QP Code: RN21BTECH569 | Reg. No | | | | | | | | | | | AR 21

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Seventh Semester - Regular) Examinations, November – 2024

21BMEPE47021-Non Destructive Evaluation and Testing

(Mechanical Engineering)

Time: 3 hrs | Maximum: 70 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

		CO #	Blooms Level
Q.1.	Answer ***ALL*** questions		
a.	Generalize the limitations of the NDT method.	CO1	K1
b.	List the materials to be used as a developer in Liquid Penetrant Testing.	CO2	K1
c.	Why should the material be demagnetized after it is subjected to NDT?	CO2	K2
d.	Narrate the principle of acoustic emission testing	CO3	K2
e.	What is meant by Film density?	CO4	K1

PART – B **(15 x 4=60 Marks)**

		Marks	CO #	Blooms Level
	Answer ***All*** the questions			
2. a.	Differentiate between destructive and non-destructive testing.	8	CO1	K2
b.	Summarize about the factors influencing the selection of NDT methods.	7	CO1	K3
	(OR)			
c.	Discuss in detail about the different types of Borescopes used in visual inspection method with neat sketches.	8	CO1	K2
d.	Describe the following: i)Application of visual inspection. ii)Advantages and disadvantages of visual inspection.	7	CO1	K2
3.a.	Discuss about the physical principles of liquid penetrant testing with neat sketch	8	CO2	K2
b.	Explain about various types of developers. List out various characteristics of developers	7	CO2	K2
	(OR)			
c.	Is it essential to demagnetize the specimen before and after the magnetic particle testing? Substantiate your answer.	8	CO2	K3
d.	Explain the following Residual Magnetization and the Properties of magnetic particle used in MPT.	7	CO2	K2
4.a.	Illustrate the principle of pulse echo method with neat sketch in ultrasonic testing method.	8	CO3	K3
b.	What are the Limitations and applications of UT	7	CO3	K1
	(OR)			
c.	Discuss about the time of flight diffraction and phased array techniques of ultrasonic testing with neat figures?	8	CO3	K3
d.	Write the difference between Straight beam ultrasonic inspection method and Angle beam ultrasonic inspection method	7	CO3	K2
5.a.	Describe the fundamental principles of X-ray production and list the types of	8	CO4	K2

interactions that occur when X-rays interact with matter.

b.	Define the types of filters and screens used in radiographic imaging and their specific purposes in improving image quality.	7	CO4	K1
	(OR)			
c.	Compare and contrast the advantages and disadvantages of film-based imaging and digital radiography,	8	CO4	K2
d.	Briefly write about the principle of operation of computed radiography with neat sketch.	7	CO4	K3

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