

SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

1. Define the following terms:
 - a. Anabolism (1 mark)
 - b. Catabolism (1 mark)
 - c. Energy Metabolism (1 mark)
2. Explain how ruminants use acetic acid and butyric acid as energy sources. (3 marks)
3. Give the three main processes responsible for urine formation. (3 marks)
4. Examine mechanisms of water loss and gain in mammals. (3 marks)
5. Distinguish between osmoconformers and osmoregulators citing examples. (3 marks)
6. Explain the production and functions of the following hormones:
 - a. Prolactin
 - b. Adrenocorticotrophic hormone
 - c. Oxytocin (3 marks)
7. Hypothalamus is the main component of the diencephalon. Give its main functions. (3 marks)
8. Distinguish between somatic motor nerves and visceral motor nerves. (3 marks)
9. Describe chemical transmission of signals at synapses. (3 marks)
10. Describe importance of taste reception in humans and animals. (3 marks)

SECTION B: ESSAY QUESTIONS (40 MARKS)

11.
 - a) Outline the stimulus for the release of both insulin and glucagon and analyze the functions of these two hormones. (10 marks)
 - b) Describe functions of main thyroid hormones. (10 marks)
12. Explore nutrient metabolism in mammals under the following headings:
 - a. Basic protein and amino acid metabolism (10 marks)
 - b. Basic lipid metabolism (10 marks)
13. Evaluate the functions of different parts of the eye and ear in mammals. (20 marks)
14. Describe the visible clinical signs in mammals suffering from malfunction of digestive system, nervous system, respiratory system and reproductive system. (20 marks)