CBCS SCHEME

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BAE301

Third Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Aircraft Materials and Processes

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain in detail the factors affecting the selection of materials for aircraft parts.	10	L2	CO2
	b.	Explain the following testing methods : i. Impact test ii. Crushing test iii. Fatigue test.	10	L2	CO2
		OR			
Q.2	a.	What are linear and non-linear elastic properties? Briefly explain.	8	L1	CO1
	b.	With neat figure explain Banchinger's effect.	8	L2	CO2
	c.	Briefly explain strain hardening phenomenon.	4	L1	CO1
		Module – 2			
Q.3	a.	Discuss the types of Aluminium alloys with application in the aircraft industry.	10	L3	CO3
	b.	Write short notes on : i. Alpha –Titanium ii. Beta – Titanium iii. Alpha – Beta Titanium.	10	L3	CO3
		OR			
Q.4	a.	List out the properties of magnesium alloys and write about the application of magnesium alloys in aircraft industry.	10	L3	CO3
	b.	Write short notes on : i. Copper alloys ii. Glass iii. Rubber used in aircraft.	10	L2	CO2
		Module – 3			
Q.5	a.	Discuss the properties and applications of maraging steels.	10	L2	CO2
	b.	Write a note on : i. Aircraft steel specifications ii. Corrosion and heat resistant steels.	5 5	L1 L2	CO1 CO2

		OR			
Q.6	**a.**	Briefly discuss the properties and application of : i. Nickel Based super alloys ii. Cobast based super alloys iii. Low alloy steels iv. Iron based super alloys.	**16**	**L3**	**CO3**
	b.	Write a short note on Heat treatment of Super Alloys.	**04**	**L2**	**CO2**
		Module – 4			
Q.7	**a.**	Explain any two fabrication process used for carbon/carbon composites.	**12**	**L3**	**CO3**
	b.	Explain the properties and application of cermets.	**8**	**L3**	**CO3**
		OR			
Q.8	**a.**	Briefly discuss the properties and applications MMCs used is aircraft/aerospace applications.	**10**	**L2**	**CO2**
	b.	Classify the ceramics and list the applications.	**5**	**L2**	**CO2**
	c.	Explain the properties and application of carbon/carbon composites.	**5**	**L2**	**CO2**
		Module – 5			
Q.9	**a.**	Briefly explain various types of corrosion.	**8**	**L2**	**CO2**
	b.	Explain die penetrant test and discuss the advantages and applications.	**6**	**L2**	**CO2**
	c.	What is NDT? State the advantages of NDT.	**6**	**L2**	**CO2**
		OR			
Q.10	**a.**	Explain the acoustic emission methods used for crack detection. List the advantages, disadvantages and applications.	**8**	**L2**	**CO2**
	b.	Explain the principle and application of X-ray Radiographic testing.	**6**	**L3**	**CO3**
	c.	Explain the corrosion prevention method.	**6**	**L1**	**CO1**

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