Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER • 2013

Subject code: 733102 **Date: 28-11-2013**

Subject Name: Cardiovasular 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 Wormersley 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 mm^3 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**

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