

**THIRD SEMESTER B.Sc. DEGREE EXAMINATION
NOVEMBER 2012**

(CCSS)

Biotechnology

BT 3B 01 – BIOCHEMISTRY

Time : Three Hours

Maximum : 30 **Weightage**

I. Objective Type Questions. Answer all *twelve* questions

A. 1. Which of the following statements regarding **Vit A** is true?

- (a) It is not an essential vitamin . (b) It is related to **tocopherol**.
(c) It is a component of **rhodopsin**. (d) It is also known as **opsin**.

2. **Panthenic** acid is a constituent of the coenzyme involved in :

- (a) **Decarboxylation**. (b) Acetylation.
(c) Dehydrogenation. (d) Reduction.

3. In adults a severe deficiency of **Vit D** causes :

- (a) Night Blindness. (b) Osteomalacia.
(c) Rickets. (d) Osteogenesis imperfect.

4. **Panthenic** acid is important for which of the following steps or pathways ?

- (a) **Glycolysis**. (b) Fatty acid biosynthesis.
(c) **Gluconeogenesis**. (d) **Pyruvate carboxylase**.

5. Which of the following compounds serves as a link between the citric acid cycle and the urea cycle?

- (a) **Malate**. (b) Citrate.
(c) **Isocitrate**. (d) Fumarate.

6. Which of the following occur in non-shivering **thermogenesis**?

- (a) Glucose is oxidized to lactate. (b) Fatty acids uncouple **phosphorylation**.
(c) Ethanol is formed. (d) ATP is burned for heat production.

Turn over

B. State whether True or False :

7. **Porphyria** is a clinical condition associated with the malabsorption of iron.
8. Vitamin K is required for the liver synthesis of **prothrombin**.
9. **Flavoprotein** receive electron from **cytochrome P450** in liver mitochondria.
10. The reaction glucose to glucose-6-phosphate generates ATP.
11. **Glyceraldehyde-3-phosphate dehydrogenase** catalyses high energy **phosphorylation** of substrates during **glycolysis**.
12. **Methionine** is a precursor for **cysteine**.

(12 x 3 = 36 weightage)

II. Short Answer Type Questions. (Answer all nine questions) :

13. What are **bufferes**? What is buffering action?
14. Write a note on **cytochromes**.
15. What are **uncouplers**? Give examples.
16. Give the chemical structure of the tyrosine and **tryptophan**.
17. What are the characteristics of the peptide bond?
18. What are structural proteins?
19. Explain-Lock and key hypothesis.
20. Clinical importance of **LDH**.
21. Physiological functions of Vitamin C.

(9 x 1 = 9 weightage)

III. Short Essay or Paragraph questions. (Answer any five from seven) :

22. Give the principle of **PAGE** electrophoresis and what is the contribution of **SDS** in PAGE?
23. Write briefly on the functions of insulin.
24. List the deficiency disorders of the fat and water soluble vitamins.
25. With the chemical structure, elaborate on the functions of lecithin.
26. What are the different interactions that are observed in protein secondary structures?
27. What are the functions of the **TCA** cycle?
28. Explain essential amino acids.

(5 x 2 = 10 weightage)

IV. Essay Questions. (Answer any two from three) :

29. Outline the **β -oxidation** of a fatty acids with the enzymes, coenzymes and intermediates.
30. Outline the **glycolytic** pathway with the enzymes, coenzymes and intermediates.
31. What are hormones? Give an overview of **phytohormones**.

(2 x 4 = 8 weightage)