MERCHANT MARINE ACADEMY OF MACEDONIA SCHOOL OF ENGINEERS

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Instructors: Dr E. Botonaki, A. Birbili Exam paper grade:

Student's full name:

А.Г.М.:

FINAL EXAM

A. Fill in the gaps using the words below.	(15 p.)
screws volute rotary centrifugo	ıl multistage
displacement impeller casing recipro	ocating vanes
There are two main groups of pumps: the	pumps and the
pumps. The 1 st group is subd	ivided into pumps
in which a piston moves up and down, and	pumps in which the
moving part rotates. The rotating part can be gea	nrs,,,
etc. The centrifugal pump on the other hand con	sists of an which
rotates at high speed inside the pump	The most common type of
centrifugal pump is the whic	h has taken its name after the spiral
case which surrounds the impeller. If the centrif	ugal pump has two or more impellers,
it is called	
B. Fill in the blanks with the following we	
high grooves film lubricators	· ·
neutralises fuel wear ste	
The lubrication of the cylinder is very important	, first because it forms an oil
between piston rings and cyl	
secondly because it the acid	products of combustion and reduces
cylinder considerably. The c	ylinder oil has
viscosity and a high TBN value. It is drawn from	the cylinder oil
tank to a small service tank by separate pumps.	From there, the oil is supplied to
by gravity and is led through	drillings onto the liner surface where
distribute it circumferentially	around the liner, and the piston
spread it up and down the su	rface of the liner. There is not

of the use	ed oil because it is finally burnt with the			
·				
C. Match the words to	their explanation. (5 p.)			
 insulate buffer tank 	a. balancing/mixing tank			
3. pressure retaining valve	b. go down, sink c. increase, enhance			
4. sludge	d. disperse through outward movement			
5. settle down	e. excess			
6. centrifuge	f. protect against heat dispersal			
7. boost	g. control, adjust			
8. regulate	h. pressure reducing valve			
9. purify	i. remove impurities, clean			
10. surplus	j. mud, deposits of fuel			
D. Write down the lubricant additive(s) which would help with the problem.				
(10 p.)				
•	posits on piston crown and cylinder liner:			
	lube oil at low temperatures:			
3. Scored, scratched cylinder	r liner surface:			
4. Fouled surfaces:				
5. Signs of corrosion on met	al surfaces:			
	ng words mean? Underline the correct choice. (8 p.)			
1. to countersign: to add/delete/deny one's signature to a document				
2. to crosscheck (of results):	to confirm/cross out/witness the results by using an			
alternative way of checking				
3. to verify: to prove that sm	th is false/true/incomplete			
4. to retain (of pressure): to i	maintain/reduce/adjust			
5. to sound (of a tank): to me	easure/check/examine the depth			
F. Insert an appropria	te derivative of the words in the parentheses. (15 p.)			
1. High water	(contain) in the fuel causes			
(error) combustion and	(corrode) to injectors.			
2. Highly	(viscosity) fuels need special (treat).			
3(distil)	fuels have cleaner (emit) than			
(residue)) fuels.			

4. The nozzle	(assemble) is screwed at the bottom of the		
	(inject) _	(hold).	
5. Chemical		(stable) is an important	(specify)
of lubricating oils.			
6. The HFO		(purify) separates water and	
(impure) from the	fuel		

G. Underline the correct alternative. (12 p.)

- 1. The VI of a lubricant shows how **stable/variable** it is to variations of temperature.
- 2. In a **displacement/centrifugal** pump, the increase of the volume of the pump chamber causes the **discharge/suction** of the liquid.
- 3. The time of ignition of the fuel is directly influenced by the **cetane number/water content**.
- 4. Verification and countersigning of bunker receipt is a(n):
- a. pre-bunkering procedure
- b. after bunkering procedure
- 5. The **lower/lowest** the pour point of a fuel, the **less/more** viscous it is.
- 6. The acronym CCAI stands for: a. calculated carbon aromaticity indexb. cracked carbon aromaticity indication
- 7. The transfer pumps are **high/low** pressure pumps while the fuel pumps are **high/low** pressure pumps.
- 8. The element which causes oxidation to the engine is **silicon/sulphur**.
- 9. In the **storage/settling** tanks the fuel is constantly heated to **lower/raise** the viscosity-grade and thus quicken the separation of fuel from water and impurities.
- 10. A screw pump is a **centrifugal/rotary** pump which is used to pump mostly **viscous/thin** fluids.
- 11. The crosshead and the guides are lubricated by **cylinder/circulating** lube oil.

H. Answer one (1) of the following questions. (20 p.)

- 1. What are the objectives of lubrication?
- 2. What does the fuel injector do? Why is it very important?

GOOD LUCK!!!