

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

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

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– III (New) EXAMINATION – WINTER 2019****Subject Code: 2130106****Date: 5/12/2019****Subject Name: Aircraft Science and Manufacturing Processes****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.

**MARKS**

- Q.1** (a) With neat sketch explain how lift is generated by a finite wing. **03**  
(b) Explain four forces acting upon a cruising aircraft. **04**  
(c) Draw a cross section of a wing and explain airfoil nomenclature of a conventional airfoil **07**

- Q.2** (a) Define Rolling, Pitching, Yawing. **03**  
(b) Differentiate between function air brakes and spoilers. **04**  
(c) With neat sketch explain function of all primary control surfaces. **07**

**OR**

- (c) Draw a layout of a sweep back wing and mention all necessary structural components. **07**
- Q.3** (a) With neat sketch explain function of vertical fin and horizontal stabilizer. **03**  
(b) Define. Bonding pressure. Enlist different types of glues used in construction of wooden airframes. **04**  
(c) Draw and explain function of members of a wooden truss type fuselage. **07**

**OR**

- Q.3** (a) What is the function of trim tabs? How they are helpful to pilots to reduce stick pressure. **03**  
(b) How will you take care of a wooden airframe and protect from humidity in atmosphere? **04**  
(c) Explain technique to cover a truss type fuselage by fabric. What are good properties of a fabric? **07**

- Q.4** (a) Draw and explain constructional features of a semimonocoque structure. **03**  
(b) Enlist and explain usage of hand tools for sheet metal work in one sentence for each. **04**  
(c) Explain fabrication process of a welded steel tube truss type fuselage. **07**

**OR**

- Q.4** (a) Explain sheet metal rolling technique with neat sketch. **03**

- (b) Explain any two types of sheet metal sheering techniques. **04**
- (c) What types of rivets are used for construction of a sheet metal airframe construction? Explain applications of such airframes with neat sketches. **07**
- Q.5** (a) Explain any one type of junction of welded steel tube structure. **03**
- (b) Differentiate between brazing and soldering process. **04**
- (c) With neat sketch explain repairing of tubing of fuselage. **07**
- OR**
- Q.5** (a) Explain stretch forming process for sheet metal. **03**
- (b) Enlist any four types of aircraft painting equipments and explain their applications very shortly. **04**
- (c) Differentiate between painting process of aircrafts having sheet metal skin and fabric covering. **07**

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