



# 17555

**15162**

**3 Hours / 100 Marks**

Seat No.

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- Instructions :** (1) *All questions are compulsory.*  
(2) *Illustrate your answers with neat sketches wherever necessary.*  
(3) *Figures to the right indicate full marks.*

**Marks**

**1. Attempt any five :**

**(5×4 = 20)**

- State the principle of magnetic particle inspection.
- What is the purpose of macro etch test ?
- Define process inspection with advantages and disadvantages.
- Differentiate between line standard and end standard.
- State the principle of Acoustic test.
- What is TQM ? State objectives of TQM.
- State any four codes for pipes as per ASME.

**2. Attempt any two :**

**(2×8 = 16)**

- Describe procedure of X-ray radiography with labeled diagram.
- Draw neat diagram of sigma comparator. State working principle of it. State advantages and disadvantages of it.
- State the procedure of Brinell hardness test. Draw neat diagram and write formula to find out BHN.

**3. Attempt any four :**

**(4×4 = 16)**

- Explain the principle operation of Eddy current testing.
- Explain the procedure of testing Nick-break test.
- Differentiate between inspection and quality control.
- What are ASME and ASTM codes ?
- State any four characteristics of good comparator.
- Define following :
  - Quality of design
  - Quality of conformance.

**P.T.O.**

**4. Attempt any two :****(2×8=16)**

- a) What is purpose of bend test ? Describe procedure for conduct of longitudinal bend test with neat sketch.
- b) Describe the procedure for conduct of “fluorescent penetrant Inspection” with neat sketch.
- c) Explain basic principle of ultrasonic inspection. State its advantages, limitations and applications.

**5. Attempt any four :****(4×4=16)**

- a) State use of any two etching reagents for the etch test.
- b) Write the duties of inspector.
- c) State and explain Taylor’s principle.
- d) What is ISO ? State the purpose of ISO-9000.
- e) Compare X-ray and gamma rays.
- f) Explain the principle of compression test with neat sketch.

**6. Attempt any two :****(2×8=16)**

- a)
    - i) State two codes for pressure vessels as per ASTM.
    - ii) What are DIN and IBR ?
  - b)
    - i) Illustrate interference fit with suitable example.
    - ii) State the concept of “Hole basis system” with diagram.
  - c)
    - i) Describe the procedure of leak test under fluid pressure.
    - ii) Describe leak test by water soluble paper with aluminium foil for welded pressure vessels.
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