Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

A Constituent Institute of Manipal University, Manipal

VII SEMESTER B. TECH (Mech & IP) END SEMESTER EXAMINATIONS, NOV 2017

SUBJECT: NONDESTRUCTIVE TESTING PE-5 [MME 4024]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer ALL the questions & write neat sketches wherever is applicable.

1A	Explain with a neat diagram the step-by- step procedure to perform LPT.	**5**
1B	What are the penetrant properties affecting LPT performance? Explain briefly.	**5**
2A	Explain the quality & process control of magnetic particle inspection.	**4**
2B	Mention the advantages and disadvantages of magnetic particle testing.	**3**
2C	Explain with a sketch the basic principal of magnetic particle testing.	**3**
3A	What are the reasons to use remote field eddy current technique? Explain the method with suitable sketch.	**4**
3B	Explain the following with respect to eddy current testing I. Frequency and Skin Effect II. Reference standards	**3**
3C	Mention the advantages, disadvantages and applications of eddy current testing.	**3**
4A	Find the geometrical un-sharpness to test 100 mm thick material by an X-ray inspection system with the following settings: source size 30 micron, distance from source to bottom surface of the material is 1000 mm, distance between top surface of material to detector 170 mm.	**1.5**
4B	A copper - Titanium bonded plate of total thickness 2.54 cm consists of copper bonded to titanium. An x-ray beam at approximately 100 Kv is reduced in intensity by 99% on traversing the plate. What are the thickness of copper and	**1.5**

titanium present. Take μ for copper 4.077 and 1.244 for Titanium.

4C Define and explain the following. **4**

I. Radiographic film contrast.

II. Radiographic definition.

4D Explain how to select a film for a radiography of a machine component. **3**

5A Explain the basic principal of ultrasonic testing, what are the advantages and disadvantages of the ultrasonic testing? **4**

5B Define and briefly explain the following. **3**

I. Characteristics of piezoelectric transducers.

II. Normal beam and angle beam inspection.

III. Wavelength and defect detection in ultrasonic testing.

5C With a schematic diagram explain the working of A E testing setup. Also mention the AE signal features. **3**