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Reg.No : .....

Name : .....

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP (HONOURS) REGULAR EXAMINATION MARCH 2025**  
**SECOND SEMESTER**

**Discipline Specific Core Course (DSC) - MG2DSCBCH100 - ESSENTIALS**  
**OF BIOCHEMISTRY : VITAMINS, HORMONES, ENZYMES AND**  
**NEUROTRANSMITTERS**  
(2024 ADMISSION ONWARDS)

**Duration: 1.5 Hours**

**Maximum Marks: 50**

***Remember(K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I)***  
***and Appreciation(Ap)***

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

**Part A**

Multiple Choice Questions

Answer all questions

Each question carries **1** marks

1. Name the vitamin that play an important role in wound repair, protects body against stress, increases phagocytic action of leucocytes. [K] / [CO1]  
a). Vitamin D    b). Vitamin A    c). Vitamin B    d). Vitamin C
2. Which fat soluble vitamin has antioxidant function? [U] / [CO1]  
a). Vitamin A    b). Vitamin E  
c). Vitamin K    d). Vitamin D
3. The neuropeptide that is linked to the regulation of blood pressure and water balance in the body. [K] / [CO4]  
a). Vasopressin    b). Endorphins    c). Oxytocin    d). Neuropeptide Y
4. Choose the enzyme which contains a protein part and a cation. [U] / [CO5]  
a). Pepsin    b). Trypsin

- c). Carbonic anhydrase                      d). Urease
5. Which class of enzymes catalyzes oxidation-reduction reactions?                      [K] / [CO5]
- a). Oxidoreductases                      b). Transferases
- c). Hydrolases                      d). Lyases

[1x5 = 5]

### Part B

Fill In The Blank Questions

Answer all questions

Each question carries 2 marks

6. A person with a bleeding disorder due to a deficiency of clotting factors is likely deficient in \_\_\_\_\_ .                      [U] / [CO1]
7. \_\_\_\_\_ are non protein molecules that bind to enzymes and assist in catalyzing biochemical reactions.                      [K] / [CO1]
8. Catecholamines are ----- and-----                      [K] / [CO4]
9. The pancreas produces two hormones namely ----- & ---- which regulates blood glucose .                      [K] / [CO3]
10. The Michaelis - Menten equation is used to describe the relationship between the .....and substrate concentration                      [K] / [CO5]

[2x5 = 10]

### Part C

Short Answer Questions

Answer any 5 questions

Each question carries 3 marks

11. Explain the letter-based nomenclature system of vitamins with examples.                      [K] / [CO1]
12. Discuss the conditions occur due to the deficiency of hypothalamus?                      [U] / [CO3]
13. Describe the role of G-protein-coupled receptors (GPCRs) in peptide hormone signaling.                      [K] / [CO3]
14. Explain classification of neurotransmitter based on their function.                      [U] / [CO4]
15. Why do enzymes exhibit geometrical specificity?                      [U] / [CO5]
16. Draw the double reciprocal plot and also write the LB equation.                      [A] / [CO5]

17. What is the significance of enzyme specificity in diagnostic and research tools? [E] / [CO5]

[3x5 = 15]

### Part D

Short Essay Questions

Answer any 4 questions

Each question carries 5 marks

18. Write about vitamin B9 deficiency in detail. [U] / [CO1]

19. Describe the process of intracellular signaling involved in steroid hormone action. [K] / [CO3]

20. Explain the concept of target glands and describe how they are involved in the endocrine system's regulation of body functions. Provide an example of how a target gland responds to hormonal signals. [U] / [CO2]

21. What is  $K_m$ ? Evaluate the Michaelis Menton equation when  $[S]$  equals  $K_m$ . [U] / [CO5]

22. Explain what is the relationship between enzyme concentration and rate of the reaction [U] / [CO5]

23. Summarize the effect of pH and temperature using an illustrated curve [U] / [CO5]

[5x4 = 20]