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Question Paper Code:U2102

M.E. DEGREE EXAMINATION, APRIL / MAY 2025

Second Semester

CAD / CAM

21PCD202–APPLIED MATERIALS ENGINEERING

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1.	(a)	Develop the relationship between strain rate sensitivity and the deformation behavior of materials under dynamic loading conditions.	CO2- App	(20)
		Or		
	(b)	Identify the relationship between temperature, strain, and strain rate on the plastic behavior of materials.	CO2- App	(20)
2.	(a)	Apply the concept of ductile-to-brittle transition in steel. How does microstructure influence this transition?	CO2- App	(20)
		Or		
	(b)	Identify a material and its properties, calculate the stress intensity factor and determine its fracture toughness.	CO2- App	(20)
3.	(a)	Identify a plan to use Lauer diffraction to determine the crystal structure of a sample.	CO3- App	(20)
		Or		
	(b)	Identify the suitability of SEM and TEM for different types of materials characterization.	CO3- App	(20)
4.	(a)	Analyze the results of tension, hardness, torsion, bending, fracture, and impact tests to evaluate material properties.	CO5- Ana	(20)
		Or		
	(b)	Analyze case studies of materials selection in automobile industries to understand the importance of different criteria and constraints.	CO5- Ana	(20)

5.	(a)	Identify the process of an advanced structural ceramics in a high-temperature environment applications	CO5- Ana	(20)
		Or		
	(b)	Identify a comprehensive coating strategy for protecting offshore structures from corrosion.	CO5- Ana	(20)