B.E. Sixth Semester (Biomedical Engineering) (CGS)
10127 : Physiological Modelling and Simulation : 6 BM 04

P. Pages : 2

Time : Three Hours

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Max. Marks : 80

Notes :
1. Due credit will be given to neatness and adequate dimensions.
2. Assume suitable data wherever necessary.
3. Illustrate your answer necessary with the help of neat sketches.

1. a) Describe physiological control system with concept. 7

   b) What do you understand by linear models of physiological system. 7

OR

2. a) List and explain different principles used in modeling. 7

   b) Describe static mathematical model with suitable example. 7

3. a) Draw and explain cardiovascular model with suitable diagram. 6

   b) Describe software development for cardiovascular system. 7

OR

4. a) Discuss need of software development for cardiovascular system modeling and simulation. 6

   b) Explain heart cardiac cycle in detail. 7

5. a) Describe pulmonary system with computational flow diagram. 6

   b) Draw and explain chestwall in detail. 7

OR

6. a) Describe lung tissue visco elastance with suitable diagram. 6

   b) Explain airways full model of respiratory mechanics. 7

7. a) Explain oculomotor muscle model with suitable diagram. 7

   b) Describe linear muscle model with a suitable diagram. 7

OR

8. a) Discuss interaction of pulmonary model in detail. 7

   b) Write and explain software for cardiopulmonary system. 7

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9. a) What do you understand by lung mechanics and their simulink implementation. 6

    b) Describe ventilatory control action. 7

OR

10. a) Give frequency domain analysis of linearize model of lung mechanics. 6

    b) Discuss circulatory control model using MATLAB tool. 7

11. a) Explain ventilatory control action by MATLAB tool. 6

    b) Discuss steady state analysis of muscle stretch reflex action by using MATLAB tool. 7

OR

12. Give and explain transient response analysis of neuromuscular reflex model using MATLAB tools. 13

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