

Name: _____

Alpha: _____

SY486K

6 Weeks Exam

Spring AY2023

Feb. 14, 2023

Open Slides, Notes, and Internet (no AI).

Please copy, verbatim, the honor pledge in the box and sign your name on the line below.

“The Naval Service I am a part of is bound by honor and integrity. I will not compromise our values by giving or receiving unauthorized help on this exam.”

Question 1 (8 pts)

Explain the relationship between the number of fins on a propeller and the induced vibration.

Question 2 (9 pts)

Briefly describe the difference between early ship steam engines and modern steam turbines.

Question 3 (9 pts)

Why would a ship run a cleaner burning propulsion system (such as LNG/Fuel Cell)?

Question 4 (9 pts)

What are some benefits to Three-Phase power?

Question 5 (9 pts)

Describe the process required to synchronize a generator before connecting it to a bus powering a load.

Question 6 (9 pts)

What are some reasons why a ballast system is required on a ship?

Question 7 (9 pts)

Describe the difference between greywater and blackwater and how they are treated onboard a ship.

Question 8 (9 pts)

What is an ECDIS and what is it used for on a ship?

Question 9 (9 pts)

Describe some limitations or weaknesses of current AIS systems?

Question 10 (20 pts)

Think about two different attacks that a knowledgeable cyber attacker could launch on a typical ship. Describe the method of ingress, systems affected, and consequences to the vessel.