THE SCIENCE OF NUTRITION

This exam assesses students’ knowledge of basic nutritional science. This exam assesses students’ understanding of the function of the chemical components of foods, including nutrients, vitamins, minerals, and water and their role in human metabolism. The exam also includes food selection, diet, and health. (3 credits)

- **Test format:** 100 multiple-choice questions (1 point each).
- **Passing score:** 65% (65/100 points). Your grade will be reported as CR (credit) or NC (no credit).
- **Time limit:** 2 hours.

OUTCOMES ASSESSED ON THE TEST

- Describe how to properly design individualized eating plans by utilizing diet planning principles, the USDA MyPlate food guidance system, the RDA, and other food guide plans that incorporate personal and ethnic food preferences.

- Describe protein form and function, identify essential amino acids, explain the health effects of protein intake, describe protein-energy malnutrition, and explain how vegetarians and nonvegetarians obtain adequate protein.

- Explain the steps involved in metabolism and the way energy is derived from carbohydrate, fat, and protein, including the consequences of consuming too much and obtaining too little energy.

- Explain the effects of other types of dietary elements on metabolism including vitamins, water-electrolyte balance, and mineral supplementation.

- Apply nutritional material to life conditions including physical activity, pregnancy, disease, and aging.

TOPICS ON THE TEST AND THEIR APPROXIMATE DISTRIBUTION

The table below indicates the main topics covered by this exam and the approximate percentage of the exam devoted to each main topic. Under the main topic heading is a list of related— but more
specific–topics. It is important to review these topics to determine how much prior knowledge you have and/or how much additional study is necessary.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Percentage</th>
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<tr>
<td><strong>Nutrition Basics</strong></td>
<td>20%</td>
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<td>● Diet planning principles; the Food Label, USDA MyPlate and food guidance systems</td>
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<td>● GI system and digestive problems</td>
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<td><strong>The Macronutrients: Carbohydrates, Fat, and Protein</strong></td>
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<td>● Simple and complex carbohydrates/fiber</td>
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<td>● Fats and the impact each has on health</td>
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<td>● Proteins-Adequate Intake/Vegetarianism</td>
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<td><strong>Metabolism</strong></td>
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<td>● Steps involved in metabolism</td>
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<td>● How energy is derived from carbohydrate, fat and protein</td>
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<td>● Consequences of consuming too much or too little energy</td>
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<td>● Weight management</td>
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<td><strong>Water, Vitamins, and Minerals</strong></td>
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<td>● Water: the essential nutrient-its function in health and recommendations for adequate hydration</td>
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<td>● The Water and Fat Soluble Vitamins/Antioxidants</td>
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<td>● The Minerals: Major and Trace Minerals</td>
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<td><strong>Nutrition Applies to Various Life Conditions</strong></td>
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<td>● Nutrition applied to physical activity and sports nutrition</td>
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<td>● Life cycle: fetal development, infancy, childhood, adolescence, adulthood and aging</td>
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<td>● Disease and prevention</td>
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<td>● Consumer concerns and food safety</td>
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**STUDY MATERIALS**

Below is a list of recommended study materials to help prepare you for your exam. Most textbooks in this subject include the topics listed above and will prepare you for the test. If you choose another text, be sure to compare its table of contents against the topic list to make sure all topics are covered.
In addition to the materials above, you may wish to review the resources below. We encourage you to explore these resources to make sure that you are familiar with multiple perspectives on the topics above. All of these resources are openly licensed, which means that they are free to be revised, remixed, reused, redistributed, and retained, so long as their unique terms are followed. You can learn more about open licensing here.

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<td>‘Nutrition’ in Boundless Anatomy and Physiology (n.d.). Portland, OR: Lumen Learning.</td>
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**SAMPLE QUESTIONS**

The questions below are designed to help you study for your TECEP. Answering these questions does not guarantee a passing score on your exam.

Please note that the questions below will not appear on your exam.

1. What is one important function of fat in the body?
   a. To provide precursors for glucose synthesis
   b. To build muscle tissue
   c. To regulate blood glucose
   d. To protect vital organs against shock
2. Recommended Dietary Allowances may be used to
   a. measure nutrient balance of population groups
   b. assess dietary nutrient adequacy for individuals
   c. treat people with diet-related illnesses
   d. calculate exact food requirements for most individuals

3. What is the function of bile?
   a. It emulsifies fats.
   b. It initiates digestion of protein.
   c. It enhances absorption of complex carbohydrates.
   d. It protects stomach and small intestine from hydrochloric acid.

4. To assist the process of digestion and absorption, it is usually best to
   a. eat before 6 PM daily
   b. combine different food types to enhance the absorption process
   c. avoid eating meat and fruit at the same meal to prevent competition
   d. take enzyme supplements periodically so the system can rejuvenate

5. __________ is an example of an added sugar.
   a. Raw sugar
   b. Eicosanoid
   c. Glycerol
   d. Levulose

6. Vitamin C serves as a(n)
   a. coenzyme
   b. antagonist
   c. antioxidant
   d. intrinsic factor

7. Which of the following nutrients show a dramatic increase in absorption during pregnancy?
   a. Salt and sugar
   b. Protein and fat
   c. Calcium and iron
   d. Thiamin and ascorbic acid
8. What is one of the most significant nutritional concerns for older adults?
   a. Depression caused by the death of a spouse, sibling, or friend
   b. Dehydration caused by lack of thirst
   c. Insufficient intake of carbohydrates to maintain adequate weight
   d. Excess intake of high-dose multivitamins

9. When there is insufficient glucose consumed to support metabolism, fat fragments combine to form
   a. ketone bodies
   b. glycerol
   c. chylomicrons
   d. triglycerides

10. Who is the most appropriate person to consult regarding nutritional information?
    a. Chiropractor
    b. Medical doctor
    c. Health food store owner
    d. Registered dietitian

11. Glycogen is mainly stored in
    a. muscle and liver tissue
    b. pancreas and kidney tissue
    c. stomach and intestine tissue
    d. brain and red blood cell tissue

12. In what part of the body are chylomicrons produced?
    a. Liver
    b. Small intestine
    c. Pancreas
    d. Gall bladder

13. A high-protein diet increases the risk of
    a. Parkinson’s disease
    b. osteoporosis
    c. multiple sclerosis
    d. type I diabetes
14. The accumulation of body fat tissue surrounding the ________ contributes to chronic disease.
   a. chest  
   b. face  
   c. abdomen  
   d. hips

15. What is the primary excretory route for the water-soluble vitamins?
   a. Bile  
   b. Kidney  
   c. Intestine  
   d. Perspiration

16. In what population group are the effects of vitamin A deficiency most severe?
   a. Newborns  
   b. Adolescents  
   c. Adults  
   d. Elderly

17. Which of the following conditions is an enlargement of the thyroid gland caused by an iodine deficiency?
   a. Goiter  
   b. Strictures  
   c. Hypokalaemia  
   d. Psoriasis

18. Which of the following is a characteristic of the trace minerals?
   a. The amounts found in foods are not predictable.  
   b. Dermatitis is a sign of deficiency common to many trace minerals.  
   c. Deficiencies are more difficult to recognize in children than in adults.  
   d. The average person has approximately 100 grams of trace minerals in their body.

19. The sequence of amino acids that make up a protein molecule is specified by
   a. diet  
   b. age  
   c. sex  
   d. heredity
20. Which of the following foods requires the LEAST energy to produce?

   a. Fruit
   b. Vegetables
   c. Grains
   d. Meat

21. Heavy use of soy products as a substitute for meat can inhibit absorption of

   a. calcium
   b. folate
   c. vitamin D
   d. iron

22. The increasing independence that comes with adolescence can cause nutritional problems, because many adolescents

   a. have decreased appetites after their major growth spurt has taken place
   b. take medications that diminish the nutritional value of food
   c. spend their food money on illegal drugs
   d. are uninterested in or unaware of the importance of good nutrition

23. Why is exercise an important part of the treatment of diabetes?

   a. It prevents the heart problems associated with diabetes.
   b. It helps prevent amputations because exercised legs are stimulated to release stored glycogen.
   c. It stimulates muscles to take up 10-20 times more glucose than unexercised muscles.
   d. It burns excess kcalories and reduces body fat associated with diabetes onset.

24. Which of the following vitamins is most likely to be missing from a vegan diet?

   a. A
   b. B12
   c. C
   d. E
# ANSWERS TO SAMPLE QUESTIONS

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