Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2023

Subject Code:3170110 Date:08-12-2023

Subject Name: Introduction to Aeroelasticity

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Define Aeroelasticity.	**03**
	(b)	How to solve Aero elasticity problems?	**04**
	(c)	Discuss on "Deformation of Structures"	**07**
Q.2	**(a)**	What is Influence Coefficient?	**03**
	(b)	How to find solutions in structure problem?	**04**
	(c)	Write a note on "Energy Method".	**07**
		OR	
	(c)	Discuss "Lift Distribution for the Steady Roll Case"	**07**
Q.3	**(a)**	Define airfoil and wing.	**03**
	(b)	Difference between 2-D airfoil and wing.	**04**
	(c)	Discuss on "Aileron Reversal"	**07**
		OR	
Q.3	**(a)**	How to solve flutter problem in Airfoil?	**03**
	(b)	Shortly explain "Control Effectiveness".	**04**
	(c)	Explain briefly "U-g Method".	**07**
Q.4	**(a)**	Define Flutter.	**03**
	(b)	What is wing loading?	**04**
	(c)	Derive the general form of the Aeroelastic Equation.	**07**
		OR	
Q.4	**(a)**	Define Swept Wing.	**03**
	(b)	Explain Supersonic flow over a 2-D body.	**04**
	(c)	For a 2-D wing derive an expression for the aileron control reversal speed.	**07**
Q.5	**(a)**	What is Finite State Model?	**03**
	(b)	Discuss on "Flutter Analysis by Assumed Mode Method".	**04**
	(c)	Discuss on "Aerodynamic lift and moment for a Harmonically oscillating Aerofoil".	**07**
		OR	
Q.5	**(a)**	Make list Exact Treatment of Bending.	**03**
	(b)	What is P-k Method?	**04**
	(c)	Explain kernal Function Approach.	**07**

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