

Q.P. Code :22603

[Time: 3 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 from remaining five questions

- Q.1** a) Explain all four biophysics tools 05
 b) What is Donnan's Equation? 05
 c) What is the need of thermoregulatory system? 05
 d) Explain the parallel conductance equation 05
- Q.2** a) Explain with the help of a neat diagram the electrical model of a cell membrane 10
 b) Derive Nernst Equation for a bivalent ion 10
- Q.3** a) Explain the two control mechanism using Open and Closed loop strategy. 10
 b) Explain stretch reflex with an anatomical sketch and block diagram. 10
- Q.4** a) Explain with the help of a diagram, the components in a thermoregulatory system. 10
 b) Explain the controller model with reference to T_s and T_{HC} 10
- Q.5** a) Derive an expression for peak velocity and peak time for Weisthmer's model. 10
 b) Explain the immune system in detail 10
- Q.6** Write short notes on **any four** 20
- a) Differences between Spindle receptor and Golgi tendon organ
 - b) Voltage clamp technique
 - c) Industrial application of thermoregulatory system
 - d) Muscles responsible for eye movements
 - e) Respiratory system model
