Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:3170109 Date:30-11-2024

Subject Name: Advance Computational Fluid Dynamics

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 CFD.	**03**
	(b)	List out different types of Turbulence model.	**04**
	(c)	Explain briefly "FVM"	**07**
Q.2	**(a)**	How Does CFD code Work?	**03**
	(b)	Write Types of Solver. Explain any one in short.	**04**
	(c)	What is Direct numerical simulation (DNS)? Explain	**07**
		OR	
	(c)	What is Large eddy Simulation (LES)? Explain	**07**
Q.3	**(a)**	Define Mesh.	**03**
	(b)	Write a step to solve problem in CFD.	**04**
	(c)	Discuss on Reynolds stress model (RSM).	**07**
		OR	
Q.3	**(a)**	What is mixing length model?	**03**
	(b)	Discuss on "Necessity of turbulence modeling".	**04**
	(c)	Write a note on "The κ-ε model".	**07**
Q.4	**(a)**	What are Eddy viscosity models?	**03**
	(b)	Define Inlet Boundary Condition.	**04**
	(c)	How Turbulent kinetic energy and dissipation work to solve problem in CFD?	**07**
		OR	
Q.4	**(a)**	Define Outlet Boundary Condition.	**03**
	(b)	Difference structured and unstructured grid.	**04**
	(c)	Explain Multi block structured grid generation.	**07**
Q.5	**(a)**	Explain shortly Wall Boundary condition.	**03**
	(b)	What is Delalunay triangulation.	**04**
	(c)	What is the difference between symmetry boundary condition and periodic boundary condition?	**07**
		OR	
Q.5	**(a)**	Discuss implicit methods	**03**
	(b)	Shortly discuss Bowyer Algorithm.	**04**
	(c)	Write a short note on Adaptive grids.	**07**

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