. 5855–10.

(REVISED COURSE)

GT–8

(3 Hours)

[Total Marks :

N.B. : (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Draw neat **figures** wherever **necessary**.
(4) Assume **suitable** data if **necessary** and state them **clearly**.

1. (a) Explain voltage clamp experiment with a neat circuit diagram. How were the time courses of K+ and Na+ currents determined? Write down the equations for total current through the membrane, Gna and Gk (12)
(b) Draw the electrical model of a membrane and explain the physiological significance of each element. (08)

2. (a) Expain the closed loop neuromuscular control sustem showing anatomical connections between physiological components that participate in stretch reflex. (10)
(b) What are spindle receptors and Golgi Tendons ?Explain with a neat block diagram Neuromuscular system using golgi Tendon. (10)

3. (a) Which are the different eye movements ? Draw a neat diagram of reciprocal innervation model and explain following terms, (14)
(i) Active state tension generator
(ii) Force- Velocity relationship
(b) What are the different steps in the physiological modelling. (06)

4. (a) What is meant by thermogenesis and thermolysis? Which are different ways of thermogenesis and thermolysis? (08)
(b) Using biophysics tools derive the expression for Nernst potential for Ca2+ and hence derive the expression of Donnan's equilibrium equation if the membrane is permeable to Ca2+ and Na+. (12)

5. (a) Which are the different eye movements ? Draw a neat diagram of reciprocal innervation model and explain following terms, (14)
(i) Active state tension generator
(ii) Force- Velocity relationship
(b) What are the different steps in the physiological modelling. (06)

6. (a) Explain using suitable diagram Human Thermoregulatory System. (10)
(b) Explain with a neat schematic physiology of muscle contaction (10)

7. Write short notes on: (attempt any four) (20)
(a) Passive elasticity.
(b) Glissades.
(c) Rigor Mortis
(d) Electrode – Electrolyte model.
(e) Cardiovascular System.
(f) Parkinson's Syndrome.