

[60]

SARDAR PATEL UNIVERSITY

Bachelor of Science (Semester 5) Examination –October 2025

BIOCHEMISTRY US05CBCH23: Human Metabolism

Date: 7/10/2025(Friday)

Time: 10:00 AM to 01:00 PM

Total:70 Marks

**NOTE:**

1. Figure to the right indicate full marks of the questions.
2. Use of scientific calculator is allowed during the examination.
3. Make suitable assumptions and draw neat figures wherever required.

Q-1 Multiple Choice Questions

[10]

1. _____ of the followings can act as a precursor for the synthesis of glucose through gluconeogenesis?
A. Pyruvate
B. Ketone bodies
C. Amino acids
D. All of the above
2. In TCA cycle, citrate is produced from the combination is acetyl CoA and _____.
A. Succinate
B. Malate
C. Oxaloacetate
D. None of the above
3. ~~Which~~ of the following ~~cannot~~ act as a precursor for the synthesis of glucose through gluconeogenesis?
A. Pyruvate
B. Amino acids
C. ~~Aceto acetate~~
D. ~~Vitamin A~~
4. Which of the following hormone lowers the blood glucose concentration?
A. Glucagon
B. Insulin
C. Thyroid Hormone
D. Growth Hormone
5. Which of the following protein requires in Glycogen synthesis?
A. Glycoprotein
B. Proteoglycan
C. Glucoprotein
D. Glycogenin
6. What is the result of accumulation of more acetyl-CoA in liver mitochondria?
A It will be converted to glucose.
B It will synthesize ketone bodies.
C It will be converted to oxaloacetate.
D It will be utilized as energy source.
7. During Beta-oxidation of fatty acid, how many carbons are removed from fatty acyl CoA during one turn?
A. 2
B. 3
C. 4
D. 16
8. The example of good cholesterol is
A. HDL
B. LDL
C. VLDL
D. Chylomicrons



[PTO]

- 9 What is the precursor molecule for the fatty acid synthesis?
 A. Propionyl CoA B. Acetoacetyl CoA
 C. Acetyl-CoA D. Succinyl CoA
- 10 In Gaucher disease, which organ is spared from infiltration of Gaucher cells
 A. Liver B. Bone marrow
 C. Spleen D. Brain

Q-2 Short Answer Questions (Attempt TEN out of TWELVE)

[20]

1. Define Anabolism and catabolism?
2. How pentose phosphate pathway will be significant?
3. What are feeder pathways for glycolysis?
4. Define glycosuria and Fructosuria
5. Give two differences between glycogenolysis and glycogenesis
6. What is glycogenesis? Write the names of enzymes used for it.
7. Give example of ketone bodies.
8. What is Triacylglycerol and glycolipids?
9. Name the enzymes involved digestion of lipids.
10. Name the deficiency enzyme in Niemann Pick disease?
11. What is the significance of cholesterol?
12. Give two rich food sources of cholesterol



Q-3 Give descriptive answers for the following questions.

[10]

- (A) Write a note on glycolysis.
 (B) Explain HMP shunt.

OR

- (A) Give an account on Kreb cycle.
 (B) Discuss gluconeogenesis for the synthesis of glucose.

Q-4 Give an account on Glycogenolysis.

[10]

OR

- Q-4** (A) Discuss various types of glycogen storage diseases.
 (B) Write a short note on Insulin and Glucagon

[05]

[05]

Q-5 Give descriptive answers for the following questions.

[10]

- (A) Discuss the Hormone regulation of lipid metabolism.

OR

- (A) Write a note on Cholesterol.
 (B) Write a note on Biosynthesis of fatty acid.

Q-6 Give descriptive answers for the following questions.

[10]

- (A) Give a detailed note on Gaucher disease.
 (B) Discuss the Tay-sach's disease in detail.

OR

- (A) Explain the Hypercholesterameia
 (B) Explain Refsum disease?

—X—