Enrolment No./Seat No_____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–III (NEW) EXAMINATION – SUMMER 2024**

**Subject Code:3130108 Date:19-07-2024**

**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)** | List different phases of flight. | **03** |
| | **(b)** | Explain the functions of Ailerons and Elevators. | **04** |
| | **(c)** | Write a note on Flaps, Trim Tabs and Spoilers. | **07** |
| **Q.2** | **(a)** | List Different regimes of atmosphere. | **03** |
| | **(b)** | Draw neat sketch of an Airfoil with Nomenclature. | **04** |
| | **(c)** | Explain lift, drag and thrust acting on an aircraft. | **07** |
| | | **OR** | |
| | **(c)** | Write a note on Critical Mach Number, Critical Pressure Coefficient and Drag Divergence Mach Number. | **07** |
| **Q.3** | **(a)** | Draw a neat sketch of wing structure with nomenclature. | **03** |
| | **(b)** | Write a difference between bulkhead and former. | **04** |
| | **(c)** | Draw and briefly explain construction of Former, Longeron, Stiffener/Stringers, Bulkheads and Ribs. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | What do you understand by Landing gear? | **03** |
| | **(b)** | Explain function of ribs and spar in aircraft structure. | **04** |
| | **(c)** | Differentiate between fixed and retractable landing gear. | **07** |
| **Q.4** | **(a)** | Why do cargo planes mostly use turboprop engines? Discuss | **03** |
| | **(b)** | Draw neat sketch of turbojet with nomenclature. | **04** |
| | **(c)** | Explain with neat sketch: ram jet. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Discuss the working of a propeller. | **03** |
| | **(b)** | Draw neat sketch of pulse jet with nomenclature. | **04** |
| | **(c)** | Explain with neat sketch: scram jet. | **07** |
| **Q.5** | **(a)** | Discuss in brief: VOR. | **03** |
| | **(b)** | Differentiate between Primary and Secondary Radar. | **04** |
| | **(c)** | Write a note on instrument landing system. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Explain in brief: Radio altimeter. | **03** |
| | **(b)** | Explain applications of NDB-ADF. | **04** |
| | **(c)** | Write a short note on TCAS and VORTAC. | **07** |

**********