Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2150104 **Date:11/05/2016**

Subject Name:Computational Fluid Dynamics II

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)**	Write down the steps involved in SIMPLE-R algorithm. Also list the advantages and disadvantages of SIMPLE-R.	**07**
	(b)	What is Boundary Condition? What are the Basic types of Boundary Conditions? Explain it with a suitable diagram.	**07**
Q.2	**(a)**	Explain Finite Volume Method for One dimensional Unsteady heat conduction.	**07**
	(b)	Why Linearization of the equations required? Explain The Beam and Warming Method.	**07**
		OR	
	(b)	Write a short note on High Resolution Schems.	**07**
Q.3	**(a)**	Why development of Upwind Scheme was needed? Explain first order upwind scheme in detail.	**07**
	(b)	Explain SIMPLE-C method in detail. How it differs from SIMPLE?	**07**
		OR	
Q.3	**(a)**	What is FVM stands for? With the help of diagram, write a note on FVM with a suitable example.	**07**
	(b)	Write a note on Central Differencing Scheme.	**07**
Q.4	**(a)**	Explain PISO algorithm in detail with all advantages and diadvatages.	**07**
	(b)	State disadvantages of 1st Order Upwind Scheme. Explain Flux Vector Splitting	**07**
		OR	
Q.4	**(a)**	What is Shock Layer? Explain the concept of Supersonic flow over a sharp edged flat plate with a proper diagram.	**07**
	(b)	Derive the governing flow equations for the problem of supersonic flow over a flat plate.	**07**
Q.5	**(a)**	Write a note on FVM for two dimensional diffusion problem.	**07**
	(b)	Write a note on Crank Nicolson Scheme for unsteady heat conduction problem.	**07**
		. **OR**	
Q.5	**(a)**	Discuss the initial and boundary conditions for two dimensional unsteady, supersonic, viscous flow over the flat plate.	**07**
	(b)	Write a short note on The Multidimensional Problem.	**07**

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