

**SECOND EXAMINATION FOR COMPETENT PERSONS FOR INSPECTION &
CERTIFICATION OF BOILERS – OCTOBER 2012**

OPERATION & MAINTENANCE (O & M) COMMISSIONING, NDT, MATERIALS AND ERECTION

Date : 07/10/2012

Time: 14.00 – 17.00 Hrs.

Marks:150

Note: 1. Answer any 5 Questions

2. Use Sketches where ever required to explain even if not explicitly asked

1. A. How boilers are classified? Explain in brief any two types of boilers. (15 Marks)

B. What are the differences between Super Heater and Reheater? Explain in detail with pressure and temperature parameters? Explain the reason for incorporating RH in thermal power plant? (15 Marks)

2. A. Define as per boilers act 1923 (10 Marks)

1) Owner

2) Steam pipe

3) Super Heater

4) Boiler Component

5) Competent Authority

B. What are the procedures to be followed for inspection of installed boilers? (Mention any five) (10 Marks)

C. When a boiler is subjected to Remnant Life Assessment (RLA)? Explain the steps involved in RLA. (10 Marks)

3. A. Explain the importance of conducting the Hydraulic test for boiler. Explain the difference between conducting the hydraulic test for boiler and boiler components. (15 Marks)
- B. Explain the procedure adopted for calculating the safety valve set pressure at Super heater and drum. (10 Marks)
- C. What is the difference between safety valve and relief valve? (5 Marks)
4. A) What are the precautions to be taken while welding of carbon steel, alloy steel and stainless steel materials during erection or repair of boiler and boiler components? (15 Marks)
- B) Explain in brief the major steps involved in the preparation for inspection of boilers before registration. (15 Marks)
5. A) i) Define tube failure (2 Marks)
- ii) Explain the types of tube failures that may occur in the initial stages of boiler operation till stabilization. (4 Marks)
- iii) Explain the other types of tube failures that may occur during the long term operation of the boilers. (4 Marks)
- B) Write the principles and application of the following NDT methods - Radiographic Testing & Liquid Penetrant Testing. (10 Marks)
- C. What are the Materials used for high temperature applications in Super Critical boilers? Give reasons. (5 + 5 Marks)
6. A. What are the requirements to be taken care for the automatic working of the boilers? (15 Marks)
- B. Name the commonly used specifications for the following :- (3 x 5 Marks)
- i) Plates (Shell, drum)
 - ii) Pipes
 - iii) Tubes
 - iv) Castings
 - v) Forgings