



USN

BAE301

**Third Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025**

## 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.	Define a Material. Classify aircraft materials and explain any 2.		10	L2	CO1
	b.	Define the following terms : Hardness    ii) Modulus of elasticity    iii) Ductility    iv) Malleability v) Fracture strength.		10	L1	CO2
OR						
Q.2	a.	With the help of stress-strain curve, explain various mechanical properties of aircraft materials.		12	L2	CO3
	b.	Brief about non-linear elastic properties of aircraft materials.		8	L2	CO2
Module – 2						
Q.3	a.	Explain the processing and applications of titanium and its alloys in aircrafts.		10	L2	CO1
	b.	List and explain the various properties of Aluminium alloys and discuss its applications.		10	L3	CO2
OR						
Q.4	a.	Brief on role of magnesium and its alloys in aircraft application.		10	L2	CO3
	b.	Explain the properties of wood and list its merits and demerits.		10	L1	CO2
Module – 3						
Q.5	a.	Classify steels based on carbon composition and list various properties of steels with respect to its grades.		10	L3	CO1
	b.	Explain Maraging steels and list its applications.		10	L2	CO3
OR						
Q.6	a.	Define super alloy. Explain the role of super alloys in aircraft application.		10	L1	CO3
	b.	Explain in brief about Nickel – based super alloys.		10	L2	CO2
Module – 4						
Q.7	a.	Define composite. Classify composite based on its primary constituents.		10	L1	CO4
	b.	List the various method of production of PMC's and explain any one.		10	L4	CO3

OR					
Q.8	a.	Brief about the production process carbon-carbon composites.	10	L2	CO3
	b.	List the various applications of composites in aircraft industry.	10	L3	CO4
Module – 5					
Q.9	a.	Define Corrosion. Discuss the various methods to prevent corrosion.	12	L4	CO3
	b.	Differentiate between Destructive and Non-Destructive testing methods.	8	L3	CO2
OR					
Q.10		Give brief note on i) X-ray test ii) Eddy current test iii) Acoustic emission method iv) Dye Penetrate test.	20	L3	CO4

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