

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-3 • EXAMINATION – WINTER 2014**

**Subject Code: 2130106****Date: 20/ 12/ 2014****Subject Name: Aircraft Science and Manufacturing Processes****Time: 02:30 P.M. to 05:00 P.M.****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)** With neat sketches explain how aircraft maneuvers around all three axis using control surfaces. **07**
- (b)** What is landing gear? What are advantages and disadvantages of retractable landing gears? **07**
- Q.2 (a)** Draw and explain different types of wooden wing ribs. Explain components of wooden wing ribs. **07**
- (b)** What is wing spar? What types of loads are carried by wing spars? With neat sketches explain where are they located on wing layouts? **07**
- OR**
- (b)** With neat sketches explain structural components of truss types of fuselage. **07**
- Q.3 (a)** How will you take care of wooden glider airframe before and after construction? **07**
- (b)** How will you construct steel tube welded fuselage structure? Explain with neat sketch. **07**
- OR**
- Q.3 (a)** Draw and explain airfoil nomenclature. **07**
- (b)** What is airfoil? Why asymmetrical airfoils are used for main wings and symmetrical for horizontal stabilizer and vertical fin? **07**
- Q.4 (a)** With neat sketches explain different types of welded joints. **07**
- (b)** With neat sketch explain any two types of rivet geometry used to construct airframes. **07**
- OR**
- Q.4 (a)** Explain method to cover a fabric over wooden wing airframe. **07**
- (b)** With neat sketches explain different types of templates used to construct and check alignments of wing geometries. **07**
- Q.5 (a)** What types of woods are used to build flying aero models and gliders? **07**
- (b)** What types of equipments are used to paint fabric covered and sheet metal aircrafts? **07**
- OR**
- Q.5 (a)** What are main structural fuselage components of semi-monocoque airframes? How they are located and attached together? **07**
- (b)** With neat sketch explain how cantilever and semi cantilever wings are attached with semi-monocoque low wing and high fuselages. **07**

\*\*\*\*\*