Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV • EXAMINATION – WINTER 2013

Subject Code: 140104   **Date: 30-12-2013**
Subject Name: Fundamentals of Aeronautics
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)**	Draw and explain geometry of cross section of wing with nomenclature.	07
	(b)	As per ISA conditions what are the physical parameters of atmosphere on sea level? What changes are taken place with change in heights?	07
Q.2	**(a)**	What is "aerofoil stalling"? Explain by C_L-α curve.	07
	(b)	How many forces take place over flying aircraft? Explain briefly.	07
		OR	
	(b)	Explain "Ram Jet Engine" with neat sketch.	07
Q.3	**(a)**	What do you understand by "Mach Number"? Write its importance in flying aircraft	07
	(b)	Explain four types of forces acting upon an aircraft, while flying. OR	07
Q.3	**(a)**	What do you understand by "Propulsion system"? What is the application of This system in aircraft?	07
	(b)	Define "Rate of climb", "Gliding flight", "Time of Climb", "Range of Aircraft", "Range", "Endurance", and "Monocoqe Fuselage Structure".	07
Q.4	**(a)**	Write functions of bulkhead, spar and frame.	07
	(b)	Prove that zero-lift drag is one-third of the drag due to lift at minimum power requirement.	07
		OR	
Q.4	**(a)**	Draw the sketch of an aircraft and labeled it with different control surfaces.	07
	(b)	Explain functions of secondary control surfaces.	07
Q.5	**(a)**	Enlist types of jet engines. Explain any two with figure.	07
	(b)	With propeller vector diagram explain how thrust generated by a propeller?	07
		OR	
Q.5	**(a)**	Derive equation of motion of an aircraft for level flight	07
	(b)	With help of sketch explain three types of dynamic stability about lateral Axis.	07

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