

**ME8097 - NON DESTRUCTIVE TESTING AND EVALUATION**

**QUESTION BANK**

**PART - A**

**UNIT - I (2 MARKS)**

1. Give the Importance of using NDT methods.? [AM2018]
2. List out the limitations of NDT? [AM2018]
3. When the non destructive methods are used? [AM2019]
4. Distinguish between destructive and non-destructive testing. [AM2019]
5. List out the service condition that leads to failure of a material? [AM2017]
6. Name two of the technique methods that can be detect internal defects. [AM2017]
7. List the various manufacturing defects and service defects[ND2018]
8. What are the physical characteristics that can be determined by NDT [ND2018]
9. List any four applications of NDT methods. [ND2021]
10. What are the objectives of non-destructive testing? [ND2021]
11. What is NDT? [ND2017]
12. What are the applications of visual inspection method? [ND2017]

**UNIT - II (2 MARKS)**

1. What are the principle methods available in penetrant Tests? [AM2018]
2. Give the merits and demerits of Dry Developers. [AM2018]
3. Advantages and limitations of LPT. [AM2019]
4. For which type of materials penetrant testing is not recommended? [AM2019]
5. What is the size of the magnetic particles on the test performance in MPT? [AM2017]
6. Magnetic Particle inspection cannot be used to detect internal defects. Why? [AM2017]
7. Mention any two materials that can be used as developers in LPT? [ND2018]
8. What is the effect of shape and size of magnetic particles on the Inspection process? [ND2018]
9. State the desirable characteristics of a good developer [ND2021]
10. What types of defects can be detected in a liquid penetrant test?. [ND2021]
11. Components teste by magnetic particle testing has to be demagnetized. Why? [ND2017]
12. Liquid penetrant testing is not applicable for porous material- give reasons. [ND2017]

**UNIT - III (2 MARKS)**

1. Define Thermography. [AM2018]
2. Write the Principle of Eddy Current Testing [AM2018]
3. How eddy current is generated? [AM2019]
4. What is the Prominent mechanism of Plastic deformation in Metals and Define it? [AM2019]
5. What is radio frequency mode in Ultrasonic Testing. [AM20217]

6. How does the depth of penetration of Eddy current is affected by the Frequency of the Current? [AM20217]
7. Differentiate between Active and Passive Thermography? [ND2018]
8. What are the characteristics of Eddy Current [ND2018]
9. State at least two properties of eddy current.. [ND2021]
10. Enumerate the instruments used for infrared detection. [ND2021]
11. What is the principle behind eddy current testing? [ND2017]
12. What are the uses of penetrometer? [ND2017]

**UNIT - IV (2 MARKS)**

1. Name the standard calibration Blocks used in UST. [AM2018]
2. Give the properties of Acoustic Waves. [AM2018]
3. Name the type of ultrasonic transducers used in ultrasonic testing. [AM2019]
4. What is the principle of testing in acoustic emission test? [AM2019]
5. What type of transducers is preferred for low ultrasonic frequencies? [AM2017]
6. Depth of penetration of Ultrasonic waves decreases as the frequency Ultrasonic waves increases. Comment.[AM2017]
7. What is the difference between straight beam and angle beam detectors.. [ND2018]
8. What are the sources of Acoustic Emission ? [ND2018]
9. What is the significance of couplant in ultrasonic testing? [ND2021]
10. List the different modes of ultrasonic waves. [ND2021]
11. What are the advantages of pulse echo technique over transmission technique in UT? [ND2020]
12. What do you understand by acoustic emission? [ND2020]

**UNIT - V (2 MARKS)**

1. Give the Properties of X-Rays and Gamma rays. [AM2018]
2. What is intensifying Screens? [AM2018]
3. What are the applications of radiography test?. [AM2019]
4. What are the functions of filters and screens in X-ray radiography? [AM2019]
5. Compare and contrast radiography testing with ultrasonic testing [AM2019]
6. How does computer Tomography differs from other Imaging Techniques? [AM2017]
7. Differentiate between film and filmless technique in Radiography. [ND2018]
8. State inverse square law in Radiography. [ND2018]
9. What is need for exposure chart in radiography? [ND2021]
10. What is film contrast in radiography testing? [ND2021]
11. What is film density in radiography? Give expression for film density.
12. What do you mean by computer topography?

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**PART - B & C**

**UNIT - I (13 MARKS)**

1. Describe the Testing Methods in detail for material characterization.
2. Explain the various optical aids in visual inspection.
3. Explain the following (i) Application of Visual Inspection (ii) Advantages and Disadvantages of Visual Inspection.
4. List the advantages, disadvantages and applications of non destructive testing. Also discuss the major factors that must be considered for an effective Non Destructive testing.
5. Discuss in detail about the various types of Boroscopes used in Visual Inspection with Neat sketches.
6. Differentiate between Destructive and Non Destructive testing.

**UNIT - II (13 MARKS)**

1. Explain how the liquid penetrant test be used to detect surface discontinuities? Explain the various stages of liquid penetrant testing procedure.
2. Discuss about longitudinal magnetization and circumferential magnetization in magnetic particle testing with neat sketch.
3. With neat sketch explain magnetic particle Inspection method and its merits, demerits and application.
4. Discuss about the various ways of magnetizing the component in NDT.
5. Explain the post Emulsifying lipophilic and solvent removable methods in Liquid penetrant Testing using the Process flow diagram.

**UNIT - III (13 MARKS)**

1. Explain the eddy current and ultrasonic based NDT methods to analyze the flaws in pipe fittings.
2. Explain the instrumentation and various methods of thermography inspection.
3. What is Eddy current testing ? Explain the principle with a neat sketch and discuss the different types of coil arrangements used in eddy current testing.

4. Explain the Principle of Thermography process and its advantages and disadvantages with neat sketch
5. Discuss in detail about the Contact and non contact inspection Methods in Thermography with neat sketches.
6. Enumerate the various probes used in EDT with details and sketches.

**UNIT - IV (13 MARKS)**

1. Explain various components involved in ultrasonic testing equipment with block diagram.
2. Discuss about the time of flight diffraction and phased array techniques of ultrasonic testing with neat figures?
3. Explain the different scan modes of ultrasonic testing. Discuss the use of UT to inspect porosity/cavity in materials.
4. What is ultrasonic Testing? Draw the schematic diagram with three methods of Scanning (A-scan, B-scan, C-scan) with neat sketch.
5. With neat sketch explain the Working Principle of Acoustic Emission Process.
6. Explain the principle of Acoustic Emission technique, Discuss about the Various parameters involved in AET.
7. Enumerate the different ways of representing the data in Ultrasonic Inspection. Explain in detail.

**UNIT - V (13 MARKS)**

1. Brief write about the following phenomena during interaction of X-ray with matter:
  - (i) Photoelectric effect
  - (ii) Compton scattering
  - (iii) Pair production and
  - (iv) Thomson scattering
2. How computed radiography differs from conventional radiography? Briefly write about the principle of operation of computed radiography with neat sketch.
3. Explain the classification of X-ray films used in industrial radiography. Discuss briefly the construction of X-ray film with simple line diagram.
4. Describe the following (i) Fluoroscopy and (ii) Xero-radiography.
5. Explain the working of radiography testing method. What are the advantages of gamma Radiography compared to X-ray radiography? What are the penetrameters of Radiography testing? List the different types of penetrameters.
6. Explain the process of Neutron Radiography and Computed Tomography.