Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1723906 **Date: 05-12-2014**

Subject Name: Computational Fluid Dynamics

Time: 02:30 pm - 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)**	What are the important applications of CFD in engineering?	**07**
	(b)	Derive the continuity equation in differential form for fluid flow.	**07**
Q.2	**(a)**	Clearly distinguish between the finite difference, FEM and FVM methods used for solving CFD problem. Why FVM as preferred method in CFD?	**07**
	(b)	Derive diffusion equation for fluid flow. Discuss its application.	**07**
		OR	
	(b)	Explain different pressure correction techniques? And compare them.	**07**
Q.3	**(a)**	Explain multi-phase flow in an air lift reactor.	**07**
	(b)	Explain simple internal flow through driven cavity	**07**
		OR	
Q.3	**(a)**	Explain Car-Reacting flow in a gas burner.	**07**
	(b)	Explain simple internal flow through T-Junction	**07**
Q.4	**(a)**	Write short note on general standard used for data exchange	**07**
	(b)	Write and explain governing equation for turbulant flow.	**07**
		OR	
Q.4	**(a)**	Write and explain governing equation for combusting flow.	**07**
	(b)	Write short note on Reynolds-Averaged Navier-Stokes Equations	**07**
Q.5	**(a)**	Explain Delaunay Triangulation.	**07**
	(b)	Explain O-grid topology and H-grid topology	**07**
		OR	
Q.5	**(a)**	Explain Transfinite Interpolation for volume grid generation	**07**
	(b)	Explain C-Grid topology with suitable example	**07**

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