Q.P. Code :22605

[Time: Three Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B: 1. Question.No.1 is compulsory.
   2. Attempt any three questions out of remaining five questions.
   3. Figures to the right indicate full marks.
   4. Assume suitable data if necessary, stating your assumption.

Q.1 Attempt the following:
1) Draw and explain behavior of immune system. **05**

2) Explain with a neat diagram, sliding filament theory. **05**

3) What are the various techniques of thermogenesis and thermolysis. **05**

4) State and explain the biophysics tools. **05**

Q.2 a) Derive the Goldman's Equation for a cell membrane **10**

b) Explain using suitable diagram plant model of a thermoregulatory system. **10**

Q.3 a) Explain the two control mechanism of neuromuscular system. **10**

b) Explain the Hodgkin – Huxley model and its conductance equation. **10**

Q.4 a) Explain the pharmokinetic model and state its applications. **10**

b) With reference to the reciprocal innervations model, explain **10**
   i)   Active state tension generator.
   ii)   Force – velocity relationship

Q.5 a) Explain the model for insulin glucose feedback mechanism. **10**

b) Define physiological modeling. Explain the steps involved in physiological modeling. Elaborate the purpose of modeling. **10**

Q.6 Write short notes on:
a) Respiratory system model. **05**
b) Ion pump and its significance. **05**
c) Glissades **05**
d) Parkinson's syndrome **05**

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