Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – SUMMER 2024

Subject Code:3170110 Date:22-05-2024

Subject Name:Introduction to Aeroelasticity

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

			MARKS
Q.1	**(a)**	What is the role of Aeroelasticity in aviation field? Explain in short.	**03**
	(b)	Difference between 2-D airfoil and wing.	**04**
	(c)	Write a short note on "Deformation of Structures".	**07**
Q.2	**(a)**	Classify Aeroelasticity.	**03**
	(b)	Define Static aeroelasticity.	**04**
	(c)	What is Energy Method? Explain	**07**
		OR	
	(c)	Discuss on Influence Coefficients.	**07**
Q.3	**(a)**	Discuss shortly Aileron reversal.	**03**
	(b)	Define Dynamic aeroelasticity.	**04**
	(c)	Discuss on "U-g Method".	**07**
		OR	
Q.3	**(a)**	Why flutter form? Shortly explain	**03**
	(b)	What is the difference between Flutter and Vibration?	**04**
	(c)	How to find Lift Distribution for the Steady Roll Case?	**07**
Q.4	**(a)**	Define Swept wing.	**03**
	(b)	What is finite state model?	**04**
	(c)	Discuss on Flutter model of 2-D Airfoil.	**07**
		OR	
Q.4	**(a)**	Define straight wing.	**03**
	(b)	Difference between 2D and 3D supersonic flow over body.	**04**
	(c)	Explain Kernal Function Approach.	**07**
Q.5	**(a)**	Define Subsonic flow.	**03**
	(b)	Discuss on "Aerodynamic lift for a Harmonically oscillating Aerofoil".	**04**
	(c)	Write a note on Theodorsen Theory.	**07**
		OR	
Q.5	**(a)**	Define Supersonic flow.	**03**
	(b)	How to minimize flutter problem in wing?	**04**
	(c)	Discuss p-k method.	**07**

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