Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) EXAMINATION – WINTER 2023

Subject Code:3130108 Date:16-01-2024

Subject Name:Fundamentals of Aeronautical Engineering

Time:10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	(a)	Define Critical Mach Number.	03
	(b)	Explain four forces acting upon an aircrafts.	04
	(c)	Explain how low pressure is generated on upper surface with respect to bottom surface over a conventional cambered airfoil?	07
Q.2	(a)	Define the role of integrated control surfaces.	03
	(b)	With neat sketch explain Airfoil Nomenclature.	04
	(c)	Explain how airfoil produces lift. Why does symmetrical airfoil do not produce lift at 0° angle of attack.	07
		OR	
	(c)	Explain Principal of generation of lift for cambered airfoil.	07
Q.3	(a)	Explain function of propeller in aircraft.	03
	(b)	Explain function of ribs and spar in aircraft structure.	04
	(c)	Briefly explain why aircraft cannot fly by increasing angle of attack more than 16°?	07
		OR	
Q.3	(a)	Define terms- High wing, Low wing and Mid wing aircraft.	03
	(b)	Differentiate between angle of attack and angle of incidence.	04
	(c)	Explain various primary and secondary control surfaces in detail.	07
Q.4	(a)	Explain Function of Trim tabs.	03
	(b)	Classify different aerospace propulsion systems.	04
	(c)	Draw structure of wing with nomenclature.	07
		OR	
Q.4	(a)	Differentiate gas turbine engine and non-gas turbine engine.	03
	(b)	Shortly explain how Radio Altimeter works.	04
	(c)	With neat sketch explain how turbo fan engine works?	07
Q.5	(a)	Differentiate between fixed and retractable landing gear.	03
	(b)	Explain application of VOR in air navigation.	04
	(c)	Briefly explain function of Airborne Weather Radar.	07
		OR	
Q.5	(a)	What is TCAS?	03
	(b)	Explain Non-Directional Beacon and ADF.	04
	(c)	Draw and explain construction of a semi monocoque fuselage.	07

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