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Question Paper Code: 52122

M.E. DEGREE EXAMINATION, MAY 2017

Second Semester

CAD / CAM

15PCD202 - Applied Materials Engineering

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 20 = 100 Marks)

1. (a) Discuss in detail the principle, potential, application and solid solutioning. (20)
Or
(b) What is the mechanism of precipitation strengthening? State the conditions an alloy should satisfy to undergo precipitation strengthening. With suitable example, explain the precipitation strengthening in detail. (20)
2. (a) What are the various types of failure cycles? Describe them with suitable figures and explain (20)
Or
(b) Explain the Larson miller parameter in deformation and fracture mechanism maps. (20)
3. (a) Explain the Cost basis in selection of materials. (20)
Or
(b) (i) Explain the toughening mechanisms for metallic materials. (10)
(ii) What are the suitable strengthening mechanisms in toughening of metals (10)

4. (a) Explain in detail about the state the characteristics and applications of smart materials. (20)

Or

- (b) Explain in detail about the following

(i) HSLA steels (10)

(ii) Ultra high strength steels (10)

5. (a) Write a detailed note on

(i) Nano materials (10)

(ii) Smart materials (10)

Or

- (b) Explain in detail about Advanced structural ceramics such as WC, TiC, TaC, Al₂O₃, SiC CBN, Diamond. (20)
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