CBCS SCHEME

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BAE302

Third Semester B.E./B.Tech. Degree Examination, June/July 2025
Elements of Aeronautics

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.	Write the classification of aircraft and explain about the primary control surfaces with neat sketch.	10	L2	CO1
	b.	Explain about the working principle of helicopter with simple diagram.	10	L2	CO1
		OR			
Q.2	a.	Describe about the types of fuselage structures with neat diagram.	12	L2	CO1
	b.	Explain metallic and non-metallic materials used for aircraft application.	8	L2	CO1
		Module – 2			
Q.3	a.	What are the forces acting on aircraft? Explain the types of drag.	12	L2	CO2
	b.	Explain the nomenclature of air foil in detail with neat sketch.	8	L2	CO2
		OR			
Q.4	a.	Write the difference between symmetric and unsymmetric airfoil with sketch and also draw the lift and drag curve.	10	L2	CO2
	b.	Define the following : i) Center of pressure ii) Aerodynamic center iii) Aspect ratio iv) Mach number v) Airspeed and ground speed.	10	L1	CO2
		Module – 3			
Q.5	a.	With a neat sketch, briefly explain the working principle of turbojet engine.	10	L2	CO2
	b.	Explain about the Ramjet engine with neat sketch.	10	L2	CO2
		OR			
Q.6	a.	Define thrust augmentation. Explain the types of augmentation methods.	10	L2	CO2
	b.	Explain the working principle of turbo-propeller engine with neat sketch.	10	L2	CO2
		Module – 4			
Q.7	a.	Explain longitudinal stability and lateral stability of an aircraft.	10	L2	CO3
	b.	Describe about the aircraft control systems.	10	L2	CO3
		OR			
Q.8	a.	Explain the following : i) Stalling ii) Gliding iii) Timing.	6	L2	CO3
	b.	Explain correct and incorrect angle of bank with sketch.	10	L2	CO3
	c.	Write the effects of flaps and slats on lift.	4	L2	CO3
		Module – 5			
Q.9	a.	With neat sketch explain the working principles of hydraulic system of an aircraft.	15	L2	CO3
	b.	Explain about the fuel system and its types.	5	L2	CO3
		OR			
Q.10	a.	Describe about the aircraft cockpit instrumentation displays.	10	L2	CO3
	b.	Explain briefly the aircraft communication system with neat sketch.	10	L2	CO3

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