Frequently Asked Questions:

1. Write a note on importance of food.

Ans: Food is a basic necessity and is vital to nourish the body. It is essential right from the womb until the tomb. Food may be defined as anything solid or liquid which when consumed meets the requirements of energy, body building, repair, regulation and protection due to the nutrients present in it. Intake of the right quality and quantity ~~amounts~~ of food can ensure good nutrition and health, which may be evident in our appearance, efficiency and emotional well-being. Different nutrients present in the food are carbohydrates, proteins, fats, vitamins and minerals. Good nutrition through food can help in overall well-being and prevent many diseases.

2. Write a note on physiological functions of food.

Ans: ~~Physiological functions of food include foods that yield energy such as carbohydrates and fats, food that help in body building such as proteins and foods that provide protection such as vitamins and minerals.~~ According to their role at the physiological level in the body, foods are classified as the following:

i) Energy yielding foods

ii) Body building foods

iii) Protective and regulatory foods

iv) Foods that help in maintenance of health

Energy yielding foods: Foods rich in carbohydrates and fats are called energy yielding foods. They provide energy to sustain the involuntary processes essential for continuance of life, to carry out various voluntary activities and to convert food ingested into usable nutrients in the body. The energy needed to carry out these work is obtained from oxidation of food. Cereals, roots, ~~and~~ tubers, dry fruits, oils, butter and ghee are all good sources of energy. Carbohydrates and proteins provide 4Kcal of energy per gram whereas fats and oils provide 9Kcal of energy per gram.

Body building foods: Foods rich in protein are called body building foods. These foods help to maintain life, repair or replace worn out tissues and promote growth. They also supply energy. Milk, meat, eggs and fish are rich in proteins of high biological value. Pulses and nuts are good sources of protein but the proteins are of relatively lower biological value than animal protein.

Protective and Regulatory foods: Foods rich in protein, minerals and vitamins are known as protective and regulatory foods. They are essential for health and regulate activities such as

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maintenance of body temperature, muscle contraction, control of water balance, clotting of blood, removal of waste products from the body, maintaining heartbeat and to improve immunity. Milk, egg, liver, fruits and vegetables are protective foods.

Foods that help in maintenance of health: Food is a source of phytochemicals and antioxidants which help in neutralizing deleterious free-radicals which damage the biological tissues thus, preventing a wide array of degenerative diseases. Food plays an important role in preventing chronic diseases like cancer, cardiovascular diseases and in management of diseases such as hypertension and diabetes. Such foods can be termed as functional foods. Few examples of foods that are rich in phytochemicals and antioxidants are green leafy vegetables, fruits, vegetables and spices.

3. How does food influence psychological well-being?

Ans: Food influences greatly on our psychological well-being. Certain amino acids such as tryptophan, phenylalanine, tyrosine and methionine are precursors of neurotransmitters that influence our psychological well-being such as serotonin, dopamine, noradrenaline and γ-aminobutyric acid. Dietary ~~deficiency of amino acids, carbohydrates and essential fatty acids have~~deficiency of amino acids, carbohydrates and essential fatty acids has been linked to psychological disorders such as depression and anxiety.

4. Write a brief note on different functions of food.

Ans: Functions of food may be classified according to their role~~e in the body~~ as physiological, social and psychological functions.

1. a. Physiological functions of food:

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i) Energy yielding foods

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iv) Foods that help in maintenance of health

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Energy yielding foods: Foods rich in carbohydrates and fats are called energy yielding foods. Carbohydrates and proteins provide 4Kcal of energy per gram whereas fats and oils provide 9Kcal of energy per gram.

Body building foods: Foods rich in protein are called body building foods. These foods help to maintain life, repair or replace worn out tissues and promote growth.

Protective and Regulatory foods: Foods rich in protein, minerals and vitamins are known as protective and regulatory foods. They are essential for health and regulate activities such as maintenance of body temperature, muscle contraction, control of water balance, clotting of blood, removal of waste products from the body, maintaining heartbeat and to improve immunity.

Foods that help in maintenance of health: Food is a source of phytochemicals and antioxidants which help in neutralizing deleterious free-radicals which damage the biological tissues thus, preventing a wide array of degenerative diseases.

1.b Social functions of food:

Food has always been the central part of our social existence. It has been a part of our community, culture and religion. Special foods are distributed as benediction in religious places. Cultural changes are observed in the preparation of food and pattern of diet in different regions of the country. It is a token of expressing gratitude, love, friendship and happiness. Food is the central part of various occasions such as birth, naming ceremony, birthdays, festivals and marriages. It connects our social life and symbolizes social acceptance. Hence, food is an integral part of our social well-being.

1.c Psychological functions of food:

The psychological functions include a sense of security, love and acceptance. Food influences greatly on our psychological well-being by the action of neurotransmitters which is greatly influenced by the dietary nutrients.

5. What are food groups? Write a note on classification of foods under different food groups and the basis for their classification.

Ans: Foods have been classified into different groups depending on their nutritive value and for the ease to plan a diet. They have been grouped as basic four, basic five and basic seven food groups.

Significance of the five-food group system is:

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i. Planning wholesome balanced menus to achieve nutritional adequacy.

ii. Assessing nutritional status, that is, a brief diet history of an individual can disclose inadequacies of food and nutrients from any of the five groups. Let us have a look into the different food groups.

a) The basic seven food groups: In 1943, during World War II, The United States Department of Agriculture (USDA) introduced a nutrition guide promoting the "Basic 7" food groups to help maintain nutritional standards under wartime food rationing. This nutrition guide was used from 1943 until 1956. The Basic 7 food groups were;

1. Green and yellow vegetables which provide carotenoids, ascorbic acid and iron.
2. Oranges, tomatoes, grapefruit, raw cabbage and salad greens which provide ascorbic acid
3. Potatoes and other vegetables; and fruits which provide vitamins, minerals, fiber.
4. Milk and milk products which provide calcium, phosphorus, protein, vitamins
5. Meat, poultry, fish, eggs, dried beans, peas, nuts, or peanut butter which provide protein, phosphorus, iron, B-vitamins
6. Bread, flour, and cereals which provide thiamine, niacin, riboflavin, carbohydrates, fiber
7. Butter and fortified margarine which provide vitamin A and fat.

b) The basic four food groups: The basic four food groups were introduced by the USDA in the year 1956 and were used as a nutrition guide until 1992. The foods were categorized as Vegetables and fruits, Milk, Meat and; Cereals and breads.

c) The basic five food groups: The Indian Council of Medical Research (ICMR) recommended the Basic Five food groups which included Cereals, grains and products, Pulses and legumes, Milk and meat products, Fruits and vegetables and lastly the Fats and sugars.

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6. Write a note on the energy requirements at different stages of life.

Ans: The energy requirements for infants are higher than adults per unit body weight i.e., infants require 108Kcal/kg body weight whereas adults require 40Kcal/kg body weight. Infants aged 0-6 months require 92Kcal/kg/day which decreases to 80Kcal/kg/day during 6-12 months. Children aged 1-9years require 1000-1700Kcal whereas adolescents require 2000-2500Kcal. The energy requirement increases during pregnancy and lactation (additional 300 and 550Kcal) whereas

decreases during geriatrics. Therefore, based on the physiological need, energy requirements at different stages of life differ from one another.

7. Define balanced diet. Mention the dietary guidelines given by the ICMR to ensure balanced diet.

Ans: A balanced diet of an adult should comprise of all the food groups in right proportions to meet the nutrient requirement. The ICMR has provided guidelines and the portions of each food group to be included each day to make the diet complete or balanced.

a) Choosing variety in the daily diet is not only appealing but also provides nutrients and promotes good health because a single food cannot provide all the nutrients.

b) A diet consisting of foods from several food groups provides all the required nutrients in proper amounts.

c) Cereals, millets and pulses are major sources of most nutrients. Cereals and pulses taken in the ratio 7:1 have been reported to be ideal to meet the amino acid requirements.

d) Milk which provides good quality proteins and calcium must be an essential item of the diet, particularly for infants, children and women.

e) Oils and nuts are calorie-rich foods, and are useful for increasing the energy density and quality of food.

f) Inclusion of eggs, flesh foods and fish enhances the quality of diet. However, vegetarians can derive almost all the nutrients from diets consisting of cereals, pulses, vegetables, fruits and milk-based diets.

g) Vegetables and fruits provide protective substances such as vitamins/ minerals/phytonutrients.

h) Diversified diets with a judicious choice from a variety food groups provide the necessary nutrients.

8. Plan a diet using the portions of each of the food groups for an adult.

Ans: A normal adult requires 1900-2300Kcal per day. A balanced diet of an adult should comprise of all the food groups in right proportions to meet the nutrient requirement. For example, twelve portions of 30g of cereals are required to meet the caloric requirements each day for a sedentary adult man. Therefore, the diet should include 360g of cereals. The number of portions of cereals to be provided in the diet for a woman is lesser than for an adult man, i.e., nine portions of 30g of cereals should be included to provide 270g of cereals per day. Similarly,

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60g of pulses, 300mL of milk and milk products, 300g of vegetables, 100g of fruits, 20-25g of fats and oils; and 20-25g of sugars should be included in the diet for a normal adult.

9. Plan a diet using the portions of each of the food groups for a pregnant woman.

Ans: Pregnant women require 2250Kcal of energy per day. The normal diet of pregnant women is similar to that of the diet of a normal adult with certain essential additional portions of food groups. Their diet should comprise of nine portions of 30g of cereals i.e., 270g of cereals, 60g of pulses, 500mL of milk and milk products (additional 2 portions than normal sedentary women), 300g of vegetables with additional half a portion of green leafy vegetables, 200g of fruits, 30g of fats and oils (additional 10g than normal requirements); and 20-25g of sugars should be included in the diet for normal sedentary pregnant women.

10. Write a note on supplementary foods that can be provided for infants after six months of age.

Ans: Foods such as diluted and strained vegetable and fruit juices, milk (120-180mL per day), sprouted and dried cereals gruels, sprouted and dried pulse porridge can be supplemented ~~to~~ during late infancy. Germinated cereal and pulses are rich in enzyme amylase which aids in digestion. Cooked, mashed and strained green leafy vegetables, fruits and vegetable juices; egg yolk and meat soup can be introduced during this age.

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11. Write a note on the modification to be considered in the dietary pattern during geriatrics.

Ans: The energy requirements during old age are lesser than adults due to decreased activity. The ~~requirement of protective foods are~~requirement of protective foods is essential during ~~oldage~~old age to prevent damage from free radicals and oxidative stress related degenerative diseases. The cereal portion of 30g for elderly man is reduced from 12 to 9 and; from 9 to 7 portions of cereals for elderly women. Similarly, 60g of pulses, 300mL of milk and milk products, 300g of vegetables, 20-25g of fats and oils; and 20-25g of sugars should be included in the diet for a normal elderly adult. An additional one portion of fruits i.e., 200g of fruits per day is to be provided in the diet of elderly adults as they are protective foods.

12. What is a food guide? Write a note on food pyramid.

Ans: A food guide is a general plan that provides information on what foods are to be included in the diet regularly. It gives an insight of different food groups and the amounts to be taken to

ensure good nutrition. A balanced diet should provide 50-60% of the calories from complex carbohydrates, 10-15% from protein and 20-30% from visible and invisible fat. In 1972, Sweden's National Board of Health and Welfare developed the idea of "basic foods" and food pyramids. Later in 1992, the USDA introduced the food guide pyramid. It is a valuable tool for planning a health promoting diet. By incorporating the principle of balance, variety and moderation, an individual can still eat their ~~favourite~~favorite foods while following the food guide pyramid. A balanced diet should provide 50-60% of the calories from complex carbohydrates which is the major part of the diet thus making it the base of the food pyramid. Therefore 6-11 servings of cereals are recommended. Protective foods are essential in providing vitamins, minerals and ~~fibre~~fiber. Therefore 3-5 servings of vegetables and 2-4 servings of fruits form the next level of food pyramid. 2-3 servings of pulses, milk and milk products, egg, meat and fish form the next level of food pyramid to meet 10-15% of protein of the total calories. The tip of the food pyramid has sugars, fats and oils which are to be used sparingly since they are energy dense foods. India's National Institute of Nutrition published the Dietary Guidelines for Indians, which includes the Food Pyramid. The pyramid has a base of beans, cereals, milk and legumes to be included adequately, a second layer of vegetables and fruit to be included liberally, a third layer of meat, fish, eggs and oils to be taken moderately, and an apex of fatty, salty and sugary foods to be eaten sparingly. Accompanying the pyramid is a recommendation of regular exercise and physical activity, as well as warnings against drinking alcohol and smoking.

13. Write a note on five food groups. Mention the important nutrients provided by each of the group.

Ans: The Indian Council of Medical Research (ICMR) recommended the Basic Five food groups which included Cereals, grains and products, Pulses and legumes, Milk and meat products, Fruits and vegetables; and Fats and sugars. Cereals, grains and products provide carbohydrates, protein, invisible fat, thiamine, riboflavin, folic acid and ~~fibre~~fiber. Pulses and legumes provide carbohydrates, protein, invisible fat, thiamine, riboflavin, folic acid, iron, calcium, and ~~fibre~~fiber. Milk and meat products provide good quality protein of high biological value, calcium, fat, riboflavin and phosphorus. Fruits and vegetables along with their rich antioxidant and phytochemical profile provide fiber, vitamins such as carotenoids, vitamin C, riboflavin, folic acid and minerals such as iron and calcium. Fats, oils and sugar provide energy, essential fatty acids, iron, vitamin A, D, E and K.

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14. Write a note on the latest nutrition guide published by the USDA.

Ans: in 2011. My Plate is divided into sections of approximately 30% cereals, 40% vegetables, 10% fruits and 20% protein, accompanied by a smaller circle representing dairy, such as a glass of milk or a yogurt cup, providing knowledge on what proportions of food groups to be included in what quantities in order to make a diet balanced in all the nutrients.

15. How does requirement of protein vary at different stages of life?

Ans: The protein requirements vary across the age. During infancy, most of the protein requirements are met by breastfeeding for infants aged 6months and below whereas for infants above 6months part of the protein requirement can be met by introducing weaning foods. Also, the protein needs are higher for infants than adults per unit body weight since their body demands for skeletal and muscle growth. The protein requirement for infants is 2g/kg body weight per day. Energy, protein, calcium and iron deficiencies are the most common nutrient deficiencies observed during schooling. Hence milk, egg, greens, pulses and cereals should be provided sufficiently in the diet. The protein requirement for children aged 1-12years is 1.5-2g per kg body weight. During adolescence, the final accelerated growth spurt occurs with respect to height and weight and the maximum height is attained. These changes demand for nutrients such as energy, protein, minerals and vitamins. The protein requirement for adolescents is 1.5g per kg body weight. The protein requirement for adults is lesser and is 1g/kg body weight, however pregnant and lactating mothers require an additional 15g and 25g of protein respectively. According to the latest Recommended Dietary Allowances for Indians, the protein requirement of pregnant women is 82g per day and lactating women is 70-78g per day. The protein requirement during geriatrics is similar to the requirements of protein for adults.

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