, tamper with, deformation, aspirate, mandatory***

-- make changes to something without permission, interfere with:

-- rigid, difficult or impossible to bend:

-- failure (of engine):

-- arrange in a straight line:

-- provide an ICE with air:

-- a narrowly avoided accident:

-- obligatory:

-- breakage:

-- change of shape:

-- wear caused by friction:

-- loosen:

-- able and possible to be done:

-- with deep scratches:

-- an opening, hole or gap:

-- (of a sound) to be repeated several times:

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

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

-- Vibration \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(measure)** should be carried out to assure that the vibration level is within ISO requirements.

-- It is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(significance)** to note down the relevant information at a place (paper or electronic logbook) for future reference and \_\_\_\_\_\_\_\_\_\_\_\_\_ **(retrieve)**.

-- Most of the readings and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(enter)** noted down in the log book can also be taken from the control room, although it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(advise)** to take local readings.

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

-- Comparing previous data of machinery parameters with current data can help us to plan maintenance more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(effect).**

-- There are many noise \_\_\_\_\_\_\_\_\_\_\_\_\_ **(transmit)** paths through which vibrational energy is transferred from one area to another.

-- According to ISO criteria, vibrations of 10 mm/sec are not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(accept).**

-- Every running machine has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(tend)** to vibrate.

-- Vibration analysis on a regular basis is needed to predict the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(operate)** health of equipment.

-- Any prolonged \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(expose)** to levels of 85 dB or above can severely affect your hearing in the absence of ear \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(protect)**.

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

-- The most famous type of torsional damper used on marine engines is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(viscosity)** type damper.

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

**5. Circle the correct answer. (25 p.)**

-- \_\_ is the greatest distance that a wave, especially a sound or radio wave, vibrates.

a. Speed b. Amplitude c. Velocity d. Frequency

-- The sound or other vibration produced in an object by sound or vibrations of a similar frequency from another object is called \_\_.

a. resonance b. natural frequency c. volume d. vibration

-- To \_\_ means to change the frequency (of an oscillatory system) away from a state of resonance.

a. attenuate b. detune c. absorb d. dampen

-- \_\_ is the speed of something in a particular direction.

a. Volume b. Amplitude c. Frequency d. Velocity

-- The twisting of an object due to forces which tend to turn one end about a longitudinal axis while the other end is held fixed is \_\_.

a. oscillation b. torsion c. vibration d. rotation

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

a. Stabilising b. Arranging c. Balancing d. Bracing

-- The most famous type of torsional damper consists of an inertia ring which is enclosed in a thin layer of \_\_.

a. silicone b. grease c. silicon d. rubber

-- Slow \_\_ is the easiest way to reduce fuel oil consumption.

a. operating b. running c. sailing d. steaming

-- Older engines were ''naturally \_\_'' - taking fresh air only at atmospheric pressure.

a. scavenged b. charged c. aspirated d. loaded

-- The \_\_ damper is used to suppress the stresses on the crankshaft which result from varying torque pulses.

a. rotational b. twisting c. axial d. torsional

-- \_\_ transfer the rocking vibration of the engine to the hull of the ship.

a. Bracings b. Shock-absorbers c. Balancers d. Dampers

-- An entry for all the lube oil \_\_ on board must be made in the engine room log book every day.

a. staying b. resting c. remaining d. keeping

-- The piston \_\_ of a loop-scavenged engine is longer than that of a uniflow-scavenged one.

a. rod b. skirt c. pin d. crown

-- The data from the log book is often used as evidence in case of insurance \_\_ arising after an accident.

a. demands b. requirements c. claims d. questions

-- It is of \_\_ importance to note down the readings of important machinery in the engine room log book.

a. prime b. basic c. main d. best

-- The data in the log book should be properly \_\_ for future references.

a. visibly b. vision c. visibility d. visible

-- \_\_ is the process in which an atom, or other particle, adopts a higher energy state when energy is applied.

a. Amplitude b. Excitement c. Excitation d. Attenuation

-- The purpose of the gas exchange process is to remove the burnt gases at the end of the \_\_ stroke and admit fresh air for the next cycle.

a. suction b. intake c. compression d. power

-- The aim of vibration analysis is to determine the \_\_ condition of equipment before it leads to a breakdown.

a. normal b. deteriorating c. improving d. optimum

-- \_\_ is the frequency at which a system oscillates when it is not subjected to a continuous or repeated external force.

a. Oscillation b. Resonance c. Natural frequency d. Attenuation

-- When vibrations occur in big-sized engines operating under heavy loads, the \_\_ of vibration is magnified, because of large mass rotation.

a. weight b. volume c. level d. intensity

-- All important machinery parameters noted down in the log book can be compared with the design and \_\_ conditions at regular intervals in order to analyse the performance of engine room machinery and systems.

a. check b. effort c. trial d. sea

-- A(n) \_\_ needs to be fitted between the engine and the reduction gear in order to reduce the vibration which occurs during motion transfer.

a. detuner b. strut c. axial damper d. flexible coupling

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

a. tear b. fretting c. damage d. fear

-- The speed of the ship in \_\_ is also recorded in the log book.

a. miles b. kilometers c. nautical miles d. knots

**6. Complete the sentences with an appropriate preposition from the list below. Some prepositions can be used more than once. (10 p.)**

 ***up, for, at, in, from, via, with, within***

-- If the engine has a power turbine connected to its crankshaft \_\_\_\_\_\_\_\_\_\_\_\_ a reduction gear, then flexible coupling is used to compensate \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the vibration occurring during motion transfer.

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

-- The presence of water and contaminants \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the lube oil combined with severe vibrations may speed \_\_\_\_\_\_\_\_\_\_\_\_\_ the damage process.

-- Vibration must not result \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ annoyance and/or discomfort for the crew.

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

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

-- In order to prevent the log book \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ getting torn or spoilt, you should use a proper cover or case \_\_\_\_\_\_\_\_\_\_\_\_\_\_ protection.

****