Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III(New) • EXAMINATION – WINTER 2016

Subject Code:2130106 **Date:09/01/2017**

Subject Name:Aircraft Science and Manufacturing Processes

Time:10:30 AM to 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			14
Q-1	1.	Define Centre of Gravity of Aircraft.	
	2.	Define Centre of Pressure of wing.	
	3.	Define Aerodynamic Centre.	
	4.	Define induce drag.	
	5.	What is high wing configuration?	
	6.	Define skin friction drag.	
	7.	What do you understand about positive stability?	
	8.	What is Biplane?	
	9.	Enlist secondary control surfaces of a jet transport aircraft.	
	10.	What is the direction of lift generation and drag?	
	11.	Enlist type of parasite drag.	
	12.	What is the application of elevator in aircraft?	
	13.	What is the application of elevator trim tab?	
	14.	Define delta wing.	
Q-2	(a)	Only draw a sheet metal wing structure of light aircraft with nomenclature.	03
	(b)	Differentiate between bulkhead and former with neat sketch.	04
	(c)	Classify different type of undercarriage or landing gear.	07
		OR	
	(c)	Draw and explain sheet metal fuselage construction.	07
Q-3	(a)	Very shortly explain equipments to paint aircrafts.	03
	(b)	Very shortly explain texting procedure on painted surfaces of aircraft.	04
	(c)	Explain techniques of painting a sheet metal aircrafts.	07
		OR	
	(a)	How will you choose glues or adhesives used for wooden airframes?	03
	(b)	How will you take care of a wooden airframe before and after construction?	04
	(c)	Draw and explain different shapes of gusset geometry used for truss type wooden airframes.	07
Q-4	(a)	Only draw junction of gusset, longeron and truss.	03
	(b)	What types of woods are available to fabricate wooden components of airframes?	04
	(c)	What types of hand tools are used for fabrication of wooden airframes?	07
		OR	
	(a)	Only draw standard zigzag rivet geometry.	03

	(b)	Explain sheet metal sheering techniques.	04
	(c)	What types of hand tools are used for fabrication of sheet metal airframes?	07
Q-5	(a)	Why beading is required in any structural components of sheet metal construction?	03
	(b)	Differentiate between fixed and retractable landing gear.	04
	(c)	Explain how a cambered aerofoil generates lift?	07

OR

	(a)	Explain why symmetrical airfoil is selected to design horizontal stabilizer?	03
	(b)	Only draw any four types of tail plane configuration?	04
	(c)	Draw and explain airfoil nomenclature.	07

****