

Registration No :

--	--	--	--	--	--	--	--	--	--

Total Number of Pages : 01

**B.Tech
PEMT5305**

6th Semester Back Examination 2018-19

COMPOSITE MATERIALS

BRANCH : METTA, MME

Time : 3 Hours

Max Marks : 70

Q.CODE : F383

**Answer Question No.1 which is compulsory and any FIVE from the rest.
The figures in the right hand margin indicate marks.**

- Q1 Answer the following questions : (2 x 10)**
- a) Define Rule of Mixtures in the determination of elasticity modulus
 - b) Name the precursors used in the manufacturing of carbon fibers
 - c) Discuss the effects of interface bonding on properties of composite
 - d) What are three common modes of failure of a unidirectional composite subjected to Longitudinal tensile load?
 - e) Define strength ratio?
 - f) Write down the equilibrium equations for bending of laminated plates?
 - g) Mention the stiffness parameter on which the buckling load depends? Why across ply is preferred for higher buckling load?
 - h) What do you mean by Warpage in Laminates?
 - i) What is thermal Spiking?
 - j) Explain the strengthening mechanism in dispersion strengthened composites?
- Q2 a) What are some of the most commonly used fibre types ? (5)**
b) What determines the mechanical and thermal properties of a composite ? (5)
- Q3 a) What do you mean by orthotropic materials? How do they respond to tensile and shear loads ? (5)**
b) Describe the stress strain relationship for an orthotropic lamina? (5)
- Q4 a) What is meant by laminated composites? Discuss the fabrication of three different orthotropic laminates ; unidirectional, crossply and angle-ply types? (5)**
b) Discuss different failure modes of uni-directional fibre reinforced composites? (5)
- Q5 a) Describe the filament winding process of fabricating continuous fiber reinforced composites and give the advantages and limitations of the process? (5)**
b) What is a prepreg? Explain with a neat sketch. Explain the different techniques of making prepregs (5)
- Q6 Describe the different slurry methods for processing of particle reinforced, whisker reinforced and continuous fibre reinforced CMCs with suitable flow sheets and diagrams? (10)**
- Q7 Explain in detail the general characteristics of composite materials and state some of its application? What are the commercial forms of fiber available and mention its importance in the evaluation of elastic properties. (10)**
- Q8 Write short answer on any TWO : (5 x 2)**
- a) fillers and additives in composites
 - b) bio-composites and hybrid composites.
 - c) Chemical Vapour Infiltration (CVI)