Nutrition Science
Macronutrients and Metabolism Quiz

Instructions:

- Answer all questions.
- For Questions 1–5, choose the best option.
- For Questions 6–8, mark True or False.
- For Questions 9–10, write detailed answers with scientific explanations.

1. Which macronutrient provides the most energy per gram?

(A) Carbohydrates (4 kcal/g)

(B) Proteins (4 kcal/g)

(C) Fats (9 kcal/g)

(D) Alcohol (7 kcal/g)

2. The glycemic index measures:

(A) Total sugar content of a food

(B) How quickly a food raises blood glucose levels

(C) Fiber content relative to carbohydrates

(D) Insulin content of foods

3. Essential amino acids are those that:

(A) Are needed in the largest quantities

(B) Cannot be synthesized by the body and must be obtained from diet

(C) Are found only in animal products

(D) Have the highest caloric value

4. Which type of fatty acid is primarily associated with increased cardiovascular risk?

(A) Monounsaturated fatty acids

(B) Polyunsaturated fatty acids

(C) Trans fatty acids

(D) Omega-3 fatty acids

5. The primary role of B vitamins in metabolism is as:

(A) Energy sources

(B) Structural components of cells

(C) Coenzymes in metabolic reactions

(D) Antioxidants

6. Dietary fiber is completely digested and absorbed in the small intestine. (True/False)

7. Complete proteins contain all essential amino acids in adequate amounts. (True/False)

8. BMR (Basal Metabolic Rate) accounts for the majority of daily energy expenditure in sedentary individuals. (True/False)

9. Explain the processes of glycolysis, the citric acid cycle, and oxidative phosphorylation. How do these pathways work together to extract energy from glucose?

10. Discuss the differences between saturated, unsaturated, and trans fats. Explain their chemical structures, food sources, and effects on health, particularly cardiovascular health.