

Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 4 – EXAMINATION – SUMMER 2026

Subject Code: 3140103

Date: 21/05/2026

Subject Name: Aircraft Systems, Instruments and Maintenance

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.**

- Q.1**
- (a)** Define the main function of an Aircraft Hydraulic System. **03**
 - (b)** List any four Engine Instruments and state what each measures. **04**
 - (c)** Draw a simple sketch and explain the operation of a Pitot-Static System. **07**

- Q.2**
- (a)** What is the primary role of the Landing Gear System? **03**
 - (b)** Explain the difference between De-Icing and Anti-Icing systems. **04**
 - (c)** What are the different type of the Lubrication System and explain the working of any one. **07**

OR

- Q.2**
- (c)** Briefly explain the function of the Attitude Indicator and Directional Gyro Indicator. **07**

- Q.3**
- (a)** Name the two main categories of Flight Control Surfaces. **03**
 - (b)** Explain the difference between a 2-stroke and a 4-stroke reciprocating engine operation. **04**
 - (c)** Describe the concept of Propeller Pitch control system. **07**

OR

- Q.3**
- (a)** What is a Bell Crank in the context of flight control systems? **03**
 - (b)** List and briefly describe the components of a basic Hydraulic System. **04**
 - (c)** Draw a labeled diagram and explain the working principle of a Turbo jet Engine. **07**

- Q.4**
- (a)** Name any three methods of Thrust Augmentation in Turbine Engines. **03**
 - (b)** Explain the purpose of a Service Bulletin and an Advisory Circular in aircraft maintenance. **04**
 - (c)** Discuss the working of different flight control actuator mechanisms. Provide relevant diagrams. **07**

OR

- Q.4**
- (a)** Define Thrust Reversal. **03**
 - (b)** What is the function of a Shock Absorber in a landing gear system? **04**
 - (c)** Write a short note on the various types of Cylinder Configurations used in Reciprocating Engines (e.g., Radial, Inline, V-Engines). **07**

- Q.5**
- (a)** State the difference between Repair and Alteration in aircraft maintenance. **03**

(b) Briefly explain the difference between Primary and Secondary Flight Controls with examples. **04**

(c) Describe the procedure for a Pre-flight check or a Walk around inspection of an aircraft. **07**

OR

Q.5 **(a)** Define Mandatory Modification in aircraft maintenance. **03**

(b) Explain the purpose of Lock Wires and Turnbuckles in flight control linkage systems. **04**

(c) Describe the operation of an Air Speed Indicator (ASI), mentioning the principle it works on. **07**
