

EXAM I

Form A

Multiple Choice

1. Which organelle participates in the chemical processes that transfers energy from the chemical bonds of nutrient molecules to newly created ATP molecules?
 - a. Mitochondria
 - b. Ribosomes
 - c. Nucleus
 - d. Lysosome
 - e. Cell Membrane
2. The body's main source of energy is _____ and should be the major part of total daily food intake.
 - a. Fats
 - b. Proteins
 - c. Carbohydrates
 - d. Fibers
 - e. Vitamins
3. To be considered an essential nutrient, a substance must have all these characteristics except
 - a. It has a specific biological function.
 - b. Removal from the diet leads to a decline in human biological function.
 - c. Return of the omitted substance to the diet if done before permanent damage occurs, restores normal biological function impaired by its absence.
 - d. It is made in abundance by the body.
 - e. None of the above.
4. Nutrient dense refers to foods that
 - a. Carry the USDA nutrition labeling.
 - b. Are higher in weight relative to volume.
 - c. Provide more nutrients relative to calories.
 - d. Contain a mixture of carbohydrate, fat, and protein.
 - e. Have no calories.
5. Several ways we use energy include
 - a. Basal metabolism.
 - b. Thermic effect of food.
 - c. Physical activity.
 - d. Non-exercise activity thermogenesis.
 - e. All the above.
6. Fiber is primarily made of
 - a. Fat.
 - b. Protein.
 - c. Carbohydrates.
 - d. Calories.
 - e. Energy.
7. An antioxidant, such as vitamin C, can donate electrons to higher reactive compounds. The loss of electrons is
 - a. Reduction.
 - b. Oxidation.
 - c. Dehydration.
 - d. Fermentation.
 - e. Metabolism.
8. Which of the following are true about enzymes?
 - a. Enzymes are biological catalysts.
 - b. Enzymes lower the activation energy for a reaction.
 - c. Enzymes are very specific in their action.
 - d. Enzymes increase the rate of a reaction.
 - e. All the above

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9. An investigator plans to test a hypothesis. She designs and performs experiments to test that hypothesis. Her studies can be considered
- Cohort studies.
 - Prospective studies.
 - Retrospective studies.
 - Case-control studies.
 - Observational studies.
10. When going from an ordered state to a disordered state,
- Heat is consumed.
 - Energy is lost.
 - Entropy is zero.
 - Energy is released.
 - Entropy decreases.
11. What are the functions of water in our body?
- Modulates body temperature
 - Works as a solvent
 - Transport fat-soluble substance
 - a and b
 - All the above
12. Which of the following statements is true regarding body fluid?
- More than half of the body weight comes from the weight of water.
 - 1/3 of the fluid is intracellular, which is located within the cell.
 - 2/3 of the fluid is extracellular, which is located between cells, or inside blood vessels and lymph.
 - The amount of extracellular fluid influences the structure of a cell (cell bursts or collapses).
 - The amount of body fluid does not affect the blood pressure.
13. What is the caloric equivalent of heat?
- 1 kcal increases the temperature of 1g of water by 1 degree Celsius
 - 1 kcal increases the temperature of 1 kg of water by 1 degree Celsius
 - 1 cal increases the temperature of 1 kg of water by 1 degree Celsius
 - 1000 kcal increases the temperature of 1 kg of water by 1 degree Celsius
 - 10000 cal increases the temperature of 1 g of water by 1 degree Celsius
14. What is a problem with Bomb Calorimetry?
- It measures the increase in temperature of the water in Fahrenheit.
 - It burns food much quicker than our body.
 - It does not tell us how much heat is generated.
 - It does not take into account how efficiently our bodies use food.
 - It measures heat given off from within the chamber and outside the chamber.
15. You are in the jungle and just got bit by a venomous snake. You have an antidote that works on dogs at a specific dose. Because it is an emergency you decide to take the drug. You want to base your dosage on an estimate of your metabolic body size. This means your dose would be based on
- Your weight
 - Your weight to the $\frac{3}{4}$ power.
 - Your weight multiplied by 0.75.
 - Your weight divided by 0.75.
 - None of the above .
16. A technique that measures inspired and expired gas flows, volumes and concentrations of O₂ and CO₂, allowing for measurement of oxygen consumption and carbon dioxide production is called
- Direct calorimetry.
 - Indirect calorimetry.
 - A stable isotopes method.
 - A technique for Oxidation-Reduction determination.
 - A technique for ATP production determination.

Form A

17. In the process of digestion and assimilation, energy is lost from carbohydrates, fats and proteins. For which of these nutrients is the difference between the gross energy and the metabolizable energy the greatest and why?
- Carbohydrate, because your body derives most of its energy from carbohydrates.
 - Fat, because it is very energy efficient to break down fat.
 - Protein, because energy is used to process the nitrogen.
 - Carbohydrate, because it is less calorically dense than fat.
 - Fat, because most of the body's energy comes from fat.
18. Which factor(s) does not result in an increase in the loss of water from the body?
- Illness such as vomit and diarrhea
 - Consumption of alcohol
 - Consumption of a diet that has no salts.
 - Drinking hot tea on a hot day
 - All the above
19. Which of the following statements is true regarding water need?
- The DRI of water is the same for men and women.
 - Loss of 3-5% body weight of water leads to reduction in urine output.
 - Our body has a compensatory mechanism to maintain fluid balance when >20% of body weight is lost.
 - Water can only be lost through urination and sweat in humans.
 - Water need remains the same across age for individuals.
20. Which of the following statements is true about the electrolytes and osmosis?
- Osmosis is the movement of water across the membrane from a region with high concentration of solutes to a region with low concentration of solutes.
 - Electrolytes can travel in and out of a cell freely.
 - The most abundant intracellular electrolyte is potassium.
 - Electrolytes do not carry positive or negative charges but can create electrical signals to activate nerve cells.
 - Body fluid refers only to the water in the body, not including the dissolved electrolytes.
21. The Estimated Average Requirement (EAR) is the average daily intake of a nutrient that maintains adequacy in ___ of a healthy population.
- 2-3%
 - 25%
 - 50%
 - 97-98%
 - 100%
22. The EAR + 2 standard deviations describes which Dietary Reference Intake?
- Recommended Daily Allowance
 - Tolerable Upper Limit
 - Acceptable Macronutrient Distribution Range
 - Recommended Dietary Allowance
23. ___ amino acids that can be converted to glucose if necessary are called
- Glucogenic
 - Ketogenic
 - Trans
 - Both a and b
 - None of the above
24. Which of the following food products is NOT regulated by the FDA?
- Eggs
 - Milk
 - Bottled Water
 - Food additives
 - All the above

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25. Based on the Nutrition Facts label, how many calories come from saturated fat in two servings in this product?
- 9 calories
 - 4 calories
 - 8 calories
 - 18 calories
 - 22 calories
26. Which of the following is NOT a Labeling Law?
- Check amount of cholesterol per serving
 - Check % fat per serving
 - Check amount of potassium per serving
 - Check calories per serving
 - None of the above
27. Essential amino acids
- Are mainly from plant-based food.
 - Are the only amino acids used to synthesize proteins.
 - Can only be obtained from animal-based food.
 - Must be included in the diet.
 - All the above.
28. In a Nutrition Facts label, what is considered a moderate amount of sodium?
- 0-150 mg/s
 - 222 mg/s
 - >300 mg/s
 - <150 mg/s
 - None of the above
29. Nonessential amino acids can be made in the body by the process of ____ if they are not available from the diet.
- Digestion
 - Deamination
 - Transamination
 - Reduction
 - Oxidation.
30. A statistical measure is found that indicates eating organic food is predictive of autism. This is an example of
- Correlation.
 - Association.
 - Falsifiability.
 - a and b.
 - All the above.
31. Which of the following claims is falsifiable?
- Martians exist but they are very shy. If they see you, they hide behind rocks.
 - Frank's power of healing only works on people who truly believe in his power.
 - All swans are white.
 - a and b
 - All the above
32. Which organelle assists in the synthesis of proteins?
- Smooth ER
 - Rough ER
 - Lysosome
 - Mitochondria
 - Nucleus
33. Which of the following is (are) a complete protein?
- Yogurt
 - Nuts
 - Beans
 - a and b
 - a, b and c

Nutrition Facts	
Serving Size 1/2 Cup (66g)	
Servings Per Container 4	
Amount Per Serving	
Calories 60	Calories from Fat 18
% Daily Values*	
Total Fat 2g	3%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 41mg	14%
Sodium 115mg	5%
Total Carbohydrate 14g	5%
Dietary Fiber 5g	20%
Sugars 4g	
Sugar Alcohol 5g	
Protein 6g	12%
Vitamin A 2%	Vitamin C 0%
Calcium 13%	Iron 1%

*Percent Daily Values are based on a 2,000 calorie diet.

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34. John is a 35-year-old accountant who likes to run 1-2 miles with his dog, a couple times a week. He weighs 100 kg and is in good health. How much protein does he need per day?
- 40 grams
 - 60 grams
 - 80 grams
 - 100 grams
 - > 100 grams
35. According to the AMDR, what percent of John's total calories/day should he be getting from protein?
- < 5%
 - 5-10%
 - 10-35%
 - 35-50%
 - 50-65%
36. For which nutrients are vegetarians at risk of deficiency?
- Iron
 - Vitamin B-12
 - Calcium
 - Potassium
 - a, b and c
37. Chemical bonds that link amino acids together are called
- Amino bonds.
 - Peptide bonds.
 - Nitrogen bonds.
 - Acidic bonds.
 - None of the above.
38. Which of the following is/are function(s) of proteins?
- Help speed up metabolic reactions
 - Help protect the body from injury and infection
 - Help keep fluid balance
 - Both b and c
 - All the above
39. Trypsinogen, which after conversion to trypsin breaks proteins into shorter peptides, is made and secreted from the
- Mouth.
 - Stomach.
 - Liver.
 - Pancreas.
 - Small intestine.
40. The amino acid pool of the blood allows for single (free) amino acid availability for processes such as
- Energy production.
 - Synthesis of glucose or ketones.
 - Synthesis of nonprotein molecules that contain nitrogen.
 - a and c.
 - All the above.
41. What is essential to all life processes?
- Fats
 - Proteins
 - Carbohydrates
 - Fiber
 - Water
42. The enzyme-catalyzed reactions allowing organisms to grow, reproduce, maintain their structure, and respond to their environment is called
- Anabolism.
 - Catabolism.
 - Metabolism.
 - Digestion.
 - Ingestion.

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43. The amino group (nitrogen) can form ammonia, which is then converted into urea in the
- Liver.
 - Kidney.
 - Stomach.
 - Small intestine.
 - Large intestine.
44. What are the functions of the gastrointestinal (GI) tract?
- To breakdown food to macromolecules the body can utilize
 - To form a barrier using the lumen to protect against toxins and infection
 - To produce hormones that control hunger and satiety
 - a and b
 - All the above
45. Which of the following statement is FALSE regarding the phases of digestions?
- Cephalic phase is the first phase of digestion that can be triggered by the smell or the sound of foods.
 - Salt channels in the body act as receptors for sodium and create a salty sensation.
 - The breakdown of food only occurs in the intestinal phase of digestion, and not in the gastric phase of digestion.
 - The stomach produces strong acids to destroy most of the bacteria, but some bacteria can still enter the intestinal tract.
 - Pancreatic and intestinal digestive enzymes are involved in the breakdown of the macronutrients.
46. Immediately following a meal, which part of blood circulation is the most nutrient-rich?
- Hepatic portal circulation
 - Lung circulation
 - The blood-brain barrier
 - The blood circulation around adipose tissue (fat)
 - None of the above
47. If more energy is consumed than is used by the body, over time the body will
- Release the extra energy as heat.
 - Increase in weight.
 - Store the extra energy mainly as carbohydrate.
 - Store the extra energy mainly as protein.
 - c and d.
48. Who of the following DO NOT have increased protein needs?
- Olympic athletes
 - Seriously injured patient
 - Infant
 - Pregnant women
 - None of the above
49. Which of the following statements is true about molecules released by the stomach during the gastric phase?
- Gastric lipase helps with the breakdown of carbohydrates.
 - Hydrochloric acid is needed for the activation of pepsin from pepsinogen.
 - Gastrin is the hormone required for the absorption of vitamin B-12.
 - Intrinsic factor stimulates gastric secretion and movement.
 - All the above.
50. _____ neutralizes stomach acid during the intestinal phase.
- Potassium
 - Bile salts
 - CCK
 - Bicarbonate
 - ATP