OPEN BOOK EXAMINATION (OBE) MODE

[This question paper contains 2 printed pages]

Sr. No. of Question Paper Roll No.Unique paper Code : 32231302

Name of the paper :Physiology: Controlling & Coordinating Systems

Name of the Course : B.Sc. (H) Zoology Examination, 2020-LOCF

Semester : III

Duration : 3 Hour

Maximum Marks: 75

Instructions for Candidates

- Attempt ANY FOUR questions. All questions carry EQUAL MARKS Write your Roll No., Name of the paper, Course, Semester, and Date of examination on the first page of the answer sheet.
- *Draw* neat and well labeled diagrams wherever necessary.
- Q1. Sanjana was involved in an automobile accident in which her neck muscles were injured. What in the neck muscle was affected? What proteins are involved in myofibril activity. Give detailed account of muscle contraction coupling mechanism. Establish it with the concept of rigor mortis. 18.75 marks
- Q2. Discuss various factors that contribute to the hardness and tensile strength of bone. List the types of cells with their functions and enlist the composition of extracellular matrix. Bone is not completely solid, classify bone based on the small spaces between its cells and extracellular matrix components. **18.75 marks**
- Q.3. How does generation of action potentials take place using different types of voltage gated channels? Compare the graded potential with action potential in a neuron. Explain the role of Na+/K+ channels and how do they contribute to the generation of an Action Potential. 18.75 marks
- Q4. What structure enables your brain to discern a sense of balance and your head's tilt within your environment? Explain the key events involved in physiology of hearing. How is the relationship between photoreceptors and bipolar cells different from other sensory receptors and adjacent cells? **18.75 marks**

Q.5. How is blood-testes barrier important? Giving the functions of Leydig and Sertoli cells explain the key events in spermatogenesis. Discuss the hormonal control of spermatogenesis and actions of testosterone and dihydrotestosterone (DHT) and inhibin in the male reproductive system? Evaluate the control mechanism for the secretion of these hormones. **18.75 marks**

Q.6. Cellular activity can vary based on sensitivity to polarity of hormones. Explain the responses of cells that are controlled by a hormone? Give an account of the determining factors for the responsiveness of a target cell to a hormone. Explain negative feedback regulation mechanism in case of hormones pair showing antagonism. Relate the osmotic pressure and the level of ADH change in your blood with respect to water consumption. **18.75 marks**