

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V- EXAMINATION – SUMMER 2016

Subject Code: 150101

Date: 19/05/2016

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.

- Q.1** (a) Write a short note on stalling phenomenon **07**  
(b) Describe with a neat sketch airfoil nomenclature **07**
- Q.2** (a) Explain Finite and Infinite Wings **07**  
(b) Explain critical pressure coefficient and critical Mach number **07**
- OR**
- (b) Write a short note on Airfoil Drag in detail. **07**
- Q.3** (a) Why are swept wings used? What are their advantages? **07**  
(b) Explain v-n diagram for a typical jet aircraft. **07**
- OR**
- Q.3** (a) Explain how lift is produced in an aircraft. **07**  
(b) Describe how primary and secondary control surfaces work **07**
- Q.4** (a) Define the following **07**  
1. Drag divergence Mach number  
2. Center of pressure  
(b) Derive a Brügge range formula for a propeller driven aircraft. **07**
- OR**
- Q.4** (a) Explain the use and mechanism of flaps in aircraft **07**  
**Q.4** (b) Explain take-off performance **07**
- Q.5** (a) Write a short note on gliding flight **07**  
(b) Derive formula for thrust required for steady level un-accelerated flight **07**
- OR**
- Q.5** (a) Derive the equation to obtain range and endurance of Jet aircraft. **07**  
(b) Write a short note on landing performance **07**

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