

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - III EXAMINATION - WINTER 2025

Subject Code: BE03001021

Date: 19-12-2025

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. Give one example or situation where it is significant in aerodynamics.	03
(b) Draw a neat labelled diagram of an aircraft wing structure and write the functions of its main parts.	04
(c) Explain the working and principle of VOR (VHF Omnidirectional Range).	07
Q.2 (a) Define Drag Divergence. Explain briefly why it occurs.	03
(b) Write the functions of landing gear and mention its configurations.	04
(c) What kind of radar is used for weather monitoring in aircraft? Explain its working and significance.	07
OR	
(c) Write the basic functions of aircraft structure.	07
Q.3 (a) Write in brief about Flaperon.	03
(b) Write the difference between turbo-engines and piston engines.	04
(c) Explain turbo-prop engine with neat sketch.	07
OR	
(a) What are the phases of a flight? Explain.	03
(b) Write the difference between bulkhead and former with neat sketch.	04
(c) Explain in detail the three axes and four forces of an aircraft.	07
Q.4 (a) Write a short note on TCAS.	03
(b) Name and explain the function of primary control surfaces.	04
(c) Explain the terms used in Airfoil nomenclature using a diagram.	07
OR	
(a) Explain the application of DME (Distance Measuring Equipment).	03

- (b) Write the difference between Turbofan and Turbojet engines. 04
- (c) Give a description of Fuselage and its types. 07
- Q.5** (a) What is airfoil? Explain different applications of it. 03
- (b) Explain Instrument Landing System (ILS). 04
- (c) Explain the difference between high wing, mid wing, and low wing aircraft configurations. 07

OR

- (a) Define a pulsejet engine and state one advantage and one disadvantage. 03
- (b) Compare ramjet and scramjet engines in terms of working principle and operational speed regime. 04
- (c) Explain solid-propellant rocket engines. 07
