

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- VIth SEMESTER-EXAMINATION – MAY- 2012****Subject code: 160105****Date: 19/05/2012****Subject Name: Computational Fluid Dynamics-II****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) Explain development of upwind scheme. **07**
(b) State the different forms of Euler equation and also state in brief equation of flux vector splitting. **07**
- Q.2** (a) Explain the inviscid flow model for Euler equation. **07**
(b) Explain the additional consideration for implicit method. **07**
- OR**
- (b) Describe Osher's approximate Riemann solver. **07**
- Q.3** (a) Describe the flux difference splitting for linear advection equation. **07**
(b) Explain the Godunov Approach. **07**
- OR**
- Q.3** (a) Discuss the high resolution scheme. **07**
(b) Explain the Beam warming method. **07**
- Q.4** (a) Explain the concept of a CD nozzle with subsonic flow. Also explain the boundary conditions for the same **07**
(b) Explain the Jacobian method. **07**
- OR**
- Q.4** (a) Explain the expression for the Prandtl Mayer function for an expansion wave, specifying the assumptions taken. **07**
(b) Explain the boundary conditions for the subsonic inflow and supersonic outflow using diagram. **07**
- Q.5** (a) Explain the physical problem of the supersonic flow over a flat plate. **07**
(b) Explain in brief the organization of Navier Stokes code using flow chart. **07**
- OR**
- Q.5** (a) Explain the initial and boundary conditions for the finite difference equation used in subsonic flow over a flat plate. **07**
(b) Discuss the physical problem of subsonic-supersonic isentropic flow, over nozzle. **07**
