

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

**Course: Maritime English V**

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**Instructors: A. Birbili, M. Tsompanoglou**

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**FINAL EXAM**

**1. Fill in the gaps using the words in the box. There is one extra word. (16 p.)**

lead	factors	lubricating	scored	consequences
water	end	original	damping	piston
pins	severe	discoloured	gensets	maintenance
rods	auxiliary			

Overheated and ..... main journals and crank pins, broken crankshaft, ..... seizure, overheated gudgeon ....., as well as damage to bottom ..... bearings of connecting rods of 5-cylinder ..... engines have been reported in various vessels as a result of ..... vibrations.

However, it cannot be ruled out that ..... in the lubricating oil and inadequate ..... may have served as contributing ..... to the incidents. The ..... bearings were found to have a layer of ..... oxide which is much harder than the ..... bearing metal.

The ..... pumps should be kept operating also for the ..... which are not running, because the oil film may have a ..... effect, and may reduce the harmful ..... of vibration, such as fretting and hammering.

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

-- Velocity is the s..... of something in a particular direction.

-- ..... bracings are widely used to control the vibrations of ..... engines on board ships.

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

-- The various diesel engines, the p....., and even the waves at sea are the main sources of vibrations on board ships.

-- Deflection readings are taken to check the alignment of the c.....

-- Any remarks for surveys and Port ..... Control inspections must be recorded in the logbook.

-- ..... equipment, such as pumps, compressors or generators can transmit vibrations to the engine through mounting structures or shared foundations.

-- 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.

### **3. Circle the correct answer. (10 p.)**

- Vibration analysts make use of measurable parameters to determine the **deteriorating/ normal/ optimum/ improving** condition of equipment before it leads to a breakdown.
- **Frequency/ Vibration/ Resonance/ Volume** is the vibration produced in an object by another object vibrating at a similar frequency.
- One type of damper consists of an inertia ring which is enclosed in a layer of **silicone/ silicon/ grease/ rubber**.
- **Attenuation/ Natural frequency/ Resonance/ Oscillation** is the frequency at which a system oscillates when it is not subjected to a continuous or repeated external force.
- The **rotational/ linear/ torsional/ axial** damper is fitted on the crankshaft to reduce the forward and aft shaft oscillations.
- **Balancers/ Dampers/ Bracings/ Shock-absorbers** are generally fitted on the exhaust side of the engine to prevent resonance within the engine's operational range.
- Installing a permanent type vibration meter on critical machines can give us signs of wear and **fear/ fretting/ tear/ damage** to be rectified well in advance before the fault converts into an expensive problem.
- E-logbooks rely on functioning technology (e.g. internet connection) which may be prone to malfunctions or **overtime/ downtime/ uptime/ daytime**.
- Near **losses/ accidents/ misses/ incidents** are discussed during safety meetings as references that can help in making safety plans.
- In **loop/ cross-flow/ uniflow/ airflow** -scavenged engines, the flow of scavenging air forms a circle within the cylinder.
- An Ozone **Decreasing/ Depleting/ Discharging/ Dumping** Substances (ODS) Record Book is a legally required logbook for ships with rechargeable systems containing these substances, such as refrigerants.
- In systems with power turbines connected via reduction **screws/ connections/ toothed wheels/ gears**, flexible couplings compensate for vibrations.
- The speed of the ship in **kilometers/ knots/ nautical miles/ miles** is also recorded in the logbook.
- The piston **crown/ pin/ skirt/ rod** of a loop-scavenged engine is longer than that of a uniflow-scavenged one.
- Older engines were "naturally **aspirated/ scavenged/ charged/ loaded**" - taking fresh air only at atmospheric pressure.
- An entry for all the lube oil **resting/ remaining/ staying/ keeping** on board must be made in the engine room logbook every day.
- **Torsional/ Axial/ Twisting/ Rotational** dampers are used to address twisting vibrations caused by uneven torque pulses.
- **Excitement/ Attenuation/ Excitation/ Vibration** is the process in which an atom, or other particle, adopts a higher energy state when energy is supplied.
- All important machinery parameters noted down in the logbook can be compared with the design and **sea/ check/ effort/ trial** conditions at regular intervals in order to analyse the performance of engine room machinery and systems.
- The power **outlet/ outcome/ result/ output** of an engine at a given speed is proportional to the mass flow rate of air.

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

*fretting implement erratic replenish amplitude illegible  
mean slacken malfunction contamination fatigue  
breakage objectionable tamper (with) breakdown deviation*

- pollution .....
- loosen .....
- difference from what is usual or expected .....
- make changes to something without permission .....
- not clear enough to read .....
- wear caused by friction between non-moving surfaces .....
- average .....
- sudden failure in operation .....
- the maximum extent of vibration .....
- unpleasant .....
- put into effect .....
- irregular or abnormal operation .....
- great tiredness, exhaustion .....
- unstable, not regular .....
- refill .....

**5. Complete the sentences with the appropriate form of the words in parentheses. (15 p.)**

- Tuned Mass Dampers consist of an ..... (**add**) mass that is tuned to a specific ..... (**frequent**) to counteract vibrations.
- Every running machine has a ..... (**tend**) to vibrate.
- Vibration ..... (**analyse**) can be conducted by maintenance engineers who use ..... (**rely**) methods that produce written data.
- Vibrations can result in fatigue defects, noise, and ..... (**comfort**) or ..... (**annoy**) for the crew.
- The most common type of ..... (**torsion**) damper used on marine engines is the ..... (**viscosity**) type damper.
- Anti-vibration mountings mainly benefit ..... (**propel**) engines, gensets and various auxiliary machinery.
- If the engine mounts are worn or damaged, they can lead to increased ..... (**transmit**) of engine vibration to the hull or superstructure.
- High levels of vibration may cause ..... (**form**) or breakage of engine components.
- In order to prevent the logbook from getting ..... (**tear**) or spoilt, use a proper cover for ..... (**protect**).
- The ..... (**compress**) phase involves the piston moving up towards the top dead centre, closing the exhaust valves and compressing the fresh air.

**6. State whether the following sentences are True (T) or False (F). (7 p.)**

- Supercharging is the process of supplying an IC Engine with air at atmospheric pressure.
- Oscillation is a regular movement between one position and another.
- All modern, large 2-stroke diesel engines being built now are of the loop-scavenged type.
- The fundamentals of gas exchange process in 2-stroke diesel engines are intake and exhaust.
- Incomplete scavenging may lead to lube oil contamination.
- 2-stroke diesel engines with an exhaust valve mounted in the cylinder head are known as loop-scavenged engines.
- Balancing for marine diesel engines means making sure all moving parts are evenly weighted.
- Fuel consumption is not affected by scavenging.
- Unlike the 4-stroke diesel engine, a 2-stroke one does not use the piston to push out the exhaust gases.
- The data from the logbooks is often used as evidence in case of accidents.
- E-logbooks are less secure than paper logbooks because they can be easily tampered with.
- High vibration levels combined with the presence of water in the lubricating oil may cause damage to the bearings of the engine.
- The pressurized air supplied by the turbocharger is heated to increase its density before entering the cylinder.
- Most of the readings and entries noted down in the logbook can also be taken from the engine control room.

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

- shaft .....set
- track .....claims
- insurance .....mounts
- cushion .....generator
- tank .....resonance
- garbage .....record
- holding .....soundings
- harmonic .....damping
- vibration .....disposal
- generator .....bolts

**8. Fill in the missing words in the following abbreviations used in logbooks. (8 p.)**

- SSP ..... of sea passage
- ROB ..... on board
- RPM ..... per minute
- FWE ..... with engine/s
- MDO ..... diesel oil
- FW ..... water
- ESP ..... of sea passage
- UMS ..... unmanned..... space

**9. Complete the following phrases using the verbs in the box. There is one extra verb.  
(9 p.)**

detect	plan	ensure	make	take
do	cross out	fill in	copy	discuss

- ..... an entry in the logbook.
- ..... readings of engine room machinery.
- ..... the logbook with assumed parameters.
- ..... data from previous entries.
- ..... during safety meetings.
- ..... the logbook is kept neat and clean.
- ..... the wrong entries.
- ..... any major fault early.
- ..... maintenance work.

Best  
of  
Luck