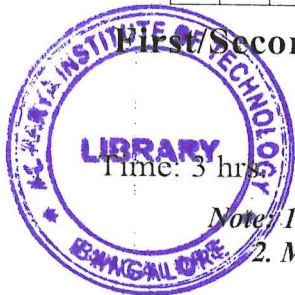


CBCS SCHEME

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1BEAE105/205



First/Second Semester B.E./B.Tech. Degree Examination, June/July 2026 Elements of Aeronautical Engineering

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.	Discuss important milestones in the development of aviation.	10	L2	C01
	b.	List and explain the classification of Aircrafts and give examples.	10	L2	C01
OR					
Q.2	a.	Explain with neat sketch monocoque, semi monocoque and truss structure of aircraft.	12	L2	C01
	b.	Compare the metallic and non-metallic materials used in aircrafts based on their properties.	08	L4	C01
Module – 2					
Q.3	a.	State Bernoulli's theorem and prove that $P_1 + \frac{1}{2}\rho_1 V_1^2 = P_2 + \frac{1}{2}\rho_2 V_2^2$.	12	L2	C02
	b.	Define Drag. Explain the different types of drag in detail.	08	L2	C02
OR					
Q.4	a.	Define the following: i) Aerodynamic centre ii) Aspect ratio iii) Centre of pressure iv) Zero lift condition v) Mach number vi) AOA	12	L1	C02
	b.	Write in detail about the airfoil nomenclature, with sketches.	08	L2	C02
Module – 3					
Q.5	a.	Explain the classification of Aircraft power plants.	08	L2	C03
	b.	What is thrust augmentation? Explain different methods of thrust augmentation.	12	L2	C03
OR					
Q.6	a.	Compare merits and demerits of Turboprop, Turbojet and Turbofan engine.	10	L4	C03
	b.	Describe the operation of a RAM Jet Engine and explain its demerits and merits.	10	L2	C03
Module – 4					
Q.7	a.	Define the following : i) Stall speed ii) Range iii) Endurance iv) Ceiling v) Glide ratio	10	L1	C04
	b.	Define degrees of freedom for an aircraft and explain the forces act on an aircraft in flight.	10	L2	C04

OR

Q.8	a.	Describe in details with suitable diagrams Longitudinal stability and Lateral stability.	08	L2	C04
	b.	Derive an expression for turn rate and radius of turn for a pull up, pull down.	12	L2	C04

Module – 5

Q.9		Explain the working principle of following with neat diagrams i) Altimeter ii) Turn coordinator iii) Air speed indicator iv) Navigation system	20	L2	C05
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OR

Q.10	a.	Explain gravity feed fuel system and pressure feed fuel system with neat labeled diagram.	12	L2	C05
	b.	Discuss the requirements of a typical hydraulic system of an aircraft?	08	L2	C05
