

Regn.No. _____

Name: _____

(To be written by the candidate)

**EXAMINATION FOR COMPETENT PERSONS FOR INSPECTION
AND CERTIFICATION OF BOILERS – OCTOBER 2015**

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

Date : 11/10/2015

Time : 14:00 – 17:00 Hrs.

Marks: 150

Question I

(3 x 5 = 15 marks)

- (i) Why we need desuperheating attemperation in superheater and reheater?
- (ii) What is the Methodology used to control the reheater temperature in different designs?
- (iii) Why we need more drum safety valves for utility boilers?

Question II

(10 marks)

What is the purpose of water level indicators and explain on direct water level gauge and remote water level gauge?

Question III

(30 marks)

What is Natural circulation and Forced circulation in a boiler? Explain with simple sketches and Pressure - Density curve with subcritical and supercritical zones.

Question IV**(20 marks)**

What is Boiler as per Boilers Act 1923? What is hydraulic test and at what pressure it is to be conducted for a new boiler and existing boiler?

Question V**(20 marks)**

What is blow down in a boiler? Explain the purpose, advantages and impact on water steam cycle.

Question VI**(20 marks)**

What is SMAW, SAW, TIG welding and MIG welding? Explain the importance of low hydrogen electrode in arc welding.

Question VII**(20 marks)**

Explain the principles of Liquid Penetrant Inspection (LPI), Magnetic Particle Inspection (MPI), Ultrasonic Testing (UT) and Radiographic Testing (RT) and also explain the limitations of each test?

Question VIII**(15 marks)**

Explain the temperature limits for carbon steel, alloy steel and stainless steel and mention the area of application in boilers. Explain with two specifications for each type of steel specified above.

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