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

**Course: Maritime English**
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**Semester: B' (Retakes)** **Date:**
**Instructor: A. Birbili** **Exam paper grade:**
**Student's name:**
**Student number:**

## FINAL EXAM

**A. Supply the missing words from the ones given below. There are two extra words. (15 p.)**

*stator* *transmits* *diffuser* *running* *incoming* *consists* *energy*

*silencer* *temperature* *impeller* *engine* *rotor* *exhaust*

*pressure* *compressor* *speed* *scavenge*

A turbocharger _____ of a single turbine wheel, the _____ of which is mounted on the same shaft as with the _____ of a centrifugal compressor. The turbocharger uses some of the _____ of the hot exhaust gases of the _____ to drive the turbine. The turbine, being on the same shaft with the impeller of the compressor, _____ the power to the impeller and drives the _____. The compressor compresses the _____ air which is then cooled and enters the _____ air manifold. Besides the rotor, the turbine assembly has a _____ too, that is, stationary vanes which direct the _____ gases to the rotor. On the compressor's side on the other hand, there is a _____ and a spiral casing, both of which contribute to further rising of the _____ of the compressed air. There is also a _____ to absorb the noise of the vibration of the _____ components.

**B. Write the names of the four strokes of a 4-stroke diesel engine and describe the third and fourth strokes. (15 p.)**

**Names of the four strokes: 1. _____ 2. _____**
**3. _____ 4. _____**
_____
_____
_____
_____
_____
_____
_____
_____
_____

**C. Match the terms to their definitions. There is one extra term. (12 p.)**

economiser deaerating feed tank soot blower desuperheater

superheater condenser oil burners furnace atomiser

air compressor water-tube boiler steam drum fire-tube boiler

-- The upper drum of a water-tube boiler where the separation of water and steam occurs: _____
-- They supply the fuel and air to the furnace: _____
-- The place in the boiler where the fuel is burnt: _____
-- A great number of small tubes which heat the steam above the saturation temperature: _____
-- A device by means of which a liquid is reduced to very fine spray: _____
-- It supplies compressed air for starting the engine: _____
-- A vessel in which water gets rid of air and other gases: _____
-- It removes the black carbon particles from the tubes of the boiler: _____
-- A device which removes all or part of the superheat from steam by spraying water into it or by using a heat exchanger: _____
-- A device which cools exhaust steam back into water: _____
-- A heat exchanger that transfers heat from the gases of combustion to the boiler feedwater: _____
-- A type of boiler in which combustion gases flow inside the tubes and water flows outside the tubes: _____

**D. Circle the correct choice. (15 p.)**

-- 4-stroke diesel engines are connected to the propeller with **turning / reduction** gear.
-- Fuel oil is cleaned in a **separator / evaporator**.
-- When the viscosity of a fuel and/or lub oil is high, a **heater / cooler** can regulate it.
-- A **service / bilge** pump is used to remove water from the machinery space.
-- A lot of garbage can be burnt in the **incinerator / separator**.
-- Fin-stabilisers are used to improve the ship's **manoeuvrability / stability**.
-- In a(n) **impulse / reaction** turbine the steam is directed from the nozzles against the stationary blades and turns the rotor.
-- **Fire extinguishers / fire detectors** warn us of a fire in a place.
-- **Motors / Generators** supply the ship with electrical power and lighting.
-- We use the **windlass / capstan** for handling the anchor.
-- In order to lower the boats to the sea we use the **steering / launching** gear.
-- **Pumps / cranes** are used for loading and unloading liquid cargo.
-- 4-stroke diesel engines are **medium-speed / slow-speed** engines, operating between **100 / 200** and **900 / 1500** rpm.

**E. Write 5 sentences describing the differences between a 4-stroke and a 2-stroke diesel engine. (10 p.)**

1._____
_____
2._____
_____
3._____
_____
4._____
_____
5._____
_____

**F. Read the functions of the different components of a diesel engine in the left-hand column and match them to the correct marine engineering term below. There is an extra term. (10 p.)**

main bearings connecting rod camshaft piston water jacket bedplate

crankshaft gudgeon pin cylinder head crosshead pin piston rod

-- a cylindrical metal object that reciprocates in a cylinder under gas pressure: _____
-- maintains the desired temperature of the cylinder: _____
-- a structure which holds the crankcase and supports the cylinder block: _____
-- they support the crankshaft within the engine bedplate: _____
-- a rod which connects the piston or crosshead to the crankshaft: _____
-- connects the piston to the connecting rod: _____
-- operates the valves of an internal combustion engine: _____
-- connects the piston rod to the connecting rod of a reciprocating engine: _____
-- cover on top of each cylinder which makes a gas-tight seal: _____
-- the main rotating component in base of a diesel engine which transmits power to the flywheel: _____

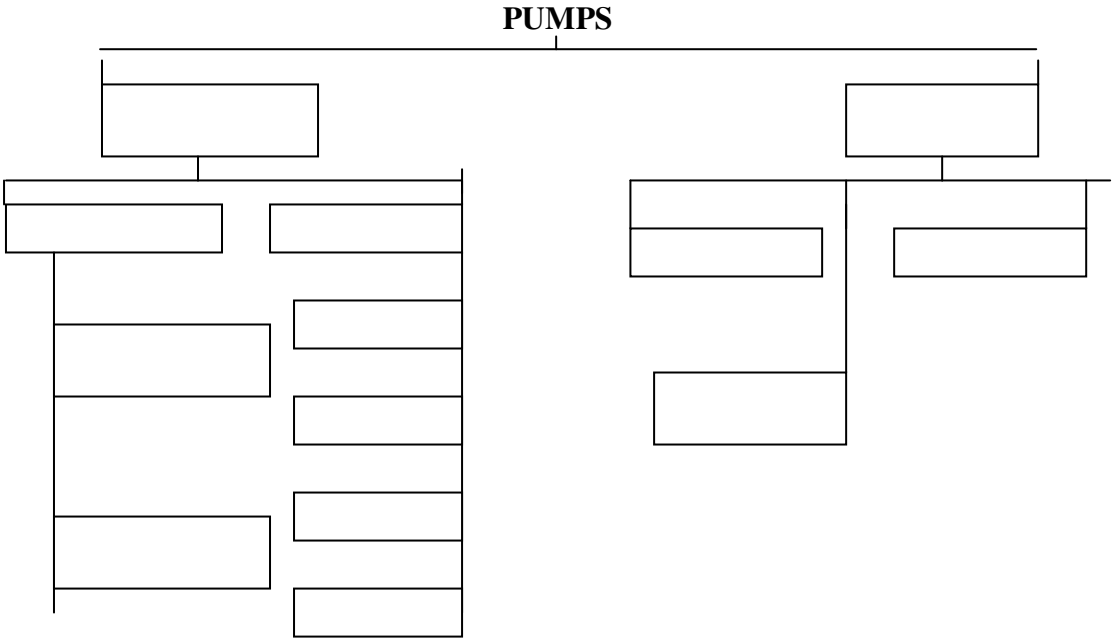
**G. Match the words to their synonyms/definitions. (10 p.)**

| | |
|---|---|
| 1. to inject | -- to fill up (with air) |
| 2. combustion | -- action |
| 3. exhaust | -- filled with moisture |
| 4. to charge | -- the opposite of ahead |
| 5. astern | -- to force liquid into (as by syringe) |
| 6. stationary | -- escape |
| 7. impulse | -- not affected by fire |

8. rotor -- burning
9. fireproof -- rotating drum
10. saturated -- fixed, not in motion

**H. Complete the diagram on pumps using the terms below. (13 p.)**

*gear-wheeled p/p* *reciprocating* *volute* *single-acting ram p/p* *lobe p/p* *regenerative* *displacement* *vane p/p* *rotary* *double-acting ram p/p* *diffuser* *screw p/p* *centrifugal*




GOOD LUCK!!!