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**Question Paper Code: 55P25**

Ph.D COURSE WORK EXAMINATION, MAY 2018

Elective

Course work

15PCD525 - COMPOSITE MATERIALS AND MECHANICS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) Explain bag moulding and hand layup process in composite development. CO1- U (20)  

Or

(b) What is matrix material in composite? How matrix materials are selected? State its desirable properties of the matrix materials. CO1- U (20)
2. (a) Derive an expression for Young's modulus of fibre reinforced composites in iso-stress condition. CO2-App (20)  

Or

(b) Explain in detail about the stress – strain behavior of the composite material with suitable graph. Also infer details on rotations of stresses and residual stress on composite material. CO2-App (20)
3. (a) What is laminate? Derive an expression for three stiffness matrices [A], [B] and [D] for a 2<sup>D</sup> laminates composite. CO3- U (20)  

Or

(b) Derive the expression for finding the stress strain relation for angle ply laminates. CO3-App (20)

4. (a) Explain Maximum stress theory and Maximum strain failure theory. CO4- U (20)

Or

(b) (i) Enlist the failure criterion of the composite materials in details. CO4- U (8)

(ii) Write short notes on sandwich composite. CO4- U (8)

5. (a) Explain the different clause of composite material with specified applications. CO5-U (20)

Or

(b) Explain the squeeze casting of MMC for structural applications. CO5-U (20)

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