

INDIAN MARITIME UNIVERSITY
(A Central University, Government of India)

MAY/JUNE 2018 END SEMESTER EXAMINATION

B.Tech(Marine Engineering)

Semester: IV

Marine Boiler Steam Engineering (UG11T1402/UG11T2402)

Date: 11-06-2018
Time: 3 Hrs

Maximum Marks : 100
Pass Marks : 50

Part-A

(Marks: 10 x 3=30)

(All Questions are compulsory)

1. a. What is the function of a compensating ring fitted to a boiler shell?
- b. Why deaerators are used in a steam turbine plant?
- c. Explain conditions under which the Boiler shuts down when on auto operation.
- d. Explain the functions of a steam turbine journal bearing.
- e. Explain how is optimum fuel oil viscosity maintained at the boiler burner tip and why?
- f. Describe the use of nozzles in a impulse turbine
- g. Explain the boiler mountings which need to be removed for inspecting & cleaning the high pressure water side.
- h. What are the selection criteria of lubricating oil for steam turbines?
- i. When & how are Hydraulic tests carried out on Boilers?
- j. What type of compounding is done in a reaction turbine? Explain with a sketch.

Part-B

(Marks: 5 x 14=70)

(Answer any 5 of the following 7 Questions)

2. (a) Describe with a sketch the principal features of a "Forced circulation boiler" (10 Marks)
- (b) What are headers and their importance in a Boiler system? (4 Marks)

3. (a) Explain various types of defects with reasons in a steam turbine gearing system (7 Marks)
(b) Explain with a neat sketch the functioning of a condenser with an air ejector of a steam turbine plant. (7 Marks)
4. (a) Sketch & describe a type of boiler burner which uses steam for optimizing combustion of fuel. (10 Marks)
(b) What is turndown ratio of a burner, give examples. (4 Marks)
5. (a) Explain with a neat sketch the use of gland steam system for a two stage turbine. (7 Marks)
(b) Draw and explain a gear type flexible coupling connected to a quill shaft used in steam turbines double reduction gear. (7 Marks)
6. (a) Explain with calculation the amount of waste heat recovered from exhaust gases. (6 Marks)
(b) Describe the working of an Exhaust Gas Boiler on board a motorship. (8 Marks)
7. (a) What measures are taken to counter steam turbine blade failures? (7 Marks)
(b) Explain with a neat sketch throttle type of governor and its use in a steam turbine. (7 Marks)
8. (a) Explain reasons for a Boiler Survey, and standard intervals between surveys. (3 Marks)
(b) Describe step by step action required in preparation for a complete Boiler Survey by a Classification Society surveyor (11 Marks)
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