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Question Paper Code	13178
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**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024**

Seventh Semester

**Computer Science and Engineering**

**20CEOE902 - HUMAN NUTRITION AND HEALTH**

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

**PART - A (MCQ) (20 × 1 = 20 Marks)**

Answer ALL Questions

Marks	K-Level	CO
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| 1. List the recommended Dietary Allowance (RDA) of a nutrient is defined as:<br>(a) The average amount consumed by a group of individuals<br>(b) The minimum amount required for body maintenance<br>(c) The amount that meets the needs of 97% of the population<br>(d) The maximum safe amount of a nutrient | 1 | K1 | CO1 |
| 2. Which of the following is the correct classification of nutrition?<br>(a) Autotrophic and Heterotrophic<br>(b) Herbivorous and Carnivorous<br>(c) Photosynthetic and Non-photosynthetic<br>(d) None of the above  | 1 | K1 | CO1 |
| 3. What is the main function of bile in digestion?<br>(a) To neutralize stomach acid<br>(b) To break down proteins<br>(c) To emulsify fats for absorption<br>(d) To absorb nutrients   | 1 | K1 | CO1 |
| 4. Which enzyme is responsible for the breakdown of carbohydrates in the mouth?<br>(a) Pepsin<br>(b) Amylase<br>(c) Lipase<br>(d) Trypsin  | 1 | K1 | CO2 |
| 5. What is the main function of proteins in the body?<br>(a) To provide energy<br>(b) To act as enzymes, hormones, and structural components<br>(c) To store genetic information<br>(d) To store energy for future use   | 1 | K1 | CO2 |
| 6. Which of the following is a type of unsaturated fat that is beneficial to health?<br>(a) Saturated fats<br>(b) Trans fats<br>(c) Omega-3 fatty acids<br>(d) Cholesterol   | 1 | K1 | CO2 |
| 7. Which mineral is essential for the formation of hemoglobin in red blood cells?<br>(a) Calcium<br>(b) Potassium<br>(c) Iron<br>(d) Magnesium   | 1 | K1 | CO3 |
| 8. Which vitamin is known for its role in collagen synthesis and wound healing?<br>(a) Vitamin A<br>(b) Vitamin B12<br>(c) Vitamin C<br>(d) Vitamin K  | 1 | K1 | CO3 |
| 9. What is the classification of nutrition based on the presence of different types of foods?<br>(a) Simple and complex<br>(b) Balanced and unbalanced<br>(c) Herbivorous, Carnivorous, and Omnivorous<br>(d) Essential and non-essential  | 1 | K1 | CO3 |
| 10. Which of the following nutrients are classified as macronutrients?<br>(a) Vitamins<br>(b) Carbohydrates, Proteins, and Fats<br>(c) Water<br>(d) Minerals   | 1 | K1 | CO4 |
| 11. Which nutrient is primarily responsible for building and repairing body tissues?<br>(a) Carbohydrates<br>(b) Fats<br>(c) Proteins<br>(d) Vitamins  | 1 | K1 | CO4 |
| 12. Which of the following is a major function of carbohydrates in the body?<br>(a) Build and repair tissues<br>(b) Provide energy<br>(c) Regulate body temperature<br>(d) Aid in immune function  | 1 | K1 | CO4 |
| 13. Which of the following is the primary form of energy used by the human body?<br>(a) Heat<br>(b) Carbohydrates<br>(c) Electrical energy<br>(d) Mechanical energy  | 1 | K1 | CO5 |
| 14. What is the energy value of 1 gram of carbohydrate?<br>(a) 2 kcal<br>(b) 4 kcal<br>(c) 6 kcal<br>(d) 9 kcal  | 1 | K1 | CO5 |
| 15. Which macronutrient has the highest energy value per gram?<br>(a) Carbohydrates<br>(b) Fats<br>(c) Proteins<br>(d) Alcohol   | 1 | K1 | CO5 |

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

**13178**

16. The Basal Metabolic Rate (BMR) refers to the amount of energy required for which of the following functions? 1 K1 CO5  
 (a) Digestion of food (b) Physical activity  
 (c) Maintenance of basic bodily functions at rest (d) Growth and development
17. Which of the following is a key characteristic of a balanced diet? 1 K1 CO6  
 (a) High in fats and low in carbohydrates  
 (b) Provides the necessary nutrients in proper proportions  
 (c) Excludes proteins and vitamins  
 (d) Contains only one type of food group
18. A modified diet refers to: 1 K1 CO6  
 (a) A diet designed to prevent diseases  
 (b) A diet that is altered to meet specific health needs  
 (c) A diet based solely on plant foods  
 (d) A diet with increased fat intake
19. Which of the following factors does NOT influence the planning of a balanced diet? 1 K1 CO6  
 (a) Age (b) Physical activity level  
 (c) Individual food preferences (d) The presence of a medical condition
20. Which food group is primarily responsible for providing the body with energy? 1 K1 CO6  
 (a) Proteins (b) Fats (c) Carbohydrates (d) Vitamins

**PART - B (10 × 2 = 20 Marks)**

Answer ALL Questions

21. Differentiate essential and non-essential amino acids. 2 K2 CO1
22. What are the main functions of the small intestine in nutrient absorption? 2 K1 CO1
23. Explain the difference between simple and complex carbohydrates, providing examples. 2 K2 CO2
24. What are the symptoms of vitamin A deficiency? And why is this vitamin important for eye health? 2 K1 CO2
25. Outline the significance of classifying nutrients into macronutrients and micronutrients. 2 K2 CO3
26. Describe how a modified diet can be tailored for individuals with specific health conditions. 2 K2 CO3
27. Classify the different forms of energy used by the human body. 2 K2 CO4
28. List the factors that influence the estimation of energy requirements for humans. 2 K1 CO4
29. List the key components of a balanced diet and explain their functions in the body. 2 K1 CO5
30. Describe how a modified diet can be tailored for individuals with specific health conditions. 2 K2 CO6

**PART - C (6 × 10 = 60 Marks)**

Answer ALL Questions

31. a) Analyze the classification of nutrition, including autotrophic and heterotrophic nutrition. 10 K4 CO1
- OR**
- b) Categorize the importance of the liver, pancreas, and small intestine in nutrient processing and regulation. 10 K4 CO1
32. a) Discuss the structure, functions, and digestion of carbohydrates, proteins, and fats in the human body. 10 K2 CO2
- OR**
- b) Discuss the functions, sources, and deficiencies of essential vitamins and minerals in the human diet. 10 K2 CO2

33. a) Outline the different classifications of nutrition with respect to various aspects such as source, function, and mode of intake. 10 K3 CO3
- OR**
- b) Show the symptoms of deficiencies in water-soluble and fat-soluble vitamins. 10 K3 CO3
34. a) Illustrate the different forms of energy used by the human body and how the energy value of foods is determined. 10 K2 CO4
- OR**
- b) Demonstrate the methods for estimating energy requirements for humans, including Basal Metabolic Rate (BMR), physical activity level (PAL), and the Thermic Effect of Food (TEF). 10 K2 CO4
35. a) Outline the concept of a balanced diet, explaining the functions and sources of macronutrients (carbohydrates, proteins, fats) and micronutrients. 10 K3 CO5
- OR**
- b) Illustrate the process of planning a balanced diet, considering factors such as age, sex, physical activity level, medical conditions, and cultural preferences. 10 K3 CO5
36. a) i) Summarize in details on the energy contribution of macronutrients (carbohydrates, proteins, and fats), including their caloric value per gram 5 K2 CO6
- ii) Explain how a modified diet can be used to address specific health concerns such as diabetes, hypertension, or under nutrition. 5 K2 CO6
- OR**
- b) i) Describe how the factors like age, sex, and activity level and health conditions interact to determine an individual's total energy needs. 5 K2 CO6
- ii) Illustrate the importance of variety, moderation, and portion control in creating a nutritionally adequate diet. 5 K2 CO6