

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3150101****Date: 18-05-2024****Subject Name: Flight Mechanics****Time: 02:30 PM TO 05:00 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 Pressure, Density and Temperature.	03
(b) How aircraft steady level flight maintain? Explain	04
(c) Draw a temperature distribution in the standard atmosphere.	07
Q.2 (a) Draw a Thrust required curve.	03
(b) Draw a curve comparison of lift – induced and zero –lift thrust required.	04
(c) Make a Relation between geopotential and geometric altitudes.	07
OR	
(c) Derive equation of motion for level, unaccelerated flight.	07
Q.3 (a) Shortly derive hydrostatic equation.	03
(b) Explain Time to Climb.	04
(c) Write a note on Stall and high lift device.	07
OR	
Q.3 (a) What is Directional Static Stability?	03
(b) Discuss Roll Control.	04
(c) Derive and discuss on Gliding flight.	07
Q.4 (a) What is the purpose of Lateral stability?	03
(b) Shortly Discuss on Stick fixed vs. Stick free Stability.	04
(c) Discuss on determination of stick-free neutral point from flight tests.	07
OR	
Q.4 (a) What is Pull up?	03
(b) Define Stability.	04
(c) Explain stick-fixed neutral point and static margin.	07
Q.5 (a) Discuss on Takeoff performance.	03
(b) Explain on Landing performance.	04
(c) Explain limitations on forward and rearward movements of c.g.	07
OR	
Q.5 (a) What is the purpose of V-N diagram?	03
(b) What is the working principle of Horizontal Stabilizer?	04
(c) Write a note on absolute and service ceilings.	07
