

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE SEM-VII Examination-Nov/Dec.-2011****Subject code: 172102****Date: 22/11/2011****Subject Name: Non Destructive Testing****Time: 10.30 am-01.00 pm****Total marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Write the principle of Ultra Sonic Testing (UT). What are the types of transducers are used in UT.? Explain with suitable diagram. **07**
- (b) Explain the Characterization procedure for analyzing defects in Welded Product using UT. **07**

- Q.2** (a) i) What is the basic principle of Magnetic Particle Testing (MPT). **03**  
ii) What are the types of magnetic Fields ? Draw line diagram & explain its importance? **04**

- (b) i) Explain the method of Die Penetrant Testing (DPT) with diagram. Can it be used for subsurface defects ? yes/ no—Justify. **05**  
ii) what are the different types of Penetrants used ? **02**

**OR**

- (b) Explain the principle of Acoustic Emission Testing (AET). with line diagram. Write about application & advantages of AET. **07**

- Q.3** (a) What are the Surface & Sub Surface Defects ? Discuss defects due to the forging process & Heat treatment process **07**
- (b) Explain Leak and Pressure testing techniques. What are its applications ? **07**

**OR**

- Q.3** (a) Explain what is Holographic testing? What are its applications & limitations? **07**

- (b) What is A Scan- B Scan- C Scan presentation in ultrasonic testing ? **07**

- Q.4** (a) Explain the principle of Radiographic testing ? Write briefly the method of generation of X-rays. **07**

- (b) Differentiate between X-ray radiography & Gamma Radiography Testing. **07**

**OR**

- Q.4** (a) What is the principle of Thermographic Testing ? What are its limitations & advantages.? **07**

- (b) Explain principles of Eddy Current Testing (ECT). What do you understand by sensitivity in ECT? Narrate one application on ECT. **07**

- Q.5** (a) Discuss most commonly used Non Destructive methods. What are the Selection criteria for any NDT Method ? **07**

- (b) What are the Scope, & Limitations Of Non Destructive Testing Methods ( NDT)? Justify its advantages over Destructive testing **07**

**OR**

- Q.5** (a) Short Notes on Any TWO **07**

1. Visual Examination Methods.

2. Safety In Industrial Radiography

(b)

(a) Answer the Following

07

1. Waves used in ultrasonic testing of materials are \_\_\_\_\_ in nature.

- a) mechanical
- b) magnetic
- c) electromagnetic
- d) harmonious

2. Particle motion in a longitudinal wave is:

- a) parallel to the direction of wave propagation
- b) at right angles to the direction of wave propagation
- c) retrograde
- d) in counterclockwise ellipses

3. Cold shuts are defects of

- a) Forging Process
- b) Rolling Process
- c) Casting Process
- d) None of the above

4. A stress corrosion crack is a defect of:

- a) casting.
- b) welding.
- c) metal forming.
- d) service.

5 The ability to separate individual defects lying closely together is called:

- a) sensitivity
- b) resolution
- c) angular acuity
- d) linearity

6. What Acoustic Emission test is not used for—

- a) Defect location
- b) Defect sizing
- c) Defect quantum
- d) Defect Distribution

7. The purpose of the IIW block is to determine:

- a) probe exit point
- b) refracted angle
- c) range (or depth scale)
- d) all of the above

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