

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – II • EXAMINATION – WINTER 2012

Subject code: 1723906**Date: 02-01-2013****Subject Name: Computational Fluid Dynamics****Time: 10.30 am – 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.

- Q.1** (a) Derive wave equation for fluid flow. Explain its application in CFD. **07**
(b) Describe the basic steps for solving the problem with FEM. **07**
- Q.2** (a) What are the different types of boundary condition used CFD analysis. **07**
(b) Derive an expression for energy equation for small, moving fluid element. **07**
- OR**
- (b) Derive the basic iteration matrix for two grid process. How the basic iteration matrix for three grid process is found. **07**
- Q.3** (a) Explain Car-Reacting flow in a gas burner. **07**
(b) Explain simple internal flow through driven cavity **07**
- OR**
- Q.3** (a) Explain simple internal flow through T-Junction **07**
(b) Explain multi-phase flow in an air lift reactor. **07**
- Q.4** (a) Write short note on Reynolds-Averaged Navier-Stokes Equations **07**
(b) Write and explain governing equation for turbulent flow. **07**
- OR**
- Q.4** (a) Write and explain governing equation for combustor flow. **07**
(b) Write short note on general standard used for data exchange **07**
- Q.5** (a) Explain C-Grid topology with suitable example **07**
(b) Explain Delaunay Triangulation. **07**
- OR**
- Q.5** (a) Explain O-grid topology and H-grid topology **07**
(b) Explain Transfinite Interpolation for volume grid generation **07**
