3 (Sem–4/CBCS) ZOO HC 3

2025

ZOOLOGY

(Honours Core)

Paper : ZOO–HC–4036

(Biochemistry of Metabolic Processes)

Full Marks : 60

Time : Three hours

**The figures in the margin indicate
full marks for the questions.**

1. Answer the following questions :   1×7=7

   (a) The gap between two neurons is called
        _____.

   (b) What is the basic unit of a muscle fiber
        called ?

   (c) The resting membrane potential of a
        neuron is _____.

   (d) Name the enzyme responsible for CO_2
        transport.

(e) What does P-wave in an ECG represent?

(f) Which valve prevents backflow of blood into the left atrium?

(g) Which enzyme helps in blood clotting by converting fibrinogen to fibrin?

2. Answer the following questions briefly:

$$2 \times 4 = 8$$

(a) Briefly explain the neuromuscular junction and it's function.

(b) Write the name of muscle proteins and their importance.

(c) Name *any two* hormones secreted by the anterior pituitary gland and write their functions.

(d) Write the difference between myogenic and neurogenic hearts with examples.

3. Answer the following questions : *(any three)*

$$5 \times 3 = 15$$

(a) Explain the structure of neuron.

(b) Elaborate the muscle characteristics in brief.

(c) Give an overview of the different digestive enzymes and their functions in various parts of the digestive tract.

(d) Explain the mechanism of CO_2 transport in blood with emphasis on the role of red blood cells.

(e) Describe the process of blood clotting.

4. *(a)* Explain the sliding filament theory of muscle contraction with a labeled diagram. 10

Or

(b) What is action potential in a nerve fiber? Describe the process in detail.

$$2 + 8 = 10$$

5. *(a)* Define $O_2 - Hb$ dissociation curve. Explain the curve with the special emphasis on Bohr effect. $2 + 8 = 10$

Or

(b) Illustrate the cardiac cycle in detail. 10

6.   *(a)*   Write down the steps of thyroid hormone synthesis.   **10**

Or

   (b)   Elaborate the mechanism of action of protein hormone.