

GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. - SEMESTER – IV • EXAMINATION – WINTER 2012

Subject code: 140302**Date: 31/12/2012****Subject Name: Physiological Measurement Techniques****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) Explain dynamics of neuromuscular reflex motion with its simulink model. **07**

(b) Explain steady state model of chemical regulation of ventilation. **07**

Q.2 (a) Explain simple model of cardiac output regulation. **07**

(b) Explain oculomotor muscle model in detail **07**

OR

(b) Explain Robinson experiment for eye muscle tension. **07**

Q.3 (a) Explain CO₂ exchange in lungs. **07**

(b) Explain linearized model of respiratory mechanics. **07**

OR

Q.3 (a) Give the frequency response of glucose insulin regulation. **07**

(b) Explain linearized model of skeletal muscles. **07**

Q.4 (a) Explain Kao's cross circulation experiments. **07**

(b) Explain linearized dynamic model of chemoreflex control of ventilation. **07**

OR

Q.4 (a) Discuss isotonic experiment for evaluation of muscle viscosity. **07**

(b) Explain simulink model of cardiovascular mechanism. **07**

Q.5 (a) Explain Hodgkin- Huxley model with necessary schematic and equations. **07**

(b) Explain describing function method for periodic breathing with apnea. **07**

OR

Q.5 (a) Explain modeling of cardiac dysrhythmias. **07**

(b) Explain modulation of applied light intensity using measurements of pupil area. **07**
