

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV • EXAMINATION – WINTER • 2014

Subject Code: 140104

Date: 02-01-2015

Subject Name: Fundamentals of Aeronautics

Time: 02:30 pm - 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.

- Q.1** (a) Name different types of gas turbine engines. Explain any one in details with figure. **07**
- (b) Describe different methods of mounting wings on fuselage with figure. Explain structure of transport aircraft wing. **07**
- Q.2** (a) Describe axis of aircraft. How angle of attack is important during take off and flight operation of an aircraft? **07**
- (b) Describe nomenclature of aerofoil. How aerofoil is generates lift? **07**
- OR**
- (b) Derive equation for thrust required for level flight. Describe in brief. **07**
- Q.3** (a) “Flaps operation is different from air brake” Prove this statement. **07**
- (b) Define load factor, Limit load factor for classification of aircraft and Ultimate load factor. **07**
- OR**
- Q.3** (a) Show the comparison of C_L - α curve for symmetric and cambered airfoil. **07**
- (b) Explain thrust required for straight and level flight with vector diagram. **07**
- Q.4** (a) Explain Climbing Flight. **07**
- (b) List stresses imposed on aircraft. Define load factor, limit load, and landing load of aircraft. **07**
- OR**
- Q.4** (a) Explain mach number, critical mach number and ultimate load. **07**
- (b) Explain rocket engine and derive rocket equation. **07**
- Q.5** (a) Write a note on Ramjet engine with a neat sketch. **07**
- (b) Describe operation of primary controls with figure. How axis are part of this function. **07**
- OR**
- Q.5** (a) Explain Gliding Flight. **07**
- (b) Enlist types of jet engine and explain Turbojet engine with a neat sketch. **07**
