

Merchant Marine Academy of Macedonia- School of Engineers		
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Student's name:		
Student's number:		
Exam paper grade:	Instructor's signature	

Which auxiliary machinery is used for ... You can choose from the following: (15)

oil-water separator	fin stabilisers	heater	crane	incinerator
electric motor	generator	davits	capstan	windlass
oily water separator	air compressors	evaporator	cargo pump	fans

- Burning the garbage?
- Increasing the temperature of fuel and improving its viscosity?
- Lowering lifeboats to the sea?
- Supplying the ship with electrical power and lighting?
- Reducing the rolling of the ship?
- Providing forced ventilation to cargo holds?
- Producing distilled water ?
- Lifting heavy objects, containers, etc?
- Removing water and dirty particles from fuel?
- Cleaning the dirty bilge water before discharging it overboard?.....
- Handling the mooring lines?
- Providing the main engine with starting air?
- Loading and unloading crude oil?
- Handling the anchor?
- Giving motion to another machine?

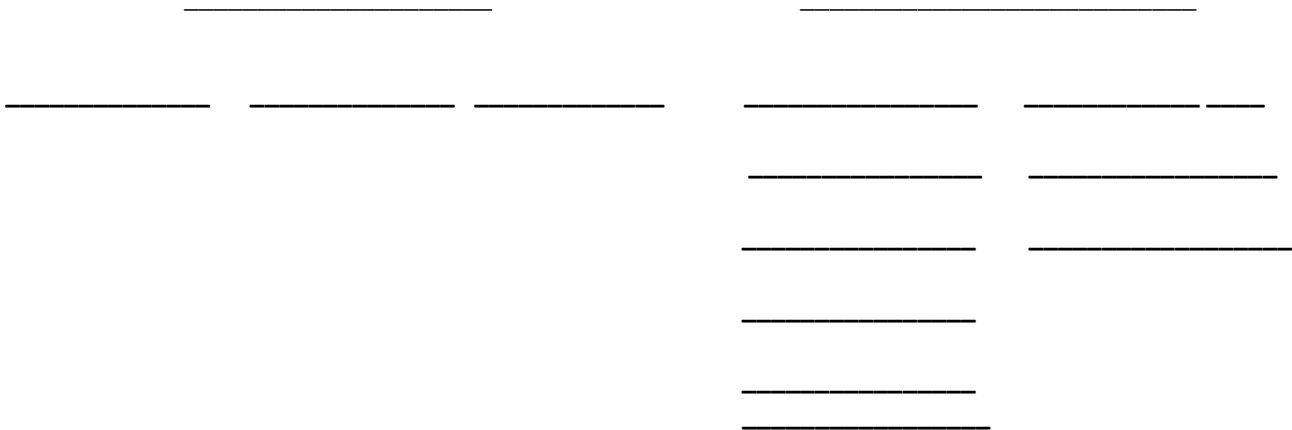
Underline the correct word. (16)

- The **economizer/ atomizer/ attemperator** is part of the oil burner which sprays the fuel.
- Water changes into steam in the **generating/ circulating/ downcomer** tubes.
- In the **economizer/ condenser/deaerator** the boiler feed water is heated under reduced pressure in order to remove dissolved air.
- In a 4-stroke diesel engine the piston is connected to the connecting rod with the **gudgeon/ crosshead/ crank** pin.
- The camshaft opens the valves with the help of the **connecting/ push/ tie** rod.
- The steam comes out of the **nozzles/ ports/ exhausts** at a high pressure.
- The piston rod reciprocates into and out of the **cylinder head/ scavenge box/ stuffing box**.
- The walls and floor of the furnace have an **isolation/ insulation/ insurance** of fireproof bricks.
- The cylinder block, the frame of the engine and the bedplate are connected together with the **frame rods/ connecting rods/ tie rods**.
- In a **gear-wheeled / centrifugal / displacement** pump, the liquid is thrown against the casing

- of the pump.
- A single-acting ram pump has **double pistons / double suctions and one discharge / double suctions and double discharges**.
- In reciprocating displacement pumps there is always a(n) **piston / gear / impeller** which moves up and down in the pump chamber.
- The L.P. turbine is larger due to the **exhaust / expansion / extension** of the steam because of the **decrease / increase** in pressure.
- The **crosshead pin / connection pin / crank pin** connects the connecting rod to the crankshaft.
- We use the **turning / steering / reduction** gear to manoeuvre the ship.

Complete the diagram on pumps by filling in the 14 gaps. The words you need are given below. (14)				
lobe	rotary	double-acting	diffuser	centrifugal
reciprocating	volute	regenerative	single-acting	gear-wheeled
vane	piston	displacement	screw	


PUMPS



Choose one of the following words to fill in the correct synonym or explanation. There is an extra word. (10)					
port	attemperator	gauge	combustion	inject	rotor
condense	fireproof	ignition	emission	efficient	

- Turn from vapour/gas into liquid
- Hole on the cylinder liner
- Force liquid into
- Measuring instrument
- Apparatus which decreases temperature
- Discharge of gas, heat, radiation
- Not affected by fire
- Capable of better output
- Firing
- Rotating drum

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 Fill in the gaps with the appropriate words. There are three extra words. (15)					
crown	camshaft	B.D.C	slow	sewage	T.D.C.
medium	propulsion	cycle	skirt	crankshaft	shaft
waste	rotor	reduction	oil scraping	discharged	impeller

- In a _____ treatment plant, human body _____ is treated biologically before being _____ overboard.
- The main engines are used for the _____ of the ship.
- At the end of the 1st stroke of a 4-stroke diesel engine the piston is at the _____.
- The upper part of the piston is called _____ and the lower _____.
- A turbocharger consists of a turbine _____ and a compressor _____ which are mounted on the same _____.
- In 2-stroke diesel engines the _____ of operation is completed in one revolution of the _____.
- 4-stroke diesel engines are _____-speed engines and are connected to the propeller with _____ gears.
- The two lower rings of the piston of a 4-stroke diesel engine are _____ rings.

Fill in the gaps to make a phrase with the following words. There are two extra words. (10)					
impulse	check	fire	wall	gland	port
pin	bearing	reverse	soot	seat	multistage

- Packing turbine
- Emergencypump Bottom end
- osmosis blower
- Feedvalve Waterheader
- Centrifugalpump Valve



Fill in the gaps with the appropriate words. There are two extra words. (10)

two	points	connecting rod	operates	injecting	stroke
internal	piston	external	revolution	air	sequence

The diesel engine is a type of _____ combustion engine which ignites the fuel by _____ it into hot, high-pressure _____ in a cylinder. It _____ with a fixed _____ of events, which may be done either in four strokes or _____. A stroke is the travel of the _____ between the extreme _____ of the cylinder. Each _____ is accomplished in half a _____ of the crankshaft.

Supply the terms that match the meaning of the following definitions. (10)

-- A great number of small tubes which heat the steam above the saturation temperature:

-- It shows the level of water in the boiler: _____

-- The upper drum of a water-tube boiler where the separation of water and steam occurs:

-- A heat exchanger that transfers heat from the gases of combustion to the boiler feedwater:

-- The place in the boiler where the fuel is burnt: _____



Good luck!!!