

6TH SEMESTER

NON-DESTRUCTIVE TESTING

Subject code-PAE6J002

MODULE –I INTRODUCTION TO NDT

NDT Versus Mechanical testing, Need for Non-destructive testing Relative merits and limitations, Various physical characteristics of materials and their applications in NDT., Visual inspection – Unaided and aided- Standards

MODULE –II SURFACE NDE METHODS

Liquid Penetrant Testing – Principles, types and properties of liquid penetrants, developers, advantages and limitations of various methods, Testing Procedure, Interpretation of results. Magnetic Particle Testing- Theory of magnetism, inspection materials Magnetisation methods, Interpretation and evaluation of test indications, Principles and methods of demagnetization, Residual magnetism.

MODULE –III THERMOGRAPHY AND EDDY CURRENT TESTING (ET)

Thermography- Principles, Contact and non contact inspection methods, Techniques for applying liquid crystals, Advantages and limitation – infrared radiation and infrared detectors, Instrumentations and methods, applications. Eddy Current Testing-Generation of eddy currents, Properties of eddy currents, Eddy current sensing elements, Probes, Instrumentation, Types of arrangement , Applications, advantages, Limitations, Interpretation/Evaluation.

MODULE –IV ULTRASONIC TESTING (UT) AND ACOUSTIC EMISSION (AE)

Ultrasonic Testing- Principle, Transducers, transmission and pulse-echo method, straight beam and angle beam, instrumentation, data representation, A-Scan, B-Scan, C-Scan. Phased Array Ultrasound, Time of Flight Diffraction. Acoustic Emission Technique –Principle, AE parameters, Applications.

MODULE –V RADIOGRAPHY (RT)

Principle, interaction of X-Ray with matter, imaging, film and film less techniques, types and use of filters and screens, geometric factors, Inverse square law, characteristics of films – graininess, density, speed, contrast, characteristic curves, Penetrameters, Exposure charts, Radiographic equivalence. Fluoroscopy- Xero-Radiography, Computed Radiography, Computed Tomography- Gamma ray Radiography, Safety in X- ray and gamma ray radiography.