

Food and Nutrition

Contents for Discussion

- Nutrition, nutrition value and food elements
- Carbohydrate and protein
- Lipids
- Vitamins
- Mineral salt
- Deficiency related diseases.

Learning Outcomes : After studying this chapter I will be able to-

- explain the nutrition value of different food;
- describe different means of prevention of malnutrition related diseases;
- select food-stuffs as per the requirement.



Practice

Multiple Choice, Short & Creative Q/A

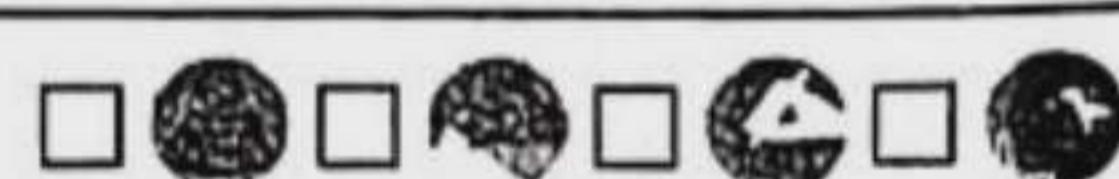
following 100% accurate format for best prep.

Dear learners, the Q/A of this chapter have been divided into exercise, multiple choice, short, creative & exercise-based activities in light of the learning outcomes. Practice the questions well to ensure the best preparation in the exam.

Textual Q/A



Let's learn the textbook Q/A



Short Answer Questions

1. What is kilocalorie?

Ans. The standard international unit of heat is calorie; i.e., heat it measured in calorie. In case of human biology, the heat produced with food intake is expressed in calorie. 1000 calories make a kilocalorie. The intake of kilocalorie depends on different factors like age, gender, body weight, height, occupation, special conditions, etc.

2. What are the symptoms of rickets?

Ans. Symptoms of rickets :

- Leg bones become curved like a bow and the other bones also get curved due to the pressure of the body.
- Bone joints of hands and legs swell up.
- The ribs also turn bent.

3. What are the diseases caused due to the deficiency of vitamin 'A'?

Ans. Diseases caused due to the deficiency of vitamin A are nocturnal blindness, blurred vision, xerophthalmia, skin rash, flu, cough and influenza.

4. What is the necessity of hemoglobin in blood?

Ans. Hemoglobin deficiency causes anemia which again lessens body's defence mechanism. It also causes weakness, nausea, drowsiness, palpitation, dizziness, anoxia, weight loss and breathing problem.

MCQs with Answers

1. Which one produces heat and energy of the body?

- | | |
|---------|-----------------|
| Ⓐ Water | Ⓑ Vitamin |
| Ⓒ Fats | Ⓓ Mineral salts |

2. The deficiency of which vitamin causes rickets in children?

- | | |
|---------------|---------------|
| Ⓐ Vitamin 'A' | Ⓑ Vitamin 'C' |
| Ⓒ Vitamin 'D' | Ⓓ Vitamin 'E' |

Read the following paragraph and answer questions no. 3 and 4:

Sumi does not like sour. Even she does not like green vegetables and tomatoes. Recently she has been experiencing bleeding from her gums.

3. What disease has attacked Sumi?

- | | |
|------------|---------------|
| Ⓐ Scurvy | Ⓑ Rickets |
| Ⓐ Merasmus | Ⓓ Kwashiorkor |

4. What happens to the elderly person due to the deficiency of foods mentioned in the paragraph?

- the bones becomes soft
- the skin itches and wounds
- pain in thoracic cage and ribs appears

Which one is correct?

- | | | | |
|------------|-----------|------------|---------------|
| Ⓐ Ⓐ i & ii | Ⓑ i & iii | Ⓒ ii & iii | Ⓓ i, ii & iii |
|------------|-----------|------------|---------------|

Creative Questions with Answers

Ques. 01 Nowadays Talha doesn't want to eat anything. He has developed somewhat apathy towards food and nausea. His skin is getting rough. The doctor, when contacted, advised him to eat more eggs and drink milk in more quantity.

- a. What is food? 1
- b. What do we understand by nutrition? 2
- c. Why did the doctor advised Talha to eat the above mentioned food? 3
- d. What may happen to Talha afterwards if Talha does not eat the food prescribed by the doctor? 4

Answer to Question No. 01 :

a Food refers to those edible items that we take in order to satisfy our hunger as well as to satisfy the demand for nutrition of each and every cell of the body.

b Nutrition is a bio-chemical process through which complex food stuff is digested, broken up into simple elements in the form of small particles and absorption of all those small particles in millions of cells of human body. The process also includes formation of newer cells, production of heat, prevention of diseases and maintenance of the body.

c The doctor advises Talha to take eggs and milk regularly on the ground that Talha has been suffering from deficiency of protein, calcium and vitamin D. He has got nausea and anoxia. His skin is getting rough. Deficiency of vitamin D obstructs the absorption and accumulation of iron and hampers haemoglobin formation. We know, iron is a digestion-promoting element for want of which complications like nausea and anoxia arise. Calcium maintains smooth functioning of the nervous system and so prevents nausea. Vitamin D plays role in removing roughness of skin.

Above all, he is suffering from merasmus which indicates his symptoms. Doctor advised him to take eggs and plenty of milk because they both contain much protein calcium and vitamin D.

d If Talha does not take the food items suggested by the doctor, he is likely to suffer from a number of health hazards. We know, eggs and milk contain vitamins A, B-Complex, D and K, iron, calcium and fats. They are also protein enriched food. For want of protein, he will suffer from loss of appetite, scaly and weak muscle, hairfall, rough skin, oedema, diarrhoea, swollen stomach and a kind of mental depression. For want of fats, he will suffer from fatigue and metabolic disorder. Deficiency of vitamins A, B-Complex, D and K will cause poor eye-sight, indigestion, problems with nervous system and blood. He will get problems with bones, teeth, ribs and joints for want of vitamin D.

Deficiency of vitamin K will cause problems with blood coagulation. Iron deficiency will cause problems with hemoglobin level in blood and also digestion. Calcium deficiency will cause dysfunctioning of nervous system and also severe disorder of bones, teeth and gums. So, Talha is badly in need of taking eggs and milk regularly.

Ques. 02 Noorjahan Begum is too much concerned about the physical growth of her eight year old son Bakul. To ensure Bakul's physical growth and sound health, she started feeding her son with some especial types of food. But she put different types of food in the food menu of herself, her husband, Bakul's grandfather and grandmother.

- a. What is protein? 1
- b. What do we understand by roughage? 2
- c. How does Noorjahan Begum prepare the food chart for Bakul? Describe. 3
- d. Justify the rationale behind the selection of different foods for the members of Noorjahan Begum's family. 4

Answer to Question No. 02 :

a The heat produced with food intake is expressed in calorie. 1000 calories make a kilocalorie.

b Roughage is the part of cereal grains, fruits and vegetables which is not digested. It passes almost unchanged through the gut. Though it is not a nutrition element, it is essential for a sound health.

c To speak in a single breath, Noorjahan Begum prepares the food chart for Bakul in such a way as ensures a balanced diet. A balanced diet means the intake of all types of food in well-proportional amounts. Bakul is running eight and so he is a primary level student. His mother prepares his food chart based on his age, occupation and physical status so that his daily requirement of energy and overall nutrition is ensured. She also takes season and weather condition into consideration. The well proportional combination includes energy producing food, growth promoting food and disease preventing food.

d The rationale behind the selection of different food items for the members of Noorjahan Begum's family is that not all food items or not the same quantity of a certain food item are suitable for people belonging to different ages, occupations or physical status. A burning example of this rationale is that sugar is a forbidden thing for a man who is suffering from diabetes while a man suffering from hypoglycemia is encouraged to take a certain amount of sugar daily. A man who exerts hard physical labour all day long needs more amount of all types of food in comparison to a man of same age and body weight having an occupation of intellectual labour.



Multiple Choice Q/A



Designed as per topic



Lesson 1 : Nutrition, nutrition value and food elements ➔ Textbook Page 135

1. What type of food does not take part in body formation directly? (Comprehension)
 - (a) Milk
 - (b) Flour
 - (c) Fowl
 - (d) Strawberry
2. How many grams make 6.5 metric ton? (Application) [JB '18]
 - (a) 65000000
 - (b) 6500000
 - (c) 65000
 - (d) 6500

Lesson 2-3 : Carbohydrate and protein ➔ Textbook Page 136

3. What is in the first position in carbohydrate group? (Comprehension)
 - (a) Rice
 - (b) Wheat
 - (c) Pulse
 - (d) Banana
4. What is the carbohydrate-lipid ratio in rice? (Knowledge)
 - (a) 10 : 1.5
 - (b) 10 : 0.75
 - (c) 10 : 3
 - (d) 5 : 3
5. What form of carbohydrate gets into the whole body through blood stream? (Higher ability)
 - (a) Glucose
 - (b) Fructose
 - (c) Galactose
 - (d) All the above
6. What amount of carbohydrate does an adult male weighing 60 kg need everyday? (Application)
 - (a) 266 gm
 - (b) 276 gm
 - (c) 350 gm
 - (d) 466 gm
7. What symptom is in a sense opposite to hypoglycemia? (Comprehension)
 - (a) Diabetes
 - (b) Hypothyroidism
 - (c) Hypermetropia
 - (d) Oedema
8. Excessive perspiration is a symptom of—. (Comprehension)
 - (a) hypothyroidism
 - (b) hypoglycemia
 - (c) psoriasis
 - (d) arthritis
9. What element separates protein from carbohydrate? (Knowledge)
 - (a) Carbon
 - (b) Hydrogen
 - (c) Oxygen
 - (d) Nitrogen
10. What percentage of nitrogen does mutton contain? (Knowledge)
 - (a) 16%
 - (b) 26%
 - (c) 36%
 - (d) 46%
11. How many amino acids does protein contain? (Knowledge)
 - (a) 18
 - (b) 20
 - (c) 22
 - (d) 24
12. What is the best food for satisfying one's need for additional energy? (Knowledge)
 - (a) Starch
 - (b) Protein
 - (c) Fat
 - (d) Minerals

13. Nausea is caused by—.
 - i. low blood sugar level
 - ii. amino acid deficiency
 - iii. rising of bilirubin level

Which one of the following is correct?

- (d) (a) i & ii (b) ii & iii (c) i & iii (d) i, ii & iii

14. The EDQ is 1 in case of—. (Application)

- i. egg
- ii. milk thistle
- iii. breast milk

Which one of the following is correct?

- (c) (a) i & ii (b) ii & iii (c) i & iii (d) i, ii & iii

Read the following passage and answer the question numbers 15 and 16 :

Rafiq likes rice with vegetable and bread with butter. He wants to follow the eating habit of the vegetarians.

15. What Rafiq should add to his menu for protein intake without changing his eating habit? (Comprehension)

- (c) (a) Fowl (b) Beef (c) Lentil (d) Durian

16. If Rafiq continues his present eating habit, he is likely to experience—. (Application)

- i. poor physical growth
- ii. recurrent diarrhoea and oedema
- iii. excessive secretion of bile

Which one of the following is correct?

- (a) (a) i & ii (b) ii & iii (c) i & iii (d) i, ii & iii

17. Which protein has easily quotient I? (Knowledge) [DB '19]

- (a) Fish
- (b) Meat
- (c) Pulse
- (d) Egg

18. Protein is formed by— (Application) [RB '19]

- i. Oxygen and Chlorine
- ii. Carbon and Hydrogen
- iii. Oxygen and Nitrogen

Which one is correct?

- (c) (a) i & ii (b) i & iii (c) ii & iii (d) i, ii & iii

19. Which one is pure food? (Knowledge) [RB '19]

- (a) Milk
- (b) Guava
- (c) Egg
- (d) Sugar

20. How much kilo calories of energy is produced from 25 grams of carbohydrate and 25 grams of protein? (Application) [CigB '19]

- (a) 450
- (b) 325
- (c) 200
- (d) 50

21. Which one is a pure food? (Knowledge) [S.B.-'79]

- (a) Sugar
- (b) Milk
- (c) Egg
- (d) Chira

22. How much energy can get from 10 gm butter? (Application) [BB '19]

- (a) 40 kilocalorie
- (b) 46 kilocalorie
- (c) 64 kilocalorie
- (d) 90 kilocalorie



23. Which is the structure element of our body? (Knowledge) [DjB '19]
 a) Protein b) Carbohydrates
 c) Fat d) Vitamins
24. Weight of Mr 'X' is 65 Kgs. How much amount of carbohydrate he needs daily? (Application) [MB '19]
 a) 14.13 gram b) 260 gram
 c) 299 gram d) 585 gram
25. Which one is easy to digest? (Comprehension) [JB '18]
 a) Potato b) Fish c) Fats d) Apple
26. Which kind of disease occur for the deficiency of carbohydrate? (Knowledge) [CB '18]
 a) Occur diarrhoea b) Bones become weak,
 c) More sweating d) Glands swells up
- With the help of stem above answer the questions No. 27 and 28 :
 Anik likes beriani. That's why Anik's mother cooks beriani. Anik noticed that the smell of beriani spread all around the room. Anik find a similarity of a special process with his textbook. [CtgB '18]
27. How many food components are there in the food liked by Anik? (Knowledge)
 a) 2 b) 3 c) 4 d) 5
28. In this process —. (Comprehension)
 i. carbon dioxide enters into the cell
 ii. water releases from plant body
 iii. carrying oxigen from lymph to cell
 Which one of the following is correct?
 c) a & ii b) ii & iii c) i & iii d) i, ii & iii
29. For the deficiency of the which food elements symptom of hypoglycemia appears? (Comprehension) [SB '18]
 a) Carbohydrates b) Proteins
 c) Lipids d) Vitamins
30. What amount of carbohydrate can a human body store? (Knowledge) [DjB '18]
 a) 60gm–70gm b) 300gm–400gm
 b) 345gm–349gm d) 1200gm–1600gm
31. The mass of Shohid is 75kg. How many carbohydrate is needed for him daily. (Application) [I'lqarunnisa Noon School & College, Dhaka]
 b) @ 300 gm b) 345 gm c) 370 gm d) 375 gm
- Lesson 4-5 : Lipids** → Textbook Page 139
32. What organ in our body absorbs the fatty substances? (Comprehension)
 a) Endocrine gland b) Lymph gland
 b) Spleen d) All the above
33. What organ fatty acids form in? (Knowledge)
 a) Liver b) Spleen
 a) Deudenal d) Intestine
34. Which one of the following is a fatty food? (Comprehension)
 a) Mayonnaise b) Margarine
 d) Cheese d) All the above

35. The joint of Siam's limbs is getting swelled up. Which foods should be taken with other foods? (Application) [RB '18]
 a) Tomato b) Grains
 c) Soyabean oil d) Fish oil
36. For the deficiency of which kinds of foods child suffer oczema and older suffer resist skin diseases? (Knowledge) [CB '18]
 a) Ruti, Muri b) Butter, Chee
 d) Sea fish, iodine d) Cabbage, tomato
- Lesson 6 : Vitamins** → Textbook Page 141
37. Which of the following food items does not contain even a single microgram of vitamin? (Comprehension)
 a) Beef b) Cod fish
 c) Cashew nut d) Cherry
38. Which vitamin is given in drops to a new born baby? (Knowledge)
 a) Vitamin C b) Vitamin K
 b) Vitamin D d) Vitamin E
- Read the following passage and answer the question numbers 39 and 40 :
 Mrs Smith gave birth to a male baby at Kensington Hospital last night. Her doctor fed the baby two drops of a liquid. She also suggested Mrs Smith to lactate the baby.
39. What is the liquid? (Comprehension)
 a) Antibiotic b) Vitamin K
 b) Riboflavin d) Cynocobalamin
40. Natural sources of this liquid —. (Application)
 i. spinach
 ii. rose hips
 iii. lettuce
 Which one of the following is correct?
 c) a & ii b) ii & iii c) i & iii d) i, ii & iii
41. Which vitamin is found in food grains? (Knowledge) [RB '19]
 a) K b) D
 c) E d) C
- Read the following stem and answer the questions No. 42 and 43 :
 There are fish, meat and milk in the daily food chart of Sabu. But there is no vegetables and coloured fruits. [C.B.-'19]
42. With which disease can Sabu be affected because of absent elements in his food chart? (Comprehension)
 a) Scurvy b) Rickets
 b) Cretinism d) Night blindness
43. Joni a student of class two, does not see clearly at after sunset. Which group of food of the following is needed for Joni? (Higher ability) [CtgB '19]
 a) Edible oil, Cabbage
 b) Fish liver oil Palong Shak
 c) Egg yolk, Cauliflower
 d) Soybean oil, Lettuce

44. Which vitamin found in foodgrains? (Knowledge) [CtgB '19]
 (a) K (b) D
 (c) E (d) C
45. Which vitamin helps to increase number of platelets of blood in body? (Application) [MB '19]
 (a) B₁ (b) B₂ (c) B₆ (d) B₁₂
46. Which is Vitamin-A enriched food? (Comprehension) [CtgB '18]
 (a) Papaya (b) Cabbage
 (c) Hog plum (d) Guava
47. Which vitamin does control level of calcium and phosphorous in blood circulation? (Comprehension) [BB '18]
 (a) A (b) C (c) D (d) K
48. What kind of vitamin is available in food grains? (Knowledge) [DjB '18]
 (a) K (b) D (c) E (d) C
49. Which vitamin helps to increase the number platelet of blood? (Knowledge)
 [I'iqarunnesa Noon School & College, Dhaka]
 (a) B₁ (b) B₂ (c) B₆ (d) B₁₂
50. Night blindness disease occurs in deficiency of which vitamin? (Knowledge)
 [I'iqarunnesa Noon School & College, Dhaka]
 (a) C (b) D (c) A (d) E

Lesson 7 : Vitamin 'C' ➤ Textbook Page 143

51. Which vitamin helps in blood coagulation? (Comprehension) [BB '19]
 (a) Vitamin-E (b) Vitamin-K
 (c) Vitamin-D (d) Vitamin-B
52. Which disease occur for not eating lemon like fruits? (Knowledge) [DjB '19]
 (a) Scurvy (b) Rickets
 (c) Merasmus (d) Kwashiorkor
53. Which helps to clot blood? (Knowledge) [DjB '19]
 (a) Vitamin "A" (b) Vitamin "C"
 (c) Vitamin "B" (d) Vitamin "K"

- Give answer from the stem to the question No. 54 and 55 :
 Rahim is a child. His joints of hand and leg have been swollen up. His leg bone has became bow like curved. [DB '18]
54. Deficiency of which vitamin is in Rahim's body? (Knowledge)
 (a) vitamin A (b) vitamin C
 (c) vitamin D (d) vitamin K

55. The preventive measure for Rahim's disease is—. (Application)
 i. children have to be given food which contains vitamin D and calcium.
 ii. children have to be given food which contains iodine
 iii. arrangement of playing in sunlight should be created for the children.

Which one of the following is correct?
 (a) i & ii (b) i & iii (c) ii & iii (d) i, ii & iii

56. Which vitamin controls calcium and phosphorous in the blood circulation system. (Knowledge) [DB '18]
 (a) A (b) C (c) D (d) K
57. Which one is applicable for the vitamins of Hogplum and Amla? (Comprehension) [JB '18]
 (a) Form the structure of the tooth
 (b) Soluble in water
 (c) Absorb Calcium
 (d) Control the amount of phosphorus
58. Which fruit contains vitamin C? (Comprehension) [BB '18]
 (a) Papaya (b) Puishak
 (c) Palongshak (d) Kamranga
- Answer the question No. 59 and 60 by reading the stem :
 Ovi likes to eat the meat of cow, hen and goat. But he does not eat totally pineapple, guava, lemon, amoloki.
- [I'iqarunnesa Noon School & College, Dhaka]
59. What happens in human body in deficiency of food element which Ovi likes? (Knowledge)
 i. Anemia
 ii. Muscle becomes weak and the colour of hair becomes pale
 iii. The gums become soft
- Which one is correct?
 (a) i & ii (b) ii & iii (c) i & iii (d) i, ii & iii
60. Which disease can be occurred for not taking the foods that Ovi dislikes? (Knowledge)
 (a) Anemia (b) Goitre (c) Rickets (d) Scurvy

Lesson 8 : Mineral salt ➤ Textbook Page 146

61. From which disease is there more possibility of thick lips, turning mentally retarded? (Comprehension) [D.B.-'19]
 (a) Rickets (b) Goiter
 (c) Anemia (d) Cretinism
62. The symptom of goiter is— (Application) [SB '19]
 i. voice becomes sharp
 ii. face trouble in swallowing of food
 iii. the gland present in throat becomes big
- Which one is correct?
 (a) i & ii (b) i & iii (c) ii & iii (d) i, ii & iii
63. The symptoms of anemia is— (Comprehension) [BB '19]
 i. loss of weight
 ii. loss of appetite
 iii. weakness
- Which one is correct?
 (a) i & ii (b) i & iii (c) ii & iii (d) i, ii & iii
64. Unusually rapid palpitation is the symptom of which disease? (Comprehension) [M.B.-'19]
 (a) Cretinism (b) Anemia
 (c) Goiter (d) Scurvy

Short Q/A



Designed as per topic

- ## ► Lesson 1 : Nutrition, nutrition value and food elements

Question 1. Mention two functions of food.

Ans. Two functions of food are—

- Ans.** Two functions of food are—

 1. Food fulfils the need of nutrition in the body and supplies energy.
 2. Regulates disease prevention, wellness and physiological functions.

Question 2. What are the nutrition elements? Explain.
Ans. The nutrition elements mean the valuable elements of dietary foods which ensure energy and appropriate growth of the body, enhance merit and

- 70.** For making 1 liter of crop saline, how much rice granule needed? (Knowledge) [CB '18]
 b
 ① 100 gm ② 50 gm
 ③ 40 gm ④ 30 gm

Look at the stem carefully and answer the questions No. 71 and 72 :

Amit feels uncomfortable while eating salt. Nowadays he does not want to eat meat, milk and egg. His mother saw that inflated his thyroid gland and face trouble in swallowing food. [CtgB '18]

71. What disease has attacked Amit? (Application)
 a
 ① Goitre ② Rickets
 ③ Xerophthalmia ④ Merasmus

72. Due to the deficiency of foods mentioned in the stem —. (Knowledge)
 i. Feels weakness
 ii. Feeling discomfort in the throat
 iii. The ribs turn bend

Which one of the following is correct?
 d
 ① i & ii ② i & iii ③ ii & iii ④ i, ii & iii

73. Which does play an important role in curing muscle cramp? (Knowledge) [CtgB '18]
 a
 ① Potassium ② Phosphorus
 ③ Calcium ④ Sodium

74. The main source of mineral salt —. (Comprehension) [DjB '18]
 b
 i. meat and egg
 ii. milk and egg
 iii. spinach and puieshak

Which one of the following is correct?
 d
 ① i & ii ② i & iii ③ ii & iii ④ i, ii & iii

75. Which disease due to iodine deficiency cause to a baby? (Knowledge) [DjB '18]
 b
 ① Anemia ② Goitre
 ③ Cretinism ④ Rickets

76. Which food is needed for the patient of goitre? (Knowledge)

intelligence, prevent diseases, help for quick recovery from illness and make human beings active.

Question 3. How does the nutrient process form new cells?

Ans. Food is digested after eating and complex food ingredients are broken down into simple ingredients suitable to absorption. The body absorbs these simple ingredients. After absorption, the nutrients reach all the cells of the body. As a result, every part of the body regenerates the damaged cells and forms new cells for the growth of the body.

Question 4. What does the nature of food mean?
Ans. To know the nutrition value of any food we need to know the nature of the food. The nature of food means whether it is a mixed food or pure one. In a mixed food more than one nutrition elements are present. For example, egg, milk, hotchpotch, guava, etc. On the other hand, in a pure food only one element is found. For example, sugar, glucose. There are no other elements except carbohydrate in it.

Question 5. Write two differences between mixed food and pure food.

Ans. Two differences between mixed diet and pure diet are-

Mixed food	Pure food
1. Mixed food contains more than one nutrition elements.	1. Pure food contains only one nutrition elements.
2. Example: egg, milk, hotchpotch	2. Example- Sugar, Glucose.

Question 6. What are food elements? Explain.

Ans. Food is composed of several chemical elements. These chemical elements are called food nutrients. There is hardly any food which is made up of only one element. Based on its elements, food is classified into three groups. Namely – Proteins, Carbohydrates and Lipids or fats.

Lesson 2-3 : Carbohydrate and protein

► Textbook Page 136

Question 7. Write two properties of carbohydrate.

Ans. Two properties of carbohydrate are-

1. Carbohydrates are easily digested.
2. All carbohydrates are composed of carbon, hydrogen and oxygen.

Question 8. Mention the classification of carbohydrates.

Ans. Based on chemical composition carbohydrate is divided into three groups. Namely-

1. Monosaccharide or simple carbohydrate.
2. Disaccharide
3. Polysaccharide

Question 9. Why is simple carbohydrate important for nutrition in the human body?

Ans. Only one carbohydrate molecule makes monosaccharide. This is also called simple carbohydrate. For the balanced nutrition of the body simple carbohydrate is very important because human body can only absorb it.

Question 10. Name three carbohydrates.

Ans. The names of three carbohydrates are -1. Glucose, 2. Fructose and 3. Galactose.

Question 11. How are people's demand of carbohydrate determined?

Ans. The demand of carbohydrate depends on age, weight of the body, height and the amount of hard work. An adult male person needs 4.6 gm of carbohydrate per kilogram of his body weight. An adult person of 60 kg needs (60×4.6) gm or 276 gm of carbohydrate a day on an average. Out of the total requirement we should intake 60-70 percent of calorie from carbohydrate.

Question 12. What problems occur due to lack of carbohydrate in the body?

Ans. The intake of carbohydrate, be it more or less, both have negative impact on our body. Due to deficiency of carbohydrate malnutrition occurs. Fall of carbohydrate in blood creates metabolic disorder in the body. If there is a fall of carbohydrate in blood, symptom of hypoglycaemia appears.

Question 13. Write two symptoms of hypoglycaemia.

Ans. Two symptoms of hypoglycaemia are-

1. Excessive sweating
2. Irregular heartbeat, it suddenly increases or decreases.

Question 14. Write two characteristics of proteins.

Ans. Two characteristics of proteins are-

1. Protein is composed of carbon, hydrogen, oxygen and nitrogen.
2. Proteins contain 16% of nitrogen.

Question 15. . What is essential amino acid?

Ans. Some amino acids are very important for the growth, repair and balance of nitrogen of the body. These are called essential amino acids. These amino acids cannot be produced in the body. These are to be collected from food.

Question 16. How many essential amino acids are there and what are they?

Ans. There are nine essential amino acids. Namely-

1. Isoleucine, 2. Methionine, 3, Valine, 4. Lysine, 5. Leucine, 6. Threonine, 7. Phenyl alanine, 8. Histidine, 9. Tryptophan.

Question 17. What are the problems caused by the lack of essential amino acids in the body?

Ans. In food if there is deficiency of essential amino acids, symptoms of various diseases arise. For example-nausea, increase of organic acid in urine, imbalance of nitrogen, etc.

Question 18. . Name two diseases of children related to the deficiency of proteins.

Ans. The two diseases of children related to the deficiency of proteins are-

1. Kwashiorkor and 2. Marasmus



Question 19. Write four symptoms of Kwashiorkor disease.

Ans. The four symptoms of Kwashiorkor disease are-

1. Children lose appetite.
2. The muscle becomes scaly and weak; the skin and hair lose their smoothness and colour.
3. Children suffer from diarrhoea, oedema.
4. Stomach swells up.

► Lesson 4-5 : Lipids

► Textbook Page 139

Question 20. What are lipids? Explain.

Ans. Lipid is a compound made up of fatty acid and glycerol. This is called energy producing ingredients. In lipids carbon, hydrogen and oxygen are found more in quantity. Since carbon has more combustion quality the molecules of lipid substance release more heat energy.

Question 21. Write two characteristics of lipids.

Ans. Two characteristics of lipids are-

1. It is a compound made up of fatty acid and glycerol.
2. In lipids carbon, hydrogen and oxygen are found more in quantity.

Question 22. How many types of fatty acids are there and what are they?

Ans. Lipid is digested into fatty acids and glycerol. Fatty acids are of two types. Namely- 1. Unsaturated fatty acids and 2. Saturated fatty acids.

Question 23. What does unsaturated fatty acid mean?

Ans. Fatty acids which are liquid at normal temperature are called unsaturated fatty acids. For example, oil, soybean etc.

Question 24. What is fat enriched food? Give example.

Ans. The foods that contain more saturated fatty acids are called fat enriched food. For example- meat, cheese, butter, etc.

Question 25. Write two differences between saturated and unsaturated fatty acids.

Ans. The two differences between saturated and unsaturated fatty acids are-

Saturated fatty acids	Unsaturated fatty acids
1. Remains solid at normal temperature.	1. Liquid at normal temperature.
2. Example- Soybean Oil, Sunflower Oil.	2. Example- Butter, Cheese.

Question 26. Why are unsaturated fatty acids beneficial?

Ans. Unsaturated fatty acids are one of the two types of fatty acids. The food that contains more unsaturated fatty acids is more useful. Because such fatty acids can improve blood cholesterol levels and reduce inflammation and even help reduce the risk of heart disease. Because of this, unsaturated fatty acids are called beneficial.

Question 27. Write two symptoms of fatty substance deficiency.

Ans. The two symptoms of fatty substance deficiency are-

1. Skin will get dry and rough that will ruin the beauty of the body.
2. Children suffer from eczema due to the deficiency of essential fatty acid.

Question 28. Write two differences between carbohydrates and proteins.

Ans. Two differences between carbohydrates and proteins are –

Carbohydrates	Proteins
1. Carbohydrates are energy producing foods.	1. Proteins are the composite element of our body.
2. Composed of carbon, hydrogen and oxygen.	2. Composed of carbon, hydrogen, oxygen, nitrogen and sulphur.

Question 29. How much energy do carbohydrates, proteins and lipids produce. Mention.

Ans. In our body, 1 gram of carbohydrate can yield 4 kilocalorie, 1 gram of protein can yield 4 kilocalorie, 1 gram of fat can yield 9 kilocalorie of energy.

Question 30. How is energy spent in our body?

Ans. Energy is spent in our body in two ways. Namely-

1. Physical work and
2. In the internal functions of the body, that is, in the metabolic activities.

Question 31. What does the demand of calories needed by the body per day depend on?

Ans. The demand of calorie or heat energy for a person depends mainly on age, height and weight of the body. Besides, the amount of energy a person uses each day varies according to sex, body-size, occupation and special conditions such as pregnancy.

Question 32. What factors do a person required daily energy depend on?

Ans. A person required daily energy depends on three factors. Namely - 1. Metabolism 2. physical labour and 3. Influence of food.

Question 33. What should be considered when selecting food?

Ans. While selecting foods we should keep in mind that the body can obtain necessary amount of calorie from food, and it should contain vitamins, mineral salts and other necessary nutrients also.

Lesson 6 : Vitamins ➤ Textbook Page 141

Question 34. Mention the types of vitamins.

Ans. Vitamins are divided into two sub-groups based on their solubility properties. Namely -

1. Fat soluble vitamins, e.g.-vitamin-A, vitamin-D, vitamin-E and vitamin-K.
2. Water soluble vitamins, e.g.- vitamin B-complex group and vitamin C.

Question 35. Name two sources of vitamins.

Ans. Two sources of vitamins are- 1. green leaves; 2. Yellow and green leafy vegetables.

Question 36. What are the sources of Vitamin A?

Ans. Vitamin A is found largely in fish liver oil and animal fats. Vegetables enriched with carotene such as lalshak, palong shak, puishak, tomatoes, carrots, beets and pumpkins, etc. Different fruits like papaya, mango, jackfruit contains vitamin A. It is also found in small fish like mola, dhela etc.

Question 37. Mention two functions of vitamin A.

Ans. Two functions of Vitamin A are-

1. To maintain good eyesight and
2. To keep skin and mucus membrane sound.

Question 38. Name two diseases caused by vitamin A deficiency.

Ans. Two diseases caused by deficiency of vitamin A are-

1. Night blindness and 2. Xerophthalmia.

Question 39. Mention two symptoms of Xerophthalmia.

Ans. Two symptoms of Xerophthalmia are as follows-

1. The eyes get dry and rolling of water from eyes also gets stopped.
2. Pus gets into the eyes and the eye-lids gets swelled.

Question 40. Write the symptom and remedy of night blindness disease.

Ans. The symptom of night blindness is one cannot see in inadequate (dim) light specially at night. The remedy for this disease is to eat green vegetables and colourful fruits.

Question 41. Why Vitamin A is important to prevent blindness?

Ans. Vitamin A keeps eyesight normal and prevents night blindness. Deficiency of vitamin A causes night blindness. If the deficiency is prolonged, the cornea of one's eye may be affected and a dry layer appears on cornea, damaging the eye. It is called Xerophthalmia. It makes a person completely blind. So, vitamin A is essential to prevent blindness.

Question 42. What does Xerophthalmia mean?

Ans. Xerophthalmia is an eye disease. As we know, deficiency of vitamin A causes night blindness. If its deficiency is chronic, ulceration occurs in the cornea of the eye. This condition is called xerophthalmia. It can cause a person to go completely blind.

Question 43. Why are children fed vitamin A capsules?

Ans. Children need more vitamin A. Because it prevents night blindness or blindness disease of the children and plays an important role in maintaining normal eyesight. For this, children are given vitamin A capsules.

Question 44. Give an idea about vitamin B-complex.

Ans. The group of 12 water-soluble vitamins is called vitamin B-complex. The function of vitamin B-complex group is to break down proteins, carbohydrates and fats as part of special enzymes and helps to release the energy from inside.

Question 45. Write two functions of thiamine.

Ans. Two functions of thiamine are-

1. To participate in carbohydrate metabolism and release energy.
2. It helps to maintain normal appetite and to keep nervous system active.

Question 46. Mention two functions of vitamin B₁₂.

Ans. Two functions of Vitamin B₁₂ are-

1. Aids in the growth and production of red blood cells.
2. Help increase the number of white blood cells and platelets.

➤ Lesson 7 : Vitamin 'C' ➤ Textbook Page 143

Question 47. Write two functions of vitamin 'C'.

Ans. Two functions of vitamin C are-

1. Strengthens muscles and teeth.
2. Helps to heal wounds and prevent skin diseases.

Question 48. Write two properties of vitamin 'C'.

Ans. Two properties of Vitamin C are-

1. Vitamin C is water soluble.
2. It gets wasted in a little stroke of heat.

Question 49. Name five fruits rich in vitamin C.

Ans. The names of the five fruits rich in vitamin 'C' are-1. Amlaki, 2. Lemon, 3. Guava, 4. Pineapple and 5. Hog Plum

Question 50. What are the symptoms of deficiency of vitamin C?

Ans. Deficiency of Vitamin C causes the following symptoms-

1. Structure of bones cannot be strong.
2. Bones become weak and fragile.
3. Skin becomes dry, itches and the healing of wound is delayed.

Question 51. What should be done to prevent rickets in children?

Ans. Children should be fed vitamin D rich foods to prevent rickets. Vitamin D is obtained from cholesterol in our skin under the influence of sunlight. So, the child should be allowed to play in the sun for a while.

Question 52. Mention two symptoms of Osteomalacia.

Ans. The rickets in elderly person is known as Osteomalacia. Two symptoms of this disease are as follows :

1. Due to the deficiency of vitamin 'D' the absorption of calcium is hampered.
2. The reserve of calcium and phosphorus reduces.



Question 53. Write the sources of Vitamin E.

Ans. Edible oil is the best source of vitamin 'E'. Food grains, liver, fats of fish and meat also contain Vitamin 'E'.

Question 54. Mention two functions of vitamin E.

Ans. Two functions of vitamin E are -

1. Vitamin 'E' helps in cell formation.
2. It takes part in some metabolic activities of the body.

Question 55. Why are vitamins important for the body?

Ans. Vitamins are those biochemical substances in food which are present in small amounts in food. Even though vitamins do not directly participate in the body formation, the body's functions such as replenishment of decay, growth or production of thermal energy cannot be completed properly due to their lack. Even due to their deficiency, the body is easily affected by diseases such as beriberi, scurvy, rickets, night blindness etc. That is why vitamins are very important for the body.

Question 56. Why is vitamin B-complex very necessary for the wellness of the body?

Ans. The group of 12 water-soluble vitamins is called vitamin B-complex. If the growth and production of blood cells in the body, keeping the nervous system active, metabolic activities in the body cells, energy production etc. are not performed properly, the normal wellness of the body is not maintained. Vitamin B-complex maintains the normal wellness of the body by carrying out these important functions of the body. That is why vitamin B-complex is very necessary for the wellness of the body.

Question 57. Write two symptoms of scurvy.

Ans. Two symptoms of scurvy are-

1. The gums swells up and becomes soft.
2. The root of the teeth becomes loose and finally bleeds.

Question 58. Amloki prevents scurvy disease – Explain.

Ans. A severe deficiency of vitamin C in the body causes a disease called scurvy. To avoid this disease, one has to consume food containing vitamin C in moderation. Amloki is one of the sources of vitamin C. Eating Amloki will prevent scurvy by filling the deficiency of vitamin C.

Question 59. Write two functions of vitamin D.

Ans. Two functions of vitamin D are-

1. Forms structure of bones and teeth.
2. Increases absorption of calcium in intestine.

Question 60. What are the sources of vitamin D?

Ans. Sources of vitamin D are - milk and milk products, edible oils, various fish oils, egg yolks, butter, ghee, fat and hilsa fish.

Question 61. Name two diseases caused by deficiency of vitamin D.

Ans. Two diseases caused by deficiency of Vitamin D are-

1. Rickets and 2. Osteomalacia.

Question 62. Mention two symptoms of rickets disease.

Ans. Two symptoms of rickets are-

1. The bone joints of hands and legs swell up.
2. The ribs also turn bent.

Question 63. What kind of food are the sources of Vitamin K?

Ans. Vitamin K is found in green vegetables, lettuce leaves, cauliflower, cabbage, egg yolk, soybean oil and liver.

Question 64. Mention the problem of vitamin K deficiency.

Ans. The bleeding under skin and inside the body due to the deficiency of vitamin 'k' if not stopped, it may result in the death of the patient. Due to vitamin- K deficiency bleeding of a patient, under operation, is not stopped easily. Sometimes it might be fatal.

► Lesson 8 : Mineral salt ► Textbook Page 146**Question 65. Write the role of mineral salts briefly.**

Ans. Mineral salt forms the body and controls the internal functions of the body. For, the formation of bones, teeth, enzyme and hormone, stimulation of nerves, contraction of muscle, keeping the osmotic balance of the body and activating different enzymes, mineral salt is an essential element.

Question 66. Write two functions of calcium.

Ans. Two functions of calcium are-

1. Helps in formation of teeth and bones.
2. Helps to coagulate blood.

Question 67. Mention two importance of phosphorus in human body.

Ans. Two importance of phosphorus in human body are-

1. Forms teeth and bones.
2. Makes phospholipids.

Question 68. Mention two functions of iron.

Ans. Two functions of iron are-

1. Iron forms red blood corpuscles.
2. Helps the enzymes in their functions.

Question 69. Why does anaemia occur due to lack of iron in food?

Ans. Iron is a major component of blood. The body fills the need of iron through food. If there is a deficiency of iron in the food, the formation of haemoglobin in the blood is disrupted and the red blood corpuscles break down. As a result, anaemia occurs in the body.

Lesson 9 : Deficiency related diseases

► Textbook Page 146

Question 70. What is goiter? Explain.

Ans. In the absence of iodine in the body the thyroid gland becomes bigger and the throat gets inflated. It is called goiter or ghag.

Question 71. Write two symptoms of goiter.

Ans. Two symptoms of goiter are-

1. Inflated thyroid gland, sound produced during breathing.
2. Hoarseness of voice.

Question 72. Mention two symptoms of Cretinism.

Ans. Two symptoms of Cretinism are-

1. Growth of the body becomes slow.
2. Thick skin and deformed face.

Question 73. Who has Cretinism disease and why?

Ans. Cretinism usually affects children. Iodine deficiency causes this disease in children.

Question 74. Mention the prevention and the remediation of Cretinism disease.

Ans. Cretinism is usually caused by iodine deficiency in children. If proper treatment is done on time, the physical problems of children can be removed, and normal growth can be maintained. And this disease can be prevented with iodized salt in food.

Question 75. Mention two preventions for anaemia.

Ans. Two preventions for anaemia are -

1. Vegetables enriched with iron, fruits, meat, egg yolk, liver, etc. should be eaten in ample quantity.
2. If needed a doctor may be consulted for proper medication.

Question 76. Why does the human body need water?

Ans. Water is an essential element of food. Water is essential for the human body. Our body contains 60-70% water. The formation and internal functions of the body cannot work without water. Water is required for the formation of every organ like our blood, flesh, nerves, teeth, bones etc.

Question 77. Mention two functions of water.

Ans. Two functions of water are -

1. Water is responsible for blood circulation and thermal regulation of the body.
2. Water releases waste materials from the body. For example urine, sweats.

Question 78. How is corn saline made?

Ans. Corn saline is a saline invented by the International Centre for Diarrhoeal Disease Research of Bangladesh. This saline is made up of 1 litre water, 50 gm rice powder and a pinch of salt.

Question 79. What happens when water decreases in cells?

Ans. If there is a fall in the quantity of water in the body, the cells experience shortage of water. When the cell water is reduced one gets very thirsty, the blood pressure falls, blood circulation and digestion process are hindered.

Question 80. Mention two problems caused by lack of water in the body.

Ans. Two problems caused by lack of water in the body are-

1. The body loses weight if there is water shortage and muscles, and nerve cells become weaken.
2. The normal body function hampered.

Question 81. Write two characteristics of Roughage.

Ans. The two features of Roughage are-

1. Roughage is the cellulose walls of plant cells.
2. It is transported directly through the gut.

Question 82. What does a balanced diet mean?

Ans. The foods which meet the demand of the calorie of the body, maintain the growth and formation of tissue cells and control the metabolic activities of the body is called balanced diet. Therefore, balanced food means the correct amount of food and the correct proportions of each (six) type of food that meet the demands of the body of a particular person.

Question 83. What are the guidelines for a balanced diet?

Ans. The guidelines for a balanced diet are-

1. In every single meal of the day the inclusion of six food elements including protein, carbohydrates and fats should be confirmed.
2. Food from each group has to be supplied based on age, sex and occupation.
3. Out of total daily intake of calorie 60-70% from carbohydrates, 10% from proteins and 30-40% from fatty foods should be taken.

Question 84. Name two growth related foods.

Ans. Two growth related foods are-

1. All types of pulses, 2. Bean seeds

Question 85. Name two disease preventing foods.

Ans. Two disease preventing foods are-

1. Seasonal fruits
2. Green, yellow and other types of coloured vegetables.

Question 86. Name five energy producing foods.

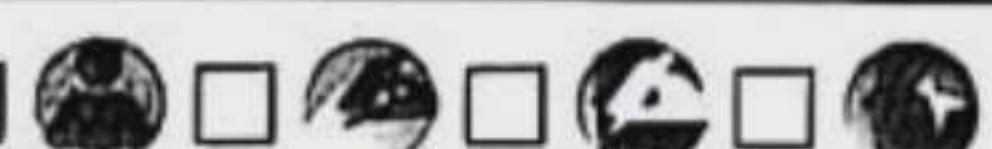
Ans. Five energy producing foods are-

1. Rice, 2. Bread, 3. Sweet potatoes, 4. Halwa, 5. Biscuits





Designed as per learning outcomes



Ques. 01 Jitu's grandma does not see anything when evening falls. She fell badly ill last year. She was hospitalized. She had been suffering from throat swelling for almost a decade. Different medical examinations were done and the doctors found that she had been suffering from anemia, osteoporosis, hypoglycemia, low blood pressure and urinary tract infection. Treatment continued for two weeks in the hospital. Her on-release prescription included different medicines and food items. A tablet is prescribed once daily for the rest of her life.

- What is the opposite term of hypoglycemia? 1
- Why will Jitu's grandma continue a tablet once daily for the rest of her life? 2
- Suppose, you are treating Jitu's grandma. How will you cure all her diseases? 3
- Treating an infection is a matter of antibiotic. What vitamin is also prescribed along with any antibiotic? Why? Establish its usefulness. 4

Answer to Question No. 01 :

- The opposite term of hypoglycemia is diabetes.
- The tablet is composed of calcium usually in carbonate form, CaCO_3) and vitamin D₃. Jitu's grandma will continue to take one tablet daily for the rest of her life because she has been suffering from osteoporosis (decay of bones). Vitamin D₃ promotes the absorption of calcium. Since she is an old lady, she has to continue a life-term medication.
- As a doctor, I first confess my limitation that I cannot treat the goitre of Jitu's grandma. Goitre is caused by iodine deficiency but dispensing iodine will be of no use because she is an old lady. Her overall health status does not support even any surgical device. However, I will first dispense her glucose infusion to raise her blood pressure and also to reduce her hypoglycemia to the optimum levels. At the same time, I will dispense her antibiotic medication along with vitamin C. I will prescribe her calcium with vitamin D₃ for lifelong use for the management of her osteoporosis. The food items I will suggest her to take are vitamin A enriched vegetables and also vitamin A capsules, usual intake of carbohydrate and sugar, iron capsule alongwith iron enriched food items, all kinds of fruits and easy-digesting vegetables according to its sensitivity rate to cure her infection.

d Vitamin C (tablet / syrup / citrus fruits) is prescribed along with any antibiotic in curing an infection. The reason behind this is that vitamin C promotes the action of antibiotics. Meanwhile, antacids are not usually prescribed along with an antibiotic because antacids inhibit the action of antibiotics. Instead of antacids, omeprazole or some other H₂-receptor medicament is prescribed, if the patient reports acidity. Regarding the usefulness of vitamin C. I would like to mention first that it is a magical substance that can protect cancer in some cases and inhibits early ageing. It heals cuts, wounds and burns by enhancing newer cell formation. It strengthens bone structure, prevents and cures scurvy, flu, cough, cold, excessive bleeding, swelling of glands, sore throat and inflammation during, urination. Vitamin C is called 'beauty doctor' in the sense that it beautifies skin and hair structures. It is a superb anti-oxidant.

Ques. 02 Mr Ivanovich is 30 but still he has no beard or moustache. He speaks in a womanly voice. He has got swollen throat. The greater problem with him that he is almost a boob. On the other hand, Mrs Ivanovich is wise enough to run her business and family very well. She is 27 and notices black beard and moustache in her face. She finds it a matter of obloquy. She also notices that her lower lip is getting thick to thicker every week.

- What compounds are needed for detecting the presence of protein in a certain food item? 1
- What element should both Mr and Mrs Ivanovich should take regularly? Why? 2
- Analyse the problems of Mr and Mrs Ivanovich. 3
- "Deficiency of hormones and mineral salts may turn life-threatening." – Illustrate the statement. 4

Answer to Question No. 02 :

- Sodium hydroxide and copper sulphate are needed for detecting the presence of protein in a certain food item.
- Both Mr and Mrs Ivanovich should take regularly iodine. Iodine deficiency causes goitre or swelling in throat low or zero intelligence quotient, labial thickening, facial deformation and tongue engorgement. If Mr and Mrs Ivanovich leave their problems untreated, they will suffer from all these problems in the most acute form.

c What is common to both Mr and Mrs Ivanovich is iodine deficiency syndromes. That Mr Ivanovich has got swollen throat, that he is almost a boob and that Mrs Ivanovich has got labial thickening are the ultimate consequences of iodine deficiency. Again, that Mr Ivanovich has no beard or moustache and that he speaks in a womanly voice are caused by deficiency of male hormone and also the presence of female hormone in his endocrine glands. The case is just opposite with Mrs Ivanovich. They should immediately see a hormone therapist. Mr Ivanovich can get rid of her problem with beard and moustache with laser therapy also.

d We sometimes see children having swollen throat and behavioral disorders. This is called hypothyroidism. It either cause quite a premature death or a severe painful survival. Each of us, in this or that way, know a diabetes patient. Both the cases are caused by hormone deficiency-TSH for the first one and insulin for the second one. Hormones play the role of chemical messenger by performing co-ordination among growth, metabolism and reproduction. A certain activity gets stuck for want of a certain hormone that may turn deadly. To speak about mineral salts, iron forms RBC and promotes the functions of enzymes. Mineral salts maintain osmotic balance, regulate interval activities and so forth without which all other food elements cannot ensure a healthy and longer life.

Ques. 03

- What is goitre? 1
- Why is vitamin-C prescribed with antibiotics? 2
- Describe the utilities of any of the food items absent in the picture. 3
- The food items are necessary for physical health. Acute shortage of these items also causes mental disorder. Assess the statement. 4

Answer to Question No. 03:

- The swelling of the throat due to the inflation of the thyroid gland (as a consequence of iodine deficiency in the body) is called goitre.
- Antibiotics are used for treating diseases caused by bacteria and for saving a cut/wound from bacterial infection. Vitamin-C is often prescribed with antibiotic on the ground that Vitamin-C accelerates the functioning of antibiotic; i.e. the patient gains an earlier remedy.

c The figure shows potatoes, oil and fish belonging to carbohydrate, lipid and protein respectively. Vitamins and minerals salts are absent in the figure. Now we will describe the utilities of mineral salts. Calcium forms teeth and bones, helps blood coagulation and plays role in the smooth functioning of the nervous system. Phosphorus also forms teeth and bones and makes phospholipids. Iron forms the red blood corpuscles and promotes the functioning of the enzymes. Iodine ensures proper functioning of the thyroid gland as well as a smooth metabolic process. Sodium is essential for body cells and body fluids. Potassium prevents muscle cramp.

d A sound health means soundness of body and mind. Physical health and mental health are so interdependent that any ailment of the body affects the mind and vice-versa. Different food elements are needful to lead a healthy life but it is not that food is essential for the body only. There goes the wise saying that a hungry man is an angry man. Hunger relates to the body while anger is a mental phenomenon. In case of any shortage of intake of the food items shown and not shown in the figure, all the organs will fall victim to different disorders, there will be insufficient supply of glucose and oxygen in the brain and so the victims thinking capacity will be interrupted. Everything will turn insipid to him. The whole nervous system including the CNS will get weak to weaker and slow to slower.

Ques. 04

X Hilsa fish, Chicken Y Guava, Orange, Tomato

Z Fish oil, Yolk, Edible oil

- What is roughage? 1
- Why is hotchpotch called a mixed food? 2
- Explain the importance of X in building body. 3
- Analyze the role of Y and Z in preventing osteomalacia and scurvy. 4

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Answer to Question No. 04 :

- Roughage or dietary fibre is obtained from fibrous foods which is not nutritious but very much essential to maintain sound health.
- If two or more plant proteins are cooked together, food value is increased. Eight kinds of amino acids can be obtained from it. The components derived from this mixture are known as mixed protein. Hotchpotch contains two or more proteins together (rice and daal). That's why hotchpotch is called mixed food.

c 'X' of the stem represents protein type food. Protein is the composite element of our body. It is composed of carbon, hydrogen, oxygen and nitrogen. Proteins contain 16% of nitrogen. Therefore, in nutrition science protein is considered as a very important food nutrient. Protein is a complex compound of amino acids. By the process of digestion it turned into amino acids, suitable for the body to absorb. As of now a total of 22 types of amino acids have been found in the nature. The way we arrange Bangla or English alphabets to get numerous words, the proteins are produced in the same way after arranging 22 amino acids in different ways, number and types. For this reason some amino acids are very important for the growth, repair and balance of nitrogen of the body. These are called essential amino acids. These amino acids cannot be produced in the body. These are to be collected from food.

d 'Y' foods of the stem are guava, orange, tomato which contain vitamins-C.

Vitamin-C is very essential nutrient for our body. This vitamin is water soluble and gets wasted in a little stroke of heat. Since it is not stored in the body, we should eat it everyday. It is found extensively in all citrus fruits like lemon, orange, shaddock, pine apple, guava, amloki, green vegetables like cabbage, cauliflower, tomato, lettuce. Fresh vegetables and fruits contain more vitamin 'C' than the ripe ones.

Due to deficiency of vitamin-'C', scurvy disease occurs. So, vitamin 'C' containing foods prevent scurvy disease. On the other hand, 'Z' foods of the stem are fish oil, yolk, edible oil which contain vitamin-D. Due to deficiency of vitamin-'D', following problems may occur—

- Due to the deficiency of vitamin 'D' the absorption of calcium is hampered.
- The reserve of calcium and phosphorus reduces.
- There is a change in the function of thyroid gland.
- Since the bones weaken, their hardness also lessens and as a result there is a possibility of the bones being broken at a light stroke.

These are the symptoms of osteomalacia. So, foods containing vitamin-D prevent osteomalacia.

Ques. 05 Sakib is nine years old. He takes 1200 kilocalories protein daily. Moreover he takes according to need rice, chocolate, butter, sugar etc. but he never eats vegetables and fruits.

- a. What is called roughage? 1
- b. Why glucose is more important for human body? 2
- c. Determine the amount of protein in grams Sakib eats daily. 3
- d. The food habit of Sakib can cause the various diseases in his body—Explain. 4

Answer to Question No. 05 :

a Roughage or dietary fibre is obtained from fibrous foods which is not nutritious but very much essential to maintain sound health.

b Glucose is a kind of simple carbohydrate. It is a monosaccharide which get easily absorbed into the body. For the balanced nutrition of the body monosaccharide is very important because human body can only absorb it. It provides quick energy for work. That's why glucose is more important for human body.

c According to the stem, Sakib takes 1200 kilocalories protein daily, protein is the composite element of our body. It is composed of carbon, hydrogen, oxygen and nitrogen. Protein contain 16% of nitrogen. By the process of digestion it turned into amino acids, suitable for the body to absorb. One gram of protein can produce 4 kilocalorie of heat. So, the amount of protein in grams— Sakib eats daily = $\frac{1200 \text{ kilocalorie}}{4}$

$$= 300 \text{ gram.}$$

d According to the stem, Sakib is a teenage boy. He likes to eat rice, chocolate, butter, sugar etc. But he never eats vegetables and fruits. Chocolate, butter, sugar etc. contain high calories. These foods are not good for health. Moreover, these foods cause obesity. Besides, Sakib does not eat coloured vegetables and fruits.

We know, coloured vegetables contain a lot of vitamin A and sour fruits contain sufficient amount of vitamin C which are very much need for healthy life. Lack of vitamin A may cause night blindness as well as xerophthalmia. On the other hand, lack of vitamin C may cause several acute diseases including scurvy.

So, it can be said that, the food habit of Sakib can causes various diseases in his body.

Ques. 06

A	Carrots
B	Soyabean oil
C	Fish

- a. What is balanced diet? 1
- b. Why transpiration is known as the "Necessary evil"? 2
- c. Explain die deficiency related complications of 'C' types food from the daily food chart. 3
- d. "In the stem, food 'A' is different from food 'B'"— Analyze it. 4

Answer to Question No. 06 :

a The foods which meet the demand of the calorie of the body, maintain the growth and formation of tissue cells and control the metabolic activities of the body is called balanced diet.

b Transpiration is a physiological process in which plants lose water in the form of vapour through their aerial parts, mainly through the leaves. High rate of loss of water may even cause death of a plant. Still it is essential for plant life in a number of ways. This is why transpiration is called a necessary evil.

c 'C' type food of the stem is protein type food. Protein is the composite element of our body. It helps in repair, growth and development of the body.

The body of children suffers from different protein deficiency related complications if food lacks sufficient proteins. The growth and developments of the body is also hampered. When children suffers from malnutrition, the growth of the body is stopped or delayed. The children suffer from kwashiorkor or merasmus disease due to protein deficiency.

Due to protein deficiency the elderly people lose their body's resistance and causes anemia.

d In the stem, food 'A' is carrot and food 'B' is soyabean oil. Carrot is a vegetable which contains vitamin-A. Vitamin A is necessary to maintain good eyesight, to keep skin and mucus membrane sound, to protect the body from different contagious diseases, to help digest food and promote appetite, to keep blood in normal state and to help in nutrition and growth of the body.

On the other hand, soyabean oil is a lipid or fat. Lipids or fats generate heat and energy in the body. In lipids carbon, hydrogen and oxygen are found more in quantity. Lipid is a compound made up of fatty acid and glycerol. If food lacks in fatty substance, deficiency of fat soluble vitamin occurs in the body. This will result in disease due to the deficiency of vitamin. So, food 'A' is different from food 'B'.

Ques. 07 A few days Apu's gam has swelled. As well as the anamel of his teeth has weakened. The bone of Apus younger brothers leg has curved. On the other hand the ability of absorbing calcium of Apu's grandmother is disturbed and solidity of bone has decreased.

- | | |
|---|---|
| a. What is basal metabolism? | 1 |
| b. Nutrition is a process—Explain. | 2 |
| c. With which disease is Apu affected? | 3 |
| d. Are the diseases of Apu's younger brother and his grandmother caused by the deficiency of same food elements? Analyze. | 4 |

Answer to Question No. 07 :

a The energy needed to run the metabolic activities is called basal metabolism.

b Nutrition is a complex process which includes digestion of complex food turning into simple food elements, absorption of simple food elements in human body, repairing of decay of cells of organs, production of new cells for growth of body, production of heat in the body and protection of the body from the germs of diseases.

c According to the stem, Apu is affected by scurvy disease. This disease is occurred due to the deficiency of vitamin - 'C'. Symptoms of scurvy disease are following—

- The gums swells up and becomes soft.
- The root of the teeth become loose and finally bleeds.
- The enamel weakens and as a result teeth fall. Children and elderly person
- suffer most from this disease.
- The glands swells up and mouthache is felt.
- Bleeding does not stop easily, healing of wounds delayed.
- Other diseases like flue, cough easily attack the body.

d Yes, the diseases of Apu's younger brother and his grandmothers are caused by the deficiency of same food elements.

The disease of Apu's younger brother is rickets and the disease of his grandmother is Osteomalacia. Both the diseases are caused due to the deficiency of Vitamin and calcium. Due to the absence of vitamin 'D' and calcium the bones of the children because soft and their growth gets hampered. This is called rickets. The symptoms as rickets are—

- The leg bones become curved like a bow and the other bones also get curved due to the pressure of the body.
- The bone joint of hands and legs swell up.
- The ribs also turn bent.

The rickets in elderly person is known as osteomalacia. The symptoms of this disease are as follows—

- Due to the deficiency of vitamin 'D' the absorption of calcium is hampered.
- The reserve of calcium and phosphorus reduces.
- There is a change in the function of thyroid gland.
- Since the bones weaken, their hardness also lessens and as a result there is a possibility of the bones being broken at a light stroke.



Ques. 08 Shohana is eight years old. She takes 1400 kilo calories protein daily. Though she takes according to her needed carbohydrate and lipids rite never eats vegetables and fruits.

- What is called food? 1
- Why glucose is more important for human body? 2
- Determine the amount of protein in grams Shohana eats daily. 3
- The food habit of Shohana can causes the various diseases in her body.—Explain. 4

• Chattogram Board 2019

Answer to Question No. 08 :

a) Organic compounds which are used by organisms for their growth, repairing of decay and production of energy is called food.

b) Glucose is a kind of simple carbohydrate. It is a monosaccharide which get easily absorbed into the body. For the balanced nutrition of the body monosaccharide is very important because human body can only absorb it. It provides quick energy for work. That's why glucose is more important for human body.

c) According to the stem, shohana takes 1400 kilocalories protein daily. Protein is the composite element of our body. It is composed of carbon, hydrogen, oxygen and nitrogen. Protein contain 16% of nitrogen. By the process of digestion it turned into amino acids, suitable for the body of absorb. One gram of protein can produce 4 kilocalorie of heat. So, the amount of protein in grams shohana eat daily = $\frac{1400 \text{ kilocalories}}{4}$
= 350 gram.

So, Shahana eats 350 gram protein daily.

d) According to the stem, Shohana is a teenage girl. She likes to eat carbohydrate and lipid type food. But she never eats vegetables and fruits. Carbohydrate and lipid type foods contain high calories. Excess intake of these foods are not good for health. Moreover, these foods cause obesity. Besides, Shohana does not eat coloured vegetables and fruits.

We know, coloured vegetables contain a lot of vitamin A and sour fruits contain sufficient amount of vitamin C which are very much need for healthy life. Lack of vitamin A may cause night blindness as well as xerophthalmia. On the other hand, lack of vitamin C may cause several acute diseases including scurvy.

So, it can be said that the food habit of Shohana can causes the various diseases in her body.

Ques. 09 Mitu has a swollen gum which became soft. Doctor advised her to take sour fruits everyday. On the other hand, her younger sister Ritu hardly sees at night.

- What is metabolic activities? 1
- Why sugar is known as pure food? 2
- Describe the symptoms of Mitu's disease. 3
- Analyze the preventive measures of Ritu's disease with reasons. 4

• Barishal Board 2019

Answer to Question No. 09 :

a) Metabolic activities include digestion, respiration, excretion etc.

b) A food is said to be pure, if only one element is found in it. Sugar is known as pure food because there is no other elements except carbohydrate is present.

c) According to the stem, the disease by which Mitu affected is Scurvy, a disease caused due to deficiency of vitamin 'C'.

The symptoms of scurvy are given below—

- The gums swells up and becomes soft.
- The root of the teeth become loose and finally bleeds.
- The enamel weakens and as a result teeth fall. Children and elderly person suffer most from this disease.
- The glands swells up and mouthache is felt.
- Bleeding does not stop easily, healing of wounds delayed.
- Other diseases like flue, cough easily attack the body.

d) According to the stem, Ritu is affected by a disease called night blindness. Night blindness is a disease caused due to deficiency of vitamin A. Food containing vitamin A can play vital role to prevent this disease. Vitamin-A capsule can also prevent this disease. In our country vitamin-A capsule is given to the children on vaccination day at different vaccination centre.

Vitamin is found largely in fish liver oil and animal fats. Vegetable enriched with carotene such as lalshak, Palong shak, Puishak, tomatoes, carrots, beets and pumping etc. Different fruits like papaya, mango, jackfruit each contains vitamin-A. It is found in small fish like mola dhela etc. These type of foods have to be selected for our meal daily in order to prevent night blindness.

Ques. 10 The weight of Mr. Sharif is 85 kg. He likes to eat fish and meat. But he does not like to eat sour fruits and colourful vegetables.

- What is balanced diet? 1
- Why rice is called carbohydrates? 2
- Determine how much carbohydrates required by Mr. Sharif daily. 3
- Explain what problems Mr. Sharif has to be faced due to lack of die foods he dislikes to eat. 4

• Dinajpur Board 2019,

Answer to Question No. 10 :

a The correct amount of food or the correct proportions of each (six) type of food that meet the demands of the body of a particular person is called balanced food.

b Rice is called carbohydrates because it is energy producing food. It is easily digested. All carbohydrates are composed of three fundamental elements namely carbon, hydrogen and oxygen. In our body rice like other carbohydrate provides energy for work.

c The demand of carbohydrate depends on age, weight of the body, height and amount of hardwork. An adult person needs 4.6 gm of carbohydrate per kilogram of his body weight. The weight of Mr sharif is 85 kg. Therefore amount of carbohydrate required by Mr Sharif daily is (85×4.6) gm or 391 gm.

d Fish, meat, etc. contain a lot of proteins. According to the science of nutrition, a normal adult person needs 1 gm of protein for every 1 kg of his body weight per day. If Mr Sharif takes protein more than the above limit, his BMI will be increased causing various problems.

Besides, Mr Sharif does not eat coloured vegetables and sour fruits.

We know, coloured vegetables contain a lot of vitamin A and sour fruits contain sufficient amount of vitamin C which are very much need for healthy life. Lack of vitamin A may cause night blindness as well as xerophthalmia. On the other hand, lack of vitamin C may cause several acute diseases including scurvy.

So, it can be said based on the above discussion that Mr Sharif may suffer from night blindness, xerophthalmia, scurvy including diabetes in future.

- What is called basal metabolism? 1
- Explain the function of the vitamin present in lemon. 2
- Explain the symptoms of deficiency related disease of B. 3
- Between A and C which element plays a vital role in the formation of body? — Analyze. 4

• Mymensingh Board 2019

Answer to Question No. 11 :

a The energy needed to run the metabolic activities of body is called basal metabolism.

b Lemon contains vitamin C.

Function of vitamin C :

- It strengthens muscle and teeth
- It heals wounds and resist skin diseases, prevents infection in throat and nose.

c 'B' compound of the stem is lipid. It is a compound made up of fatty acid and glycerol.

If food lacks in fatty substance deficiency of fat soluble & vitamin occurs in the body. This will result in diseases due to the deficiency of vitamin. For example: skin will get dry and rough that will ruin the beauty of the body, the children will suffer form eczema caused due to the deficiency of essential fatty acid. And elderly person lose resistance against skin disease.

d 'A' compound of the stem is protein and 'C' compound is carbohydrate. Between the two, compound 'A' that is protein plays a vital role in the formation of body.

Protein is the composite element of our body. It is composed of carbon, hydrogen, oxygen and nitrogen. Proteins contain 16% of nitrogen.

Therefore, in nutrition science protein is considered as a very important food nutrient. Protein is a complex compound of amino acids. By the process of digestion it turned into amino acids, suitable for the body to absorb. As of now a total of 22 types of amino acids have been found in the nature. The way we arrange Bangla or English alphabets to get numerous words, the proteins are produced in the same way after arranging 22 amino acids in different ways, number and types. For this reason. Some amino acids are very important for the growth, repair and balance of nitrogen of the body. These are called essential amino acids. These amino acids cannot be produced in the body. These are to be collected from food.

In food if there is deficiency of animal proteins i.e. essential amino acids, symptoms of various diseases arises. For example- nausea, increase of organic acid in urine, imbalance of nitrogen, etc.

Ques. 11

Food elements	How food elements are composed
A	A complex compound of amino acids
B	A compound made up of fatty acid and glycerol
C	A compound made of carbon, hydrogen and oxygen



Science

All proteins are not equally absorbed in the body. The nutrition value of proteins depends on its digestibility. After having an intake of proteins the proportionate percentage of protein which is absorbed from the intestine is called the easily digestible quotient of the proteins. The proteins which are cent percent absorbed in the body and enhances the growth and repair has the easily digestible quotient of 1. In this case the intake of proteins and its absorption is equal. Simply it can be said that the amount of proteins taken by the organism is fully used by body for its growth and repair.

- Ques. 12** Roni has dislike in vegetables, meat and fish and likes fast food. As a result he lacks interest in food, study and feels physical weak. He goes to a doctor. The doctor advises him to take food which contains Protein. On the other hand Rahim likes different fruits and food cooked at home.
- What type of food is rice? 1
 - Why is sea fish necessary for human body? 2
 - Explain the reason behind the doctor's advice to Roni. 3
 - Analyze the utility of the foods consumed by Roni and Rahim and make a comparative discussion of it. 4

• Dhaka Board 2018

Answer to Question No.12 :

- a** Rice is a Carbohydrate.
- b** Marine fish contains iodine which is important for human body. Deficiency of iodine in the body the thyroid gland becomes bigger and the throat gets inflated. The disease is known as goitre or ghag. So, marine fish is necessary for human body to prevent this disease.
- c** According to the stem, Roni dislikes meat and fish which are protein type food. The doctor advices him to take food which contains protein because if there is deficiency of protein in body, symptoms of various diseases arises. For example nausea, increase of organic acid in urine, imbalance of nitrogen, physical weakness etc. Protein is the composite element of our body. In nutrition science protein is considered as a very important food nutrient. Protein is a complex compound of amino acids. By the process of digestion it turns into amino acids, suitable for the body to absorb. Some amino acids are very important for the growth, repair and balance of nitrogen of the body. These are called essential amino acids. These amino acids cannot be produced in the body. These are to be collected from food. That's why, doctor advised Roni to take protein enriched food.

d Roni dislikes vegetables, meat and fish and likes fast food. Fish, meat etc. contain a lot of protein. According to the science of nutrition, a normal adult person needs 1 gm of protein for every 1 kg of his body weight per day. Besides, coloured vegetables contain a lot of vitamins and minerals. Green leafy vegetables contain vitamin-A, B, C, K and minerals like calcium, potassium, iron, magnesium etc. Which prevents diseases. So, vegetables are essential for our body. As Roni dislikes vegetables he will suffer from vitamin and protein deficiency diseases.

Symptoms of the diseases for deficiency of vitamin are—

- Deficiency symptoms of vitamin-A are night blindness, Xerophthalmia.
- Deficiency diseases of vitamin-B complex are beriberi, weak nerve, loss of appetite, weight loss, vomiting, anaemia, pellagra etc.
- Deficiency symptoms of vitamin-C are scurvy, fragile bone, skin becomes dry, healing of wound is delayed.
- Deficiency diseases of vitamin-D are rickets, osteomalacia, obstruction the absorption and accumulation of iron, hampering hemoglobin formation.
- Bleeding under skin and inside the body not stop due to the deficiency of vitamin-K.

Moreover Roni likes fast food which is not good for health and it may causes obesity.

On the other hand, Rahim likes different fruits and food cooked in home. Different fruits like papaya, mango, jackfruit contains vitamin-A. Vitamin-A is essential to maintain good eyesight, to keep skin and mucous membrane sound and to protect the body from different contagious diseases. Various citrus fruits like lemon, orange, shaddock, pine apple, guava, amloki contain Vitamin-C which strengthens muscle and teeth, heals wounds and resist skin diseases, prevents infection in throat and nose.

Moreover foods cooked in home are safe for body. So, it is seen that, Rahim maintains a balanced diet which is good for health.

- Ques. 13** Rahim and Karim are two brothers. Rahim does not eat guava, hogplum, amloki and this type of fruit with other foods. On the other hand, Karim does not eat fish and meat. The weight of Karim is 70 kg.
- What is balanced diet? 1
 - What do you mean by 'the easily digestible quotient of egg's protein is 1'? 2
 - How many grams carbohydrate need everyday of Karim? 3
 - In future will Rahim and Karim be affected by same physical problem? Give your opinion will logic. 4

• Rajshahi Board 2018

Answer to Question No. 13 :

a The correct amount of food or the correct proportions of each (six) type of food that meet the demands of the body of a particular person is called balanced food.

b All proteins are not equally absorbed in the body. The nutrition value of proteins depends on its digestibility. After having an intake of proteins the proportionate percentage of protein which is absorbed from the intestine is called the easily digestible quotient of the protein. The proteins which are cent percent absorbed in the body and enhances the growth and repair has the easily quotient of 1.

So, the easily digestible quotient of egg's protein is 1 means egg protein is cent percent absorbed in the body and enhances the growth and repair. In this case the intake of proteins and its absorption is equal.

c Carbohydrates are energy producing food. Among different elements of our daily food carbohydrate dominates. In our body carbohydrate provides energy for work. The carbohydrates are easily digested. Once absorbed in the body, it generates heat very quickly and supply energy to the body. One gram of carbohydrate can produce 4 kilocalorie of heat. The demand of carbohydrate depends on age, weight of the body, height and the amount of hard work. An adult male person needs 4.6 gm of carbohydrate per kilogram of his body weight. In the stem, the weight of Karim is 70 Kg. So, the requirement of carbohydrate in gram for Karim is $4.6 \times 70 = 322$ gram.

d According to the stem, Rahim does not eat guava, hogplum, amloki and this type of fruits. These fruits contain vitamin-C. So, in future Rahim will be affected by vitamin-C deficiency related diseases.

Vitamin-C is very essential nutrient for our body. This vitamin is water soluble and gets wasted in a little stroke of heat. Since it is not stored in the body, we should eat it everyday. It is found extensively in all citrus fruits like lemon, orange, shaddock, pine apple, guava, amloki, green vegetables like cabbage, cauliflower, tomato, lettuce. Fresh vegetables and fruits contain more vitamin 'C' than the ripe ones.

Vitamin 'C' strengthens muscle and teeth, heals wounds and resist skin diseases, prevents infection in throat and nose.

In adults, acute shortage of vitamin C shows the following symptoms.

- * Structure of bones cannot be strong.
- * Bones become weak and fragile.
- * Skin becomes dry, itches and the healing of wound is delayed.

On the other hand, Karim does not eat fish and meat. Which are protein type food. Protein is the composite element of our body. In nutrition science protein is considered as a very important food nutrient. Protein is very important for the growth, repair and balance of nitrogen of the body. In food if there is deficiency of animal proteins i.e. essential amino acids, symptoms of various diseases arises. For example nausea, increase of organic acid in urine, imbalance of nitrogen etc.

So, in future Karim will be affected by protein deficiency diseases.

Therefore it can be said that, in future Rahim and Karim will not be affected by the same physical problem.

Ques. 14 Age of Suma is 25 years and weight is 54kg. She takes 200gm carbohydrate, 150gm protein and 50 gm fats like food. The liver of her younger brother grows up day by day. Doctor advises him to eat more fish, meat, egg like food.

- a. What is called nutrition? 1
- b. Why milk is called balanced food? 2
- c. What type of disease is Suma's younger brother attacked by? Explain. 3
- d. Does Suma take sufficient amount of calories from daily taken food according to her age? Opine on the basis of mathematical calculation. 4

• Jashore Board 2018

Answer to Question No. 14 :

a Nutrition is a complex process which includes digestion of complex food turning into simple food elements, absorption of simple food elements in human body, repairing of decay of cells of organs, production of new cells for growth of body, production of heat in the body and protection of the body from the germs of diseases.

b Milk is called balanced diet because milk contains all kind of food nutrients such as proteins, carbohydrates, lipids, vitamins, minerals and water.

c The disease by which Suma's younger brother attacked is protein deficiency related disease called kwashiorkor.

Symptoms of kwashiorkor disease :

- Children lose appetite.
- The muscle becomes scaly and weak, the skin and hair lose their smoothness and colour.
- Children suffer from diarrhoea, oedema.
- Stomach swells up.

d An adult person daily needs 2500 – 3000 kilo calories energy for active and sound health.

Energy obtained from daily food taken by Suma is calculated below :

Energy from 200 gm carbohydrate

$$= 200 \times 4 = 800 \text{ kilocalorie}$$

Energy from 150 gm proteins

$$= 150 \times 4 = 600 \text{ kilocalorie}$$

Energy from 50 gm fats

$$= 50 \times 9 = 450 \text{ kilocalorie}$$

Total energy obtained from daily food take by Suma = $(800 + 600 + 450)$ kilocalorie
= 1850 kilocalorie

1850 kilocalorie is not sufficient energy for an adult person.

∴ Suma does not take sufficient amount of calories from daily taken food according to her age.

Ques. 15


Fig-A

Pumpkin
Fig-B

Fig-C

- What is called food? 1
- What are the condition of the balance food? 2
- What type of disease observe for the deficiency of food in figure-'A' in child body? Explain. 3
- Do both child and old fall victim to disease for the deficiency of figure-'B' and figure-'C'? 4

• Cumilla Board 2018

Answer to Question No. 15 :

a Organic compounds which are used by organisms for their growth, repairing of decay and production of energy is called food.

b The foods which meet the demand of the calorie of the body, maintain the growth and formation of tissue cells and control the metabolic activities of the body is called balanced diet. Therefore by balanced food we mean the correct amount of food and the correct proportions of each (six) type of food that meet the demands of the body of a particular person.

The necessary nutrition elements of food remain in specific quantity in a balanced diet depending on age, sex, physical condition, work load etc. A balanced diet chart should be made following some instructions. Such as –

- In every single meal of the day the inclusion of six food elements including protein, carbohydrates and fats should be confirmed. 1
- Food from each group has to be supplied based on age, sex and occupation. 2
- Out of total daily intake of calorie 60-70% from carbohydrates, 10% from proteins and 30-40% from fatty foods should be taken. 3

c The figure (A) food refers to the protein type food.

Diseases related to the deficiency of proteins :

The body of children suffers from different protein deficiency related complications if food lacks sufficient proteins. The growth and developments of the body is also hampered. When children suffers from malnutrition, the growth of the body is stopped or delayed. The children suffer from kwashiorkor or marasmus disease due to protein deficiency.

Symptoms of kwashiorkor disease :

- Children lose appetite.
- The muscle becomes scaly and weak, the skin and hair lose their smoothness and colour.
- Children suffer from diarrhoea and Oedema.
- Stomach swells up.

d The figure B and C refer the nutrient vitamin A and Vitamin D respectively.

Deficiency related diseases : Night blindness: The symptoms of this disease is, one cannot see in inadequate (dim) light specially at night. The children are the main victim of this disease. If it continues for a longer period of time, one might lose his eyesight. If attacked with this disease, green vegetables and coloured fruits should be added to the food menu of the children. Vitamin-A capsule can prevent this disease. In our country vitamin-A capsule has given to the children on vaccination day at different vaccination centre.

Vitamin 'D' : Vitamin 'D' is found abundant in edible oil, milk and milk products, different fish liver oil, egg yolk, butter, ghee, fats and hilsha fish.

Functions :

- Forms structure of bones and teeth.
 - Increases absorption of calcium in intestine.
 - Controls the extent of calcium and phosphorous during blood circulation.
- Deficiency related diseases.

The deficiency of vitamin 'D' obstructed the absorption and accumulation of iron, and hamper hemoglobin formation.

Ques. 16 Mr Rahman is 40 years old. His mass is 55 kg. By the advice of doctor, he takes 100 gm chira as his breakfast now a days. In every 20 gm chira, there are 15.4 gm carbohydrate, 1.32 gm protein and 0.24 gm lipids.

- What is food? 1
- What do you mean by Roughage? Explain. 2
- Calculate the amount of energy that Mr. Rahman find from the chira. 3
- How much amount of carbohydrate he intake from the other foods at day long for his fitness? Give your opinion mathematically. 4

• Sylhet Board 2018

Answer to Question No. 16 :

a Organic compounds which are used by organisms for their growth, repairing of decay and production of energy is called food.

b Roughage is the part of cereal grains, fruits and vegetables which is not digested. It passes almost unchanged through the gut. Though it is not a nutrition element, it is essential for a sound health.

c Given,

In every 20 gm chira there is 15.4 gm carbohydrate, 1.32 gm protein and 0.24 gm lipids.

∴ In every 100 gm chira, there is

$$\frac{15.4 \times 100}{20} \text{ gm} = 77 \text{ gm carbohydrate}$$

$$\text{Protein} = \frac{1.32 \times 100}{20} \text{ gm} = 6.6 \text{ gm}$$

$$\text{Lipids} = \frac{0.24 \times 100}{20} \text{ gm} = 1.2 \text{ gm}$$

We know,

1 gram of carbohydrate can yield 4 kilocalorie of energy

∴ 77 gram of carbohydrate can yield 4×77 kilo calorie of energy

$$= 308 \text{ kilo calorie of energy}$$

Again,

1 gm of protein can yield 4 kilo calorie of energy

∴ 6.6 gm of protein can yield 4×6.6 kilo calorie of energy

$$= 26.4 \text{ kilo calorie of energy}$$

Again,

1 gm lipid can yield 9 kilo calorie of energy

∴ 1.2 gm lipid can yield (9×1.2) kilo calorie of energy
= 10.8 kilo calorie of energy.

Total energy (E) that, Mr Rahman find from 100 gm of chira is $(308 + 26.4 + 10.8)$ kilocalorie
= 593.12 kilo calorie of energy.

d The demand of carbohydrate depends on age, weight of the body height and amount of hard work. An adult person needs 4.6 gm of carbohydrate per kilogram of his body weight.

The weight of Mr Rahman is 55 kg

$$\therefore \text{He needs } (4.6 \times 55) \text{ gm of carbohydrate} \\ = 253 \text{ gm of carbohydrate}$$

He gets 77 gm carbohydrate from chira. He needs $(253 - 77)$ gm = 176 gm carbohydrate from other food.

Knowledge & Comprehension-based Q/A



Designed as per topic



Preparatory Knowledge-based Q/A

Question 1. What is called food?

Ans. Organic compounds which are used by organisms for their growth, repairing of decay and production of energy is called food.

Question 2. Based on nutrition value, how is food classified into groups?

Ans. Based on nutrients, food is classified into three groups namely protein, carbohydrate and fats.

Question 3. What is the important function of water?

Ans. The important function of water is to release waste materials from the body as well as to help in thermoregulation.

Question 4. What are the fundamental elements of carbohydrate?

Ans. The fundamental elements of carbohydrate are carbon, hydrogen and oxygen.

Question 5. What is the first and foremost responsibility of carbohydrate?

Ans. The first and foremost responsibility of carbohydrate is the production of energy.

Question 6. How much quantity of heat can 1 gm of carbohydrate produce?

Ans. One gram of carbohydrate can produce 4 kilocalories of heat.

Question 7. How much quantity of carbohydrates can be stored in a human body?

Ans. 300 - 400 gm of carbohydrates can be stored in a human body.

Question 8. Iodine turns into which of the colours when it is mixed with carbohydrates?

Ans. Iodine turns into blue in colour when it is mixed with carbohydrates.

Question 9. Protein is mainly composed of which of the elements?

Ans. Protein is mainly composed of the elements namely carbon, hydrogen, oxygen and nitrogen.

Question 10. Which is the only component of food containing and supplying nitrogen to the body?

Ans. Protein is the only component of food containing and supplying nitrogen to the body.

Question 11. What is protein?

Ans. Protein is a complex compound of amino acids.

Question 12. What is amino acid?

Ans. Amino acid is a nitrogenous compound.

Question 13. What is the digestible quotient of breast milk and eggs?

Ans. The digestible quotient of breast milk and eggs is 1.

Question 14. What does happen when a few drops of sodium hydroxide and copper sulphate solution are added to a small amount of protein solution?

Ans. The solution of protein takes violet colour following the mixing of the solution of chemicals.

Question 15. 1000 calorie of heat is equal to how much kilocalorie of heat?

Ans. 1000 calorie of heat = 1 kilocalorie of heat.

Question 16. What is the reason of causing night blindness?

Ans. Deficiency of vitamin-A is marked as the cause of night blindness.

Question 17. What is osteomalacia?

Ans. The rickets in elderly person is known as osteomalacia.

Question 18. What is the best source of vitamin E?

Ans. Edible oil is the best source of vitamin E.

Question 19. Which of the vitamins helps blood to clot?

Ans. Vitamin K helps blood to clot.

Question 20. What are the main source of mineral salts?

Ans. Meat, egg, milk, green vegetables and fruits are the main source of mineral salts.

Question 21. What is the cause of the disease like rickets?

Ans. Deficiency of calcium is the cause of rickets.

Question 22. What percent of water does our body contain normally?

Ans. Our body contains 60-70% of water normally.

Question 23. What is the full name of the acronym of ICDDRDB?

Ans. The full name of ICDDRDB is International Centre for Diarrhoeal Disease Research of Bangladesh.

 **Preparatory Comprehension-based Q/A** 
Question 1. How should one make a chart of a balanced diet?

Ans. One should make a chart of balanced diet as under :

- Firstly the list has to be made based on the understanding that the requirements of different food elements vary according to age, occupation and physical status of a particular person.
- The daily required total energy should be ensured according to the needs of one's body.
- The food should contain correct proteins needed for body formation and the prevention of its decay.

Question 2. On the basis of solubility properties, how many sub-groups are there in vitamins and what are they?

Ans. On the basis of solubility properties, vitamins are divided into two sub-groups. Such as :

- Fat soluble vitamins which includes vitamin-A, D, E and K.
- Water soluble vitamins which includes vitamin B-complex group and vitamin C.

Question 3. What is the necessity of mineral salts in human body?

Ans. We know, mineral salts are salts of iron, calcium, iodine, phosphorus, sodium, potassium, magnesium, chlorine, sulphur, etc. These salts form the body and control the internal functions like formation of bones, teeth, enzymes and hormone, stimulation of nerves, contraction of muscles, keeping the osmotic balance and activating different enzymes of the body.

Question 4. What do you know about roughage?

Ans. Roughage is the part of cereal grains, fruits and vegetables which is not digested. It passes almost unchanged through the gut. It is not a nutrition elements. But it is very essential to maintain a sound health. Roughage in grains is called bran. Roughage in fruit and vegetables is the cellulose walls of plant cells. We get roughage from fibre foods.

Question 5. What are the important functions of water in human body?

Ans. Water is an inseparable part of human body. It plays vital role in existence of life. The most important functions of water in human body are stated below :

- Water is responsible for blood circulation and thermal regulation of the body.
- Water releases waste materials from the body. For example urine, sweats.

Question 6. Why is protein a different food element from other food nutrients?

Ans. Protein is a composite element of our body and it is composed of carbon, hydrogen, oxygen, nitrogen, iron, phosphorus and iodine. Because of the presence of nitrogen and the elements mentioned above, the composition and importance of proteins is different from other food nutrients.


Super Suggestions


Super Suggestions with 100% preparatory questions selected by the Master Trainer Panel

Dear learners, important multiple choice, short, creative, knowledge & comprehension-based questions of this chapter selected by Master Trainer Panel for Half-Yearly and Annual Exams are presented below. Learn the answers to the mentioned questions well to ensure 100% preparation.

Question Pattern	7*	5*
● MCQs with Answers	Learn each MCQs in this chapter thoroughly.	
● Short Q/A	1, 5, 15, 20, 29, 38, 42, 49, 55, 60, 67, 71, 76, 80	3, 8, 10, 14, 19, 23, 27, 35, 40, 48, 57, 64, 70, 78, 82
● Creative Q/A	1, 2, 4, 8, 12	3, 6, 9, 11, 15
● Knowledge-based Q/A	1, 2, 5, 8, 10, 12, 16	3, 4, 6, 9, 13, 15
● Comprehension-based Q/A	1, 5	2, 3

Exclusive Tips ► Master the solutions to all the activities in this chapter along with exercise and other Q/A to develop the creative thinking and assess your talent.



Assessment & Evaluation



A question bank presented in the form
of a class test to assess the preparation

Class Test

Time : 3 hours

Science

Class : Eight

Full marks : 100

Multiple Choice Questions (Each question carries 1 mark) $1 \times 30 = 30$

[N.B. : Answer all the questions. Each question carries one mark. Block fully, with a ball-point pen, the circle of the letter that stands for the correct/best answer in the "Answer Sheet" for Multiple Choice Question Type Examination.]

1. Excessive perspiration is a symptom of—
 A hypothyroidism B hypoglycemia
 C psoriasis D arthritis
 2. What element separates protein from carbohydrate?
 A Carbon B Hydrogen
 C Oxygen D Nitrogen
 3. What is in the first position in carbohydrate group?
 A Rice B Wheat C Pulse D Banana
 4. What is the carbohydrate-lipid ratio in rice?
 A 10 : 1.5 B 10 : 0.75 C 10 : 3 D 5 : 3
 5. What form of carbohydrate gets into the whole body through blood stream?
 A Glucose B Fructose
 C Galactose D All the above
 6. What organ in our body absorbs the fatty substances?
 A Endocrine gland B Lymph gland
 C Spleen D All the above
 7. What organ fatty acids form in?
 A Liver B Spleen
 C Deudenal D Intestine
 8. What kind of vitamin is available in food grains?
 A K B D C E D C
 9. Which vitamin helps to increase the number platelet of blood?
 A B₁ B₂ C B₆ D B₁₂
- Answer the question No. 10 and 11 by reading the stem :
Ovi likes to eat the meat of cow, hen and goat. But he does not eat totally pineapple, guava, lemon, amoloki.
10. What happens in human body in deficiency of food element which Ovi likes?
i. Anemia
ii. Muscle becomes weak and the colour of hair becomes pale
iii. The gums become soft
Which one is correct?
 A i & ii B ii & iii C i & iii D i, ii & iii
 11. Which disease can be occurred for not taking the foods that Ovi dislikes?
 A Anemia B Goitre C Rickets D Scurvy
 12. Which disease occurs for not eating lemon like fruits?
 A Scurvy B Rickets
 C Merasmus D Kwashiorkor
 13. Which helps to clot blood?
 A Vitamin "A" B Vitamin "C"
 C Vitamin "B" D Vitamin "K"

14. Which vitamin helps to increase number of platelets of blood in body?
 A B₁ B B₂ C B₆ D B₁₂
15. Which is Vitamin-A enriched food?
 A Papaya B Cabbage C Hog plum D Guava
16. Which vitamin does control level of calcium and phosphorous in blood circulation?
 A A B C C D D K
17. Which vitamin controls calcium and phosphorous in the blood circulation system.
 A A B C C D D K
18. Which is the structure element of our body?
 A Protein B Carbohydrates
 C Fat D Vitamins
19. Weight of Mr 'X' is 65 Kgs. How much amount of carbohydrate he needs daily?
 A 14.13 gram B 260 gram
 C 299 gram D 585 gram
20. Which one is easy to digest?
 A Potato B Fish C Fats D Apple
21. Which kind of disease occurs for the deficiency of carbohydrate?
 A Occur diarrhoea B Bones become weak
 C More sweating D Glands swells up
22. For the deficiency of which kinds of foods child suffer oczema and older suffer resist skin diseases?
 A Ruti, Muri B Butter, Chee
 C Sea fish, iodine D Cabbage, tomato
23. What type of food does not take part in body formation directly?
 A Milk B Flour
 C Fowl D Strawberry
24. How many grams make 6.5 metric ton?
 A 65000000 B 6500000
 C 65000 D 6500
25. What symptom is in a sense opposite to hypoglycemia?
 A Diabetes B Hypothyroidism
 C Hypermetropia D Oedema
26. How many amino acids does protein contain?
 A 18 B 20 C 22 D 24
27. What is the best food for satisfying one's need for additional energy?
 A Starch B Protein C Fat D Minerals
28. How much kilo calories of energy is produced from 25 grams of carbohydrate and 25 grams of protein?
 A 450 B 325 C 200 D 50
29. Which one is a pure food?
 A Sugar B Milk C Egg D Chira
30. How much energy can get from 10 gm butter?
 A 40 kilocalorie B 46 kilocalorie
 C 64 kilocalorie D 90 kilocalorie

Answer Sheet ▶ Multiple Choice Questions

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>	9	<input type="radio"/>	10	<input type="radio"/>	11	<input type="radio"/>	12	<input type="radio"/>	13	<input type="radio"/>	14	<input type="radio"/>	15	<input type="radio"/>
16	<input type="radio"/>	17	<input type="radio"/>	18	<input type="radio"/>	19	<input type="radio"/>	20	<input type="radio"/>	21	<input type="radio"/>	22	<input type="radio"/>	23	<input type="radio"/>	24	<input type="radio"/>	25	<input type="radio"/>	26	<input type="radio"/>	27	<input type="radio"/>	28	<input type="radio"/>	29	<input type="radio"/>	30	<input type="radio"/>



Science

Short-Answer Question (Each question carries 2 marks)**Answer any 10 of the following questions :** **$2 \times 10 = 20$**

1. What does the nature of food mean?
2. Mention the classification of carbohydrates.
3. Name three carbohydrates.
4. Write two symptoms of hypoglycaemia.
5. Write two characteristics of proteins.
6. What are lipids? Explain.
7. How many types of fatty acids are there and what are they?

8. Write two symptoms of fatty substance deficiency.
9. How is energy spent in our body?
10. Mention the types of vitamins.
11. Mention two functions of vitamin A.
12. Write the symptom and remedy of night blindness disease.
13. What does Xerophthalmia mean?
14. Name five fruits rich in vitamin C.
15. What are the sources of vitamin D?

Creative Question (Each question carries 10 marks)**Answer any 5 of the following questions :** **$10 \times 5 = 50$**

1. 
- a. What is goitre? 1
 - b. Why is vitamin-C prescribed with antibiotics? 2
 - c. Describe the utilities of any of the food items absent in the picture. 3
 - d. The food items are necessary for physical health. Acute shortage of these items also causes mental disorder. Assess the statement. 4
2. X Hilsa fish, Chicken Y Guava, Orange, Tomato
Z Fish oil, Yolk, Edible oil

- a. What is roughage? 1
- b. Why hotchpotch called a mixed food? 2
- c. Explain the importance of X in building body. 3
- d. Analyze the role of Y and Z in preventing osteomalacia and scurvy. 4
3. Sakib is nine years old. He takes 1200 kilocalories protein daily. Moreover he takes according to need rice, chocolate, butter, sugar etc. but he never eats vegetables and fruits.
 - a. What is called roughage? 1
 - b. Why glucose is more important for human body? 2
 - c. Determine the amount of protein in grams Sakib eats daily. 3
 - d. The food habit of Sakib can cause the various diseases in his body—Explain. 4
4. Shohana is eight years old. She takes 1400 kilo calories protein daily. Though she takes according to her needed carbohydrate and lipids rite never eats vegetables and fruits.
 - a. What is called food? 1
 - b. Why glucose is more important for human body? 2
 - c. Determine the amount of protein in grams Shohana eats daily. 3
 - d. The food habit of Shohana can causes the various diseases in her body.—Explain. 4
5. The weight of Mr. Sharif is 85 kg. He likes to eat fish and meat. But he does not like to eat sour fruits and colourful vegetables.

- a. What is balanced diet? 1
- b. Why rice is called carbohydrates? 2
- c. Determine how much carbohydrates required by Mr. Sharif daily. 3
- d. Explain what problems Mr. Sharif has to be faced due to lack of die foods he dislikes to eat. 4
6. Roni has dislike in vegetables, meat and fish and likes fast food. As a result he lacks interest in food, study and feels physical weak. He goes to a doctor. The doctor advises him to take food which contains Protein. On the other hand Rahim likes different fruits and food cooked at home.
 - a. What type of food is rice? 1
 - b. Why is sea fish necessary for human body? 2
 - c. Explain the reason behind the doctor's advice to Roni. 3
 - d. Analyze the utility of the foods consumed by Roni and Rahim and make a comparative discussion of it. 4
7. Age of Suma is 25 years and weight is 54kg. She takes 200gm carbohydrate, 150gm protein and 50 gm fats like food. The liver of her younger brother grows up day by day. Doctor advices him to eat more fish, meat, egg like food.
 - a. What is called nutrition? 1
 - b. Why milk is called balanced food? 2
 - c. What type of disease is Suma's younger brother attacted by? Explain. 3
 - d. Does Suma take sufficient amount of calories from daily taken food according to her age? Opine on the basis of mathematical calculation. 4
8. Mr Rahman is 40 years old. His mass is 55 kg. By the advice of doctor, he takes 100 gm chira as his breakfast now a days. In every 20 gm chira, there are 15.4 gm carbohydrate, 1.32 gm protein and 0.24 gm lipids.
 - a. What is food? 1
 - b. What do you mean by Roughage? Explain. 2
 - c. Calculate the amount of energy that Mr. Rahman find from the chira. 3
 - d. How much amount of carbohydrate he intake from the other foods at day long for his fitness? Give your opinion mathematically. 4

✓ Answering Reference ► Short-Answer Questions

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|--------------------------------|--------------------------------|---------------------------------|---------------------------------|
| 1 ▶ See this Chapter, Ques. 04 | 5 ▶ See this Chapter, Ques. 14 | 9 ▶ See this Chapter, Ques. 30 | 13 ▶ See this Chapter, Ques. 42 |
| 2 ▶ See this Chapter, Ques. 08 | 6 ▶ See this Chapter, Ques. 20 | 10 ▶ See this Chapter, Ques. 34 | 14 ▶ See this Chapter, Ques. 49 |
| 3 ▶ See this Chapter, Ques. 10 | 7 ▶ See this Chapter, Ques. 22 | 11 ▶ See this Chapter, Ques. 37 | 15 ▶ See this Chapter, Ques. 60 |
| 4 ▶ See this Chapter, Ques. 13 | 8 ▶ See this Chapter, Ques. 27 | 12 ▶ See this Chapter, Ques. 40 | |

✓ Answering Reference ► Creative Questions

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|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 1 ▶ See this Chapter, Ques. 03 | 3 ▶ See this Chapter, Ques. 05 | 5 ▶ See this Chapter, Ques. 10 | 7 ▶ See this Chapter, Ques. 14 |
| 2 ▶ See this Chapter, Ques. 04 | 4 ▶ See this Chapter, Ques. 08 | 6 ▶ See this Chapter, Ques. 12 | 8 ▶ See this Chapter, Ques. 16 |