Seat No.: _____ Enrolment No._____

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**

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