



GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Seventh Semester – Regular) Examinations, November – 2023 BPME7022 - Non Destructive Evaluation Testing and Evaluation (Mechanical)

Time: 3 hrs

Maximum: 70 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)

(1 x 10 = 10 Marks)

Q.1. Answer ALL questions

	[CO#]	[PO#]
a. Which of the following defects occur due to flux employed and electrode coating?	CO1	PO1
(i) Inclusion of slag		
(ii) Inadequate penetration		
iii) Incomplete fusion		
iv) Porosity		
b. Which of the following defects occur due to the entrapment of gas bubbles by the freezing dendrites during the cooling of molten pad?	CO1	PO1
(i) Inclusion of slag		
(ii) Inadequate penetration		
iii) Incomplete fusion		
iv) Porosity		
c. A material with a wider hysteresis loop has?	CO2	PO1
(i) Higher reluctance		
(ii) Lower permeability		
iii) Higher permeability		
iv) None of theses		
d. A location where a magnetic field can be detected exiting or entering a material is called:	CO2	PO1
(i) A magnetic pole		
ii) A magnetic field		
iii) A flux field		
iv) Polarity		
e. Sounds of frequency higher than 20,000 Hz which are inaudible to normal human ear are called	CO3	PO1
(i) noise		
(ii) Amplitude		
iii) Frequency		
iv) Ultrasonic		
f. Which test can be performed without skilled labour?	CO3	PO1
(i) Dye penetrant testing		
(ii) Ultrasonic Testing		
iii) Magnetic Particle Testing		
iv) None of these		
g. Ionizing radiation can be used in industrial radiography because the health hazards:	CO4	PO1
(i) Have been eliminated with controls and procedures		
ii) Are minimized through controls and procedures		
iii) Are worth the risk		
iv) Are being ignored		
h. Higher energy radiation will have more:	CO4	PO1
(i) Speed		
ii) Incident Intensity		
iii) Penetrating power		
iv) Both B and C		
i. The tendency of a deformed solid to regain its actual proportions instantly upon unloading known as _____	CO1	PO1
(i) Perfectly elastic		
ii) Delayed elasticity		
iii) Inelastic effect		
iv) Plasticity		
j. A volume of space where there is a change in magnetic energy is called:	CO2	PO1
(i) Magnetic Flux		
(ii) Pole		
iii) Magnetic Dipole		
iv) Porosity		

PART – B: (Short Answer Questions)**(2 x 10 = 20 Marks)**Q.2. Answer **ALL** questions

	[CO#]	[PO#]
a. List any four unattractive features of non-destructive testing.	CO1	PO1
b. Express about visual inspection techniques.	CO1	PO1
c. Summarize the methods of penetrant application.	CO2	PO1
d. Express about residual magnetism in magnetic particle testing.	CO2	PO1
e. Classify the waves in ultrasonic testing.	CO3	PO1
f. Discriminate straight beam and angle beam transducer.	CO3	PO1
g. Describe about intensifying screens.	CO4	PO1
h. Define the term "Crompton effect".	CO4	PO1
i. Discuss the objectives of non-destructive testing.	CO1	PO1
j. What is liquid penetrant testing?	CO2	PO1

PART – C: (Long Answer Questions)**(10 x 4 = 40 Marks)**Answer **ALL** questions

	Marks	CO	PO
3. a. Differentiate between destructive and non-destructive testing. (OR)	10	CO1	PO1
b. Explain the working principle and types of visual inspection technique with suitable sketch.	10	CO1	PO1
4. a. Explain in detail about the equipment used in determination of magnetic field strength and direction. (OR)	10	CO2	PO1
b. Explain about various steps involved in Magnetic particle inspection process with suitable flow diagram.	10	CO2	PO1
5. a. Illustrate the principle of pulse echo method with neat sketch in ultrasonic testing method. (OR)	10	CO3	PO1
b. Discuss the following Ultrasonic inspection technique with neat sketch (i) Time of flight diffraction inspection method. (ii) Phase array ultrasonic inspection method. (iii) Immersion ultrasonic inspection method.	10	CO3	PO1
6. a. Explain about the process of Neutron Radiography and Computed Tomography. (OR)	10	CO4	PO1
b. Explain in detail about Xerography techniques with suitable sketch.	10	CO4	PO1

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