

IV B.Tech I Semester Supplementary Examinations, April/May 2005
PHYSIOLOGICAL SYSTEMS MODELLING
(Bio-Medical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) With the help of a mathematical model explain a respiratory system.
(b) Giving the example of a model for circulatory system, explain its characteristics.
2. Explain in detail (by drawing necessary illustrations) as to how the metabolic and endocrine systems affect the normal physiological functioning of the body.
3. (a) Taking a certain physiological organ, explain its cellular model.
(b) What do you mean by global modeling? Explain with an example.
4. Giving any two relevant examples for receptors, discuss their characteristics, adaptation and rate sensitivity.
5. (a) What are perturbation schemes? How they affect physiological modeling?
(b) What are biological receptors? Explain how they effect physiological modeling?
6. (a) By considering a proper system example, explain (by drawing proper schematics) the glucose - insulin model to estimate insulin sensitivity.
(b) Write short notes on insulin sensitivity index.
7. (a) Discuss any two models of glucose utilization.
(b) Compare any two models for glucose - insulin sensitivity.
8. Explain the following in detail:
 - (a) Discrete statistical signals.
 - (b) Continuous statistical signals.
