Code No: RT21213 **R13** SET - 1

II B. Tech I Semester Supplementary Examinations, Oct/Nov- 2017
AEROSPACE MATERIALS AND COMPOSITES
(Aeronautical Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1.	a)	How the components are made by using carbon fiber reinforced composites?	(3M)
	b)	Give typical applications of fiber composites.	(4M)
	c)	Discuss the influence of fibre length on fibre reinforced composites.	(4M)
	d)	Mention the applications of filament winding process.	(4M)
	e)	How the microwave technique is used to find the fiber content, material thickness and porosity?	(4M)
	f)	Explain the important characteristics of super alloys.	(3M)

PART -B

2.		Write notes on the following: i) Boron fibers ii) Metal oxide Fibers iii) Cermets	(16M)
3.		Derive an expression for the modulus of elasticity for a fiber reinforced composite when a stress is applied perpendicular to the axis of the fiber.	(16M)
4.	a)	Discuss in detail the various phases used in composite fabrication.	(8M)
	b)	Draw a brief account as prepeg preparation and the corresponding composite fabrication methods	(8M)
5.	a)	How are the structural components of an aircraft manufactured with nickel base super alloys?	(8M)
	b)	Describe hot isostatic pressing of nickel based alloy powders.	(8M)
6.	a)	What is the importance of fracture toughness for aerospace materials and how can it be measured?	(8M)
	b)	How the material damage studies are made? Describe the methods to avoid material damage.	(8M)
7.	a)	Classify various refractory materials used in practice and discuss their advantages and limitations.	(8M)
	b)	What materials are used for the following components? Explain with reasons: (i) landing gear doors (ii) wing panels (iii) elevator (iv) radome	(8M)
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