Chapter 10. Nutrition

Exercise 1

Solution A.

1. (c) Fructose and glucose
2. (d) Potassium – Banana
3. (b) and (c). (Note: Marasmus is mainly caused due to the deficiency of proteins, but as per the options provided, the right answer would be both carbohydrates and fats.)
4. (a) A, D and E
5. (c) Carrot
6. (a) C

Solution B.1.

(a) T (True)
(b) F (False). Kwashiorkor is a severe protein deficiency disease.
(c) F (False). Iodine is required for the proper working of thyroid.
(d) F (False). Antibodies are proteins produced by the immune system of the body, when it detects harmful substances called antigens.
(e) T (True)

Solution B.2.

(i) Fluorine
(ii) Iodine
(iii) Iron

Solution C.1.

CARBOHYDRATES	EXAMPLES	USES
(i) Monosaccharides	1.Glucose	Provides an instant source of energy
	2.Fructose	Needed for maintaining a healthy body
(ii) Disaccharides	1.Sucrose	Needed for good health
	2.Maltose	Further broken down to produce glucose molecule which provides energy to the body
(iii) Polysaccharides	1.Cellulose	Acts as roughage

		which prevents constipation
	2. Glycogen	Reserve carbohydrate in humans and stored in liver and muscles

Solution C.2.

Balanced diet is defined as the one which contains all the principal constituents of food in proper quantity.
Balanced diet is the one that provides at least 50% of energy from carbohydrate, 35% from fat, and 15% from protein. The precise optimal quantities of each nutrient will vary with age, sex and activity.

Solution C.3.

Bones are generally made of calcium and iron. Milk and milk products are rich in calcium and Vitamin A. That is why, a doctor advises a bone patient to include more of milk and milk products in his everyday food to make his bones and teeth strong. Milk also prevents oxidation of Vitamin A. Calcium present in milk even helps in clotting of blood. Milk, is therefore a wholesome food.

Solution D.1.

Need for food by the body:

1. **Growth:** Food is necessary for building new protoplasm or cells. This helps in the growth of an organism.
2. **Repair:** Food provides materials for the repair of worn out or damaged cells and tissues.
3. **Energy:** We obtain energy from food. This energy is required for carrying out various life functions.
4. **Maintenance:** Nutrients obtained through food help to maintain the chemical composition of cells.
5. **Provision of raw materials:** Raw materials required for the synthesis of products such as enzymes, hormones, sweat, milk, etc. are obtained through food.
6. **Protection:** Food provides protection from diseases and infection.

Solution D.2.

Proteins are the body building foods. They provide the chemical material for the growth and repair of body cells and tissues. At the time of emergency, proteins can also be oxidized in the body to release energy.
Protein deficiency disease of young children: Kwashiorkor

Solution D.3.

Whole grain atta, fruits and green leafy vegetables are the chief sources of roughage.

1. Roughage does not provide any nutrients to our body. It still has nutritive value and is essential for the proper functioning of the gut.
2. It absorbs a lot of water and retains it. In this way, it keeps faecal matter soft preventing constipation.
3. It combines with intestinal waste and makes it bulky.
4. It helps in the formation of stools and helps our body to expel the undigested waste food.
5. Roughage expands the intestinal lumen and helps in slow and smooth movement of food through the gastrointestinal tract. This movement is required for proper and complete digestion of food and for the elimination of intestinal waste.
6. Roughage stimulates secretion from the digestive tract and also helps in removal of cholesterol, fatty secretory substances and toxins from the body.

Solution E.1.

VITAMIN	RICH SOURCE	DEFICIENCY DISEASE
(i) **Thiamine**	Whole grain	Beri-beri
Niacin	Milk	(ii) **Pellagra**
(iii) **Ascorbic acid**	(iv) **Citrus fruit**	Scurvy
Calciferol	(v) **Fish liver oil**	(vi) **Rickets**
(vii) **Retinol**	Carrot, yellow fruit	(viii) **Night blindness**

Solution E.2.

Mineral	Function	Rich Source
Iodine	**Promotes the secretion of thyroxine by the thyroid gland**	**Iodised salt, sea foods**
Iron	Formation of haemoglobin	**Whole cereals, fish**
Calcium	**Allows muscle contraction and clotting of blood**	**Dairy foods, beans**
Potassium	**Controls nerve and muscle activity, fluid balance, secretion of neurotransmitter**	**Banana, potato**