B.Sc. BIOTECHNOLOGY
SECOND SEMESTER
BIOCHEMISTRY-II
BBT – 203

(Use separate answer scripts for Objective & Descriptive)

Duration: 3 hrs. **Full Marks: 70**

(PART A : Objective)

Time: 20 min. Marks: 20

Choose the correct answer from the following: 1×20=20

1. Fruit ripening is stimulated by:
   a) Gibberelin b) Ethylene
   c) Cytokinin d) Adscisic acid

2. Glucocorticoids are secreted by:
   a) Thyroid b) Adrenal cortex
   c) Adrenal medulla d) Liver

3. Female menstrual cycle is regulated by:
   a) Estrogen b) Androgen
   c) Progesterone d) All of these

4. Xerophthalmia occurs in individuals with deficiency of:
   a) Vitamin K b) Vitamin D
   c) Vitamin C d) Vitamin A

5. Urea cycle takes place in:
   a) Liver b) Kidney
   c) Stomach d) Intestine

6. Co-enzyme of vitamin B_6 is:
   a) NADH b) FADH
   c) PLP d) CoA

7. Transaminase uses co-enzyme:
   a) TPP b) PLP
   c) co-enzyme A d) FAD

8. Pellagra is deficiency symptom of:
   a) Vitamin B2 b) Vitamin B3
   c) Vitamin B5 d) Vitamin B9

9. Thick filament is made up of:
   a) Myosin molecule b) Actin molecule
   c) Troponin d) None of these

10. Neurotransmitters are synthesised by:
    a) Andodrine gland b) Transmitter vesicle
    c) Brain d) None of these

11. Collagen is the cementing material that glues the body's cells together. Which vitamin is required for collagen synthesis?
    a) Vitamin A b) Vitamin D
    c) Vitamin C d) Vitamin K

12. Second messengers are triggered as a response to:
    a) Steroid hormones b) Anabolic steroids
    c) Peptide hormones d) All of the above

13. Electrical signals in the dendrites and cell body of a neuron are called:
    a) Threshold potentials b) Graded potentials
    c) Neurotransmitters d) Action potentials

14. Which of the following a gaseous hormone?
    a) Auxin b) Cytokinin
    c) Gibberllins d) Ethylene

15. Fat soluble vitamins include:
    a) A, D, C, F b) A, D, E, K
    c) C, B, K, E d) B, A, D, K

16. The process of conversion of soil NO_3^- to N_2 is called:
    a) Nitrification b) Denitrification
    c) Ammonification d) Nitrogen fixation

17. The nitrogen atoms of urea produced in the urea cycle are derived from:
    a) Nitrate b) Ammonia and aspartic acid
    c) Nitrite d) Ammonia

18. Vitamins function as_____ to release energy from the energy nutrients such as carbohydrates, fats and proteins.
    a) Precursors b) Antioxidants
    c) Coenzymes d) Modifiers

19. The contractile protein of skeletal muscle involving ATPase activity is:
    a) Actin b) Myosin
    c) Troponin d) Tropomyosin

20. Vitamin B_{12} deficiency caused by lack of intrinsic factor is called:
    a) Pernicious anemia b) Poor circulation of the red blood cells
    c) Beri beri d) Pellagra

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(PART B : Descriptive)

Time: 2 hrs. 40 min. **Marks: 50**

(Answer question no. 1 & any four (4) from the rest)

1. What is the function of neurotransmitters in human body? Explain briefly how thin and thick filaments slide along each other. (3+7=10)

2. Explain nitrogen cycle. What is the importance of leghemoglobin in nitrogen fixation? (7+3=10)

3. What are hormones? Write briefly about plant hormones. (2+8=10)

4. What is vitamin? Give the functions and deficiency symptoms of vitamin B_3. Name the co-enzyme derived from vitamin B_1, B_2, B_5 and B_6. (1+5+4=10)

5. Describe transamination with mechanism. Explain how urea is synthesized inside human body. (4+6=10)

6. What are ketogenic and glucogenic amino acids? Write short notes on Lesch-Nyhan and Gout. (5+5=10)

7. a) Write a note on the sources of vitamins for human health. (5)

b) Write any three practical applications for each of abscissic acid and gibberellins. (5)

8. a) Distinguish between the location of receptors associated with the cell for protein, peptide, and steroid hormones. Which are water soluble and lipid soluble? How does this affect the location of hormone receptors? (5)

b) What is the general mechanism of neurotransmitter action? (5)

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