GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII EXAMINATION – SUMMER 2016

Subject Code:170101   **Date:16/05/2016**

Subject Name:Aircraft Design - 1

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)**	Explain overview of conceptual design process of an aircraft.	**07**
	(b)	Explain process of a weight estimation process of a conventional turbo prop aircraft.	**07**
Q.2	**(a)**	Differentiate between maximum take-off weight and all up weight. Define basic empty weight.	**07**
	(b)	Classify fuel weights.	**07**
		OR	
	(b)	How will you determine amount of usable fuel while designing an aircraft?	**07**
Q.3	**(a)**	Explain how you will estimate L/D (Lift/Drag) ratio of a particular design.	**07**
	(b)	Explain different tail plane configuration with neat sketch.	**07**
		OR	
Q.3	**(a)**	How will you decide that what type of tail-plane configuration and shape will you choose for a particular design	**07**
	(b)	In which cases will you choose rectangular-delta-sweepback wing plan form shape?	**07**
Q.4	**(a)**	Explain method to find out size of a conventional tail plane with neat sketch.	**07**
	(b)	Explain conventional helicopter control system with neat sketch.	**07**
		OR	
Q.4	**(a)**	How will you determine thrust requirement at various phases of aircraft design.	**07**
	(b)	Classify airfoils. How will you choose type of airfoil for your aircraft?	**07**
Q.5	**(a)**	Explain flight envelope with neat sketch.	**07**
	(b)	Explain method to determine wing loading. How does it affect performance?	**07**
		OR	
Q.5	**(a)**	With neat sketch explain difference between deicing and anti-icing system.	**07**
	(b)	Explain V-N diagram with neat sketch.	**07**

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