Reg. No.												

Question Paper Code	12209

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Seventh Semester

Mechanical Engineering

20PROE907 - TESTING OF MATERIALS

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	What are the advantages of Material Testing?	*2,K1,CO1*
2.	Define Material Science.	*2,K1,CO1*
3.	What is a flow curve?	*2,K1,CO2*
4.	Define Poisson's ratio.	*2,K1,CO2*
5.	Classify the types of penetrant materials.	*2,K1,CO3*
6.	Define X ray radiography.	*2,K1,CO3*
7.	What is TEM analysis? Where it is preferred?	*2,K1,CO4*
8.	What is optical microscope?	*2,K1,CO4*
9.	What is electron excitation?	*2,K2,CO5*
10.	Mention the fey features of Automatic diffract meters.	*2,K1,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain the classification of materials and properties briefly.	*13,K2,CO1*
		OR	
	b)	Explain in details about the steps to be followed for description of test report.	*13,K2,CO1*
12.	a)	Explain detail about Rockwell hardness test with its advantages and disadvantages.	*13,K2,CO2*
		OR	
	b)	Draw the S.N curve for mild steel and aluminium and explain the features. Formulate the procedure used to obtain S.N diagram.	*13,K3,CO2*
13.	a)	Briefly explain with suitable sketch about working principle of Ultrasonic testing.	*13,K2,CO3*

OR

b) Illustrate with suitable sketch about working principle of Eddy current non destructive testing. *13,K2,CO3*

14. a) Explain with suitable sketch, principle, and working of SEM analysis. *13,K2,CO4*

OR

b) Differentiate X-Ray diffraction and Electron diffraction. *13,K2,CO4*

15. a) Explain differential scanning calorimetry with its working principle and limitations. *13,K2,CO5*

OR

b) Explain the various components working in Inductively Coupled Plasma Optical Emission Spectroscopy. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Choose a suitable case study on material characterization using TEM analysis. *13,K3,CO4*

OR

b) Explain with neat sketches the working of liquid penetrant testing. Write advantages and disadvantages. *13,K2,CO3*