

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 turbulent 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**
