Food and Protection of Food

Solution 1.a:

The main constituents of food are carbohydrates, proteins, fats, minerals and vitamins.

1. **Carbohydrates:** Rice, wheat, maize, bajra, jowar
2. **Proteins:** Dals, milk, eggs, fish, meat
3. **Fats:** Oil, butter, ghee, margarine, cream
4. **Minerals:** Milk, salt, spinach, banana, corn
5. **Vitamins:** Leafy vegetables, carrot, papaya, milk, orange

Solution 1.b:

Fruits and leafy vegetables are fibrous foods.

Solution 1.c:

It is necessary to preserve foodstuffs for the following reasons:

1. Food can be made available whenever it is required.
2. Quality of food is maintained by preventing spoilage.
3. Spoilage of food by microorganisms and other pests is prevented, and thus, food is protected.

Solution 1.d:

Various methods of preserving food are

1. Boiling
2. Drying
3. Storing at low temperature/refrigeration
4. Candying
5. Salting
6. Pasteurisation
7. Adding natural and chemical preservatives

Solution 1.e:

Pasteurisation is the process in which the food item is first heated to 80°C to destroy the microorganisms in it and then cooled suddenly. Pasteurisation is mostly used for preserving milk.

Solution 1.f:

Chemical preservatives:

1. Citric acid
2. Boric acid
3. Acetic acid or vinegar
4. Sodium metabisulphite

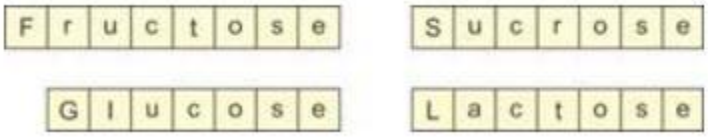
Solution 2:

- At temperature below **5**°C in the refrigerator, microorganisms stop growing.
- Growth of microorganisms depends on **temperature**.
- To prevent spoilage of potatoes due to sprouting, **gamma rays** are used.

Solution 3:

Group 'A'	**Group 'B'**
(a) Carbohydrates	2. Glucose
(b) Proteins	3. Amino acids
(c) Fats	1. Glycerol

Solution 4:



Solution 5.a:

Microorganisms grow best between 20°C and 40°C. Boiling kills microorganisms. If microorganisms persist in the milk, the milk gets spoilt. Therefore, to preserve the milk in good condition, we boil milk from time to time.

Solution 5.b:

Fibrous substances form the bulk of faeces. These substances do not get digested in our body and act as roughage. Therefore, we should include fibrous substances in our diet as they help in forming stools and expelling the undigested waste part of the food.

Solution 6:

Disorder	Food suggested	Disease and vitamin deficiency
Ramesh cannot see clearly at night.	Leafy vegetables, carrots, papaya, milk	Night blindness (Vitamin A deficiency)
The bones in Rosie's legs are bent.	Cod liver oil, shark liver oil	Rickets (Vitamin D deficiency)
Neela has bleeding gums.	Oranges, amla, sprouted pulses, lemon	Scurvy (Vitamin C deficiency)
Ahmed has a rough skin.	Dals, leafy vegetables, milk	(Vitamin B deficiency)

Solution 7.a:

Adulteration of food

1. Mixing of cheap, low quality and undesirable substances in the food for making profits is called adulteration of food.
2. Chilli powder is adulterated with brick powder, coriander powder with horse dung, black pepper with dried papaya seeds, wheat flour with chalk powder and ghee with animal fats.
3. Adulteration reduces the nutritional value of food, and adulterated food may also cause diseases if consumed regularly. Therefore, we should be very careful while buying any food item.
4. Food adulteration can be detected by simple methods.
5. To prevent food adulteration, the Food and Drug Administration Department inspects all food items from time to time.
6. The Government of India passed the 'Prevention of Food Adulteration Act' in 1954 to check the quality of food.
7. 'ISI' and 'Agmark' are standards for ensuring that the food is of a good quality.

Solution 7.b:

Use of refrigerator

1. The growth of microorganisms depends on temperature.
2. If food is preserved at a low temperature, it lasts longer and better because microorganisms cannot grow at low temperatures.
3. The temperature inside a refrigerator is low, about 5°C. So, the food remains safe.
4. It is necessary to store leafy vegetables, fruits and cooked food at low temperatures. The refrigerator acts as a means to store food safely.

Solution 7.c:

Cold stores

1. Cold stores are used for storage of food on a large scale. Fruits, vegetables, milk, meat and fish are preserved in cold stores.
2. However, these food items can get spoilt if the warehouses are not maintained properly.
3. Keeping food in cold storage prevents the spoilage of food because most of the microorganisms do not grow below 10°C.
4. It also helps to prevent self-decomposition by reducing the action of enzymes in the food.