

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER • 2013****Subject code: 733102****Date: 28-11-2013****Subject Name: Cardiovascular Mechanics****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 blood flow through heart. **07**
(b) Write short notes on Aortic valve and pulmonic valve. **07**
- Q.2** (a) Explain shear stress, viscosity and velocity profile of fluid in detail. **07**
(b) Explain in detail “HRV”. **07**
- OR**
- (b) Explain the modeling of compliance of artery. **07**
- Q.3** (a) Explain various structures of artery. **07**
(b) Explain the modeling of pulsatile flow in rigid tubes with Fry Solution. **07**
- OR**
- Q.3** (a) Explain the modeling of pulsatile flow in rigid tubes with Womersley Solution. **07**
(b) Give the relation between ECG with pressure related to heart. **07**
- Q.4** (a) Explain mathematical model and electrical equivalent circuit for the measurement of flow in a tube. **07**
(b) Write a short note on Leukocytes. **07**
- OR**
- Q.4** (a) Describe diagrammatically and mathematically, flow through mitral valve. **07**
(b) Explain properties of cardiac muscles. **07**
- Q.5** (a) Explain stenosis, thrombosis and atherosclerosis. **07**
(b) What is MCV and MCH? If a patient has a hemoglobin concentration of 15 g per 100 mL of whole blood and also has five million red blood cells in each mm³ of blood, then calculate MCH. **07**
- OR**
- Q.5** (a) Explain stress strain characteristics of artery. **07**
(b) Explain Poiseuille’s law for the measurement of flow rate of Newtonian fluid in rigid tube. **07**
