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**Question Paper Code:U2102**

M.E. DEGREE EXAMINATION, APRIL 2024

Second Semester

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 a novel method for enhancing the superplastic behavior of a material. CO2-App (20)  
Or  
(b) Develop the relationship between strain rate sensitivity and the deformation behavior of materials under dynamic loading conditions. CO2-App (20)
2. (a) Develop the Larson-Miller parameter and its significance in predicting material behavior under high temperature conditions. CO2-App (20)  
Or  
(b) Identify method for estimating the residual life of a component subjected to fatigue loading. CO2-App (20)
3. (a) Develop a plan to use Lauer diffraction to determine the crystal structure of a sample. CO3-App (20)  
Or  
(b) Construct X-ray diffraction pattern to determine the crystal structure of a material. CO3-App (20)
4. (a) Analyze the factors influencing surface durability, corrosion, and wear resistance in material selection. CO5-An (20)  
Or  
(b) Analyze the results of tension, hardness, torsion, bending, fracture, and impact tests to evaluate material properties. CO5-An (20)

5. (a) Develop a comprehensive coating strategy for protecting offshore structures from corrosion. CO4-App (20)

Or

(b) Identify the process for producing nano materials and its production method in detail. CO4-App (20)