Roll No.												

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST - 1

Even Semester: 2018-19 | **Date**: 06 March 2019

Course Code: MEC 323 | **Time**: 1 Hour

Course Name: Non Destructive Testing | **Max Marks**: 40

Programme & Sem: B.Tech (DE) & VI Sem | **Weightage**: 20%

Instructions:

(i) ***Read the questions and answer accordingly***

Part A

Answer **both** the Questions. **Each** question carries **seven** marks. (2Qx7M=14)

1. With the help of suitable examples, differentiate between destructive and non- destructive testing techniques. List the advantages, disadvantages and applications.
2. Explain the importance of visual inspection process. Explain in detail any 3 different types of optical aids used in the process.

Part B

Answer the Question. Question carries **ten** marks. (1Qx10M=10)

3. With a neat sketch explain the following
   a. Differential pressure method.
   b. Detection by Water-Soluble Paper with Aluminum Foil.

Part C

Answer **any four sub** Question. Each question carries **four** marks. (4Qx4M=16)

4. Explain any four of the following with sketch
   a. Halide torch
   b. Bubble testing
   c. Helium leak detector
   d. Cold shut in casting
   e. Stringers in rolling

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GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST - 2

Even Semester: 2018-19 | **Date**: 16 April 2019

Course Code: MEC 323 | **Time**: 1 Hour

Course Name: Non Destructive Testing | **Max Marks**: 40

Program & Sem: B.Tech & VI Sem (DE) | **Weightage**: 20%

Instructions:

(i) ***Read the questions and answer accordingly***

Part A

Answer **both** the Questions. **Each** question carries **five** marks. (2Qx5M=10)

1. With neat sketches explain the procedure for Liquid penetrant test.
2. With a flow diagram explain Water washable penetrant method.

Part B

Answer **both** the Questions. **Each** question carries **ten** marks. (2Qx10M=20)

3. Explain with sketch any two methods of magnetizing techniques in magnetic particle Inspection.
4. Write a note on equipment used for magnetic particle Inspection. Quote at least five advantages and disadvantages of magnetic particle Inspection.

Part C

Answer the Question. The Question carries **ten** marks. (1Qx10M=10)

5. What is the frequency range in Ultrasonic testing? How the velocity of ultrasonic waves determined? Explain with sketch the longitudinal and transverse waves in UT.

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PRESIDENCY UNIVERSITY
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SCHOOL OF ENGINEERING

END TERM FINAL EXAMINATION

Even Semester: 2018-19 | **Date**: 23 May 2019

Course Code: MEC 323 | **Time**: 3 Hours

Course Name: Non Destructive Testing | **Max Marks**: 80

Program & Sem: B.Tech & VI Sem | **Weightage**: 40%

Instructions:

i. *SECTION-A is COMPULSORY consisting of TWENTY questions carrying ONE mark each.*
ii. *SECTION-B contains FIVE questions carrying SIX marks each and students have to attempt all FIVE questions.*
iii. *SECTION-C contains THREE questions carrying TEN marks each and students have to attempt all THREE questions*

Part A

Answer **all** the Questions. **Each** question carries **one** mark. (20Qx1M=20M)

1 I. For detection of **surface** weld defects or discontinuities what are the NDT methods commonly used?
   A. Visual Testing
   B. Penetrant Testing
   C. Magnetic Particle Testing
   D. All of the above

II. Generation of eddy currents depends on the principle of:
   A. Electromagnetic induction
   B. Wave guide theory
   C. Magneto-restrictive forces
   D. All of the above

III. The discovery of electromagnetic induction is credited to:
   A. Arago
   B. Oersted
   C. Maxwell
   D. Faraday

IV. All of the following parts can be tested by the liquid penetrant method except:
   A. An iron casting
   B. An aluminum forging
   C. A part made from a porous plastic material
   D. A part made from a non-porous material

V. Which of the following are commonly accepted methods for applying penetrant?
   A. Dipping the part in penetrant (dipping)
   B. Pouring the penetrant over the test specimen (flowing)
   C. Spraying the penetrant on the test specimen (spraying)
   D. All of the above

VI. Which of the following statements concerning liquid penetrant testing is correct?
   A. Fluorescent penetrants will produce red against white discontinuity indications
   B. Non-fluorescent penetrants require the use of black lights
   C. Fluorescent indications will be seen when exposed to black light
   D. Non fluorescent discontinuities glow in the dark for easy viewing and interpretation

VII. Shear waves do not propagates in
   A. Solids
   B. Liquids
   C. Gases
   D. Both b and c are correct

VIII. The most effective NDT method for locating surface cracks in ferromagnetic materials is:
   A. Ultrasonic testing
   B. Radiographic testing
   C. Magnetic particle testing
   D. Liquid penetrant testing

IX. The opposition that a ferromagnetic material shows to the establishment of a magnetic field is called:
   A. Reluctance
   B. Retentivity
   C. Coercive force
   D. Permeability

X. The areas on a magnetized part from which the magnetic field is leaving or returning into the part are called:
   A. Salient points
   B. Defects
   C. Magnetic poles
   D. Nodes

XI. Most of the energy applied to an X ray tube is converted into:
   A. X rays
   B. Light
   C. Heat
   D. Ultraviolet radiation

XII. Another name for a penetrameter is:
   A. Image quality indicator
   B. Radiographic shim
   C. Density standard
   D. Acceptance standard

XIII. X rays are produced by:
   A. Radioactive isotopes
   B. The rapid deceleration of electrons
   C. Ultraviolet radiation of unstable atoms
   D. All of the above

XIV. During the manufacturing of a casting, the purpose of a riser is
   A. To introduce molten metal into the mould
   B. To allow excess heat to escape during solidification
   C. To provide a vent for excess steam to escape
   D. To provide additional molten metal to allow for shrinkage during solidification

XV. Which of the following circuits converts electrical energy to ultrasonic energy?
   A. The pulse generator
   B. The transducer
   C. The transformer
   D. The power supply

XVI. Which of the following is an advantage to LPI?
   A. Large areas can be inspected
   B. Parts with complex shapes can be inspected
   C. It is portable
   D. All of the above

XVII. Proper selection of test coil arrangement is determined by:
   A. Shape of test object
   B. Resolution required
   C. Sensitivity required
   D. All of the above.

XVIII. x-rays and gamma rays are form of
   A. Light
   B. Particle radiation
   C. Electromagnetic radiation
   D. None of the above

XIX. Who is given credit for the discovery of radioactive materials?
   A. Henri Becquerel
   B. Wilhelm Roentgen
   C. Marie Curie
   D. None of the above

XX. X-rays and Gamma rays have significant penetrating power due to their:
   A. Medium wavelength
   B. Short wavelength
   C. Long wavelength
   D. Wide range of wavelengths

Part B

Answer **all the** Questions. **Each** question carries **six** marks (5Qx6M=30M)

2. Write a note on selection of non- destructive testing techniques. List the advantages and disadvantages of NDT.
3. Explain visual Inspection Process. Explain different types of optical aids used in this process.
4. With a neat sketch, explain various steps involved in Liquid penetrant inspection.
5. With a neat sketch explain the following techniques used in MPI
   i) Magnetization Using Magnet ii) Induced Current flow
6. With a neat sketch explain the principle of Ultrasonic testing of materials

Part C

Answer **all the** Questions. **Each** question carries **ten** marks. (3Qx10M=30M)

7. With a neat sketch, explain the production of X-rays. What are the properties of X-ray and Gamma rays?
8. Explain different inspection techniques in radiography testing. What are advantages of radiography testing?
9. Explain the following terms associated with eddy current testing:
   i) Edge effect ii) End effect iii) Lift off effect iv) Fill factor v) Skin effect