Indian Maritime University
(A Central University, Govt of India)
JUNE2022 End Semester Examinations
B Tech (Marine Engineering)
IV Semester
MARINE BOILERS
UG11T3401

Maximum Marks: 70 **Pass Marks: 35**
Duration: 3 Hours
Date:02.06.2022

Part A (Part A is Compulsory)

Part A – Q.No.1;10 MCQs (10 X 01 Mark)

(i) Where boiler point temp high?

A. Riser

B. Superheater

C. Primary steam drum

D. Economiser

(ii) The arrangement used to protect overheating of the superheaters under fluctuating loads is called

A. De-superheater

B. Attemperator

C. Steam dumping valve

D. Feed heater

(iii) Steam stop valve is eased of its seat during boiler start up from cold

A. To allow thermal expansion of parts

B. To allow steam flow during start up

C. To prevent water hammer

D. All of the above

(iv) In a coil-type auxiliary water-tube circulation boiler

A. unevaporated feed water collects in the bottom of the flash chamber

B. all generated steam is recirculated through heating coils in the boiler

C. heated water flashes to steam in the boiler heating coils

D. response to steam demand is slower than in a fire-tube boiler

(v) Gusset stays in a boiler are provided to

(A) Prevent the bulging of flat surfaces

(B) Avoid explosion in furnace

(C) Prevent leakage of hot flue gases

(D) Support furnace freely from top

(vi) An economiser _____ the steam raising capacity of a boiler.

(A) Increases

(B) Decreases

(C) Has no effect on

(D) None of these

(vii) A safety valve mainly used with marine boilers is

(A) Lever safety valve

(B) Dead weight safety valve

(C) High steam and low water safety valve

(D) Spring loaded safety valve

(viii) What is important to do before the burner is ignited

(A)Flush the firebox thoroughly with heavy oil

(B) Flush the firebox thoroughly with air

(C)rinse the igniter electrodes with feed water

(D)Lower the temperature in order to get a better mix of water

(ix) An alarm sounds and the photo cell alarm light starts flashing. What could be the problem

(A)The burner has burned up the fuel

(B)No flame is being registered

(C)There is no steam

(D)There is no water

(x) ESD stands for which type of boiler

A. External superheater D-type

B. Emergency shutdown Boiler

C. Extreme Superheat type

D. External Superheat De-superheater type

Part B –Q.No.2; 5 Short Questions (05 X 02 Marks)

(i) Name the various Boiler Water Tests carried out onboard the ship? Explain about Hardness test.

(ii) What is the main difference between Attemperators and De-superheaters

(iii) What action need to be taken in the Event of Shortage of Water in a boiler?

(iv) What is sagging how it effects the refractory in a boiler?

(v) What are the requirements of Pre-purging and Post-purging of a Boiler Furnace

Part C – 7 Long Questions-Answer Any 5 (05 X 10 Marks)

(3) a) Compare between Smoke Tube Boiler and Water Tube Boiler **(4M)**

b) Sketch & describe an Aalborg vertical (water tube) boiler used for auxiliary purpose **(6M)**

(4) a) Sketch and describe Dual Fired (Oil & LNG) Boilers **(6M)**

b) Explain where & why a steam "Header" is fitted? **(4M)**

(5)a) Sketch and describe Double Evaporation (Dual Pressure / Steam to Steam Generator) Boiler and discuss its merits and demerits **(7M)**

b) Explain adjustments or setting of safety valves **(3M)**

(6) a) Explain with neat sketch Cochran exhaust gas composite boiler **(5M)**

b) Sketch and describe an economiser suitable for use with water tube boiler **(5M)**

(7) a) State the Procedure for blowing through a Gauge Glass, in a Boiler? and discuss the causes for false readings **(7M)**

b) Explain soot blowing procedure for a water tube boiler **(3M)**

(8)a) Describe with neat circuit about closed feed system for a high pressure water tube boiler **(6M)**

b) Explain procedure of closing up and raising steam from cold on a Water Tube Boiler **(4M)**

(9)a) Describe with sketch a pressure jet fuel oil burner. Explain how the throughput of oil is controlled. Explain turn down ratio **(7M)**

b) Explain the procedure of hydraulic tests of boiler. **(3M)**

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