

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER • 2014****Subject code: 733102****Date: 27-11-2014****Subject Name: Cardiovascular Mechanics****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) Explain cardiac cycle with timing diagram. **07**
(b) Explain the effects of heart rate, stroke volume and peripheral resistance on pressure of aorta. **07**
- Q.2** (a) Write a short note on Blood rheology. **07**
(b) Write a short note on Gas exchange and transport phenomena of Lung. **07**
- OR**
- (b) Explain the mechanics of breathing. **07**
- Q.3** (a) Explain Blood Types, Distributions and Their Associate Antigens and Antibodies. **07**
(b) Write a short note on Prosthetic Mechanical Valves. **07**
- OR**
- Q.3** (a) Write a short note on Mechanics of Arterial Walls. **07**
(b) Explain Intravascular: strain gauge tipped pressure transducer. **07**
- Q.4** (a) Explain Navier-Stokes Equations of motion for incompressible, Newtonian fluids. **07**
(b) Explain Indicator dilution and dye dilution technique. **07**
- OR**
- Q.4** (a) Explain Fry Solution for Pulsatile Flow in Rigid Tubes. **07**
(b) Explain Characteristics of an extravascular pressure measuring system. **07**
- Q.5** (a) Explain Electrical Analog Model of Flow in a Tube. **07**
(b) Write a short note on Blood Hematology. **07**
- OR**
- Q.5** (a) Explain Modeling of Flow through the Mitral Valve. **07**
(b) Derive the equation of compliance for the change in the internal pressure of arterial walls. **07**
