



## PURCHASE AND STORAGE OF FOOD

All of us purchase food from the market. Some of us also grow food at home. While purchasing food we pick and choose from a variety of foods that are sold in the market. Some foods are cheap, some expensive, some are fresh and some stale, some are in season and some are out of season. All these factors influence our choice of food while buying. Since buying in bulk is cheaper and convenient, we generally buy more than what we require at any given time. Hence after buying, our next problem is to store the foodstuff. Even if we are careful we sometimes find food spoilt, vegetables smelling and dals being eaten by insects. Why does this happen? Is this because we did not select the foods carefully or because they were not stored properly? What happens if a spoilt food is accidentally consumed? You will find answers to these and similar questions in this lesson.



### OBJECTIVES

After reading this lesson, you will be able to:

- explain the terms perishable, semi-perishable and non-perishable and classify food items accordingly;
- state indicators of quality for all kinds of food items;
- use the quality indicators for selection and purchase of food;
- adopt appropriate methods of storage of food;
- define food spoilage and explain its causes;
- state the importance and procedure of safe food handling.



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## 7.1 PERISHABILITY OF FOODS

'Perishable' is a term used in the context of food that goes bad quickly. You must have noticed that if you keep the milk at room temperature, specially in hot summer, by evening it curdles. If you keep the dough in similar circumstances it ferments and soon starts giving foul smell. But nothing happens to bread or potatoes or apples or pulses. Bread will show signs of decay in probably 2-3 days times and potatoes and apples will take even longer. Pulses usually do not show any damage for months.

Thus, you can use three different terms to describe perishability of food. These are perishable, semi-perishable and non-perishable. The terms are relative meaning thereby, that all foods are perishable but some perish much sooner than the others. You must know that each food stuff has a specific period after which it begins to spoil. This period is called **shelf life**. Depending upon the shelf life we can divide foods into three categories:

### 7.1.1 Classification of food on the basis of perishability

Can you now classify all food items into categories of perishability? Try. The three categories of food are:

- (i) **Perishable foods:** Cannot be stored for more than one or two days at room temperature, that is, they have a shelf life of 1 or 2 days. Milk is a good example of perishable food.



Fig. 7.1 Perishable foods

- (ii) **Semi-perishable foods:** Can be kept for a couple of weeks or even a month or two. They have a longer shelf life than perishable foods. Potato, arbi, onions, ginger, biscuits and namkeens, are some examples of semi-perishable food.

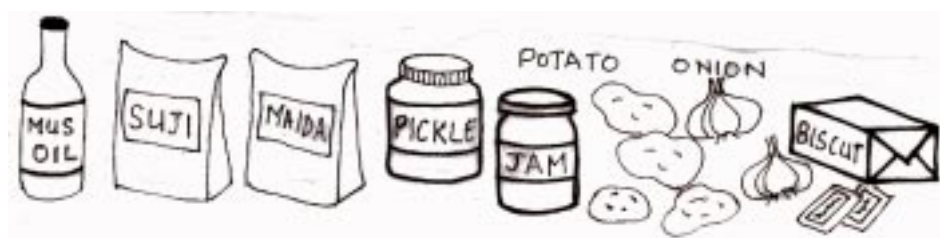


Fig. 7.2 Semi-perishable foods



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- (iii) **Non-perishable foods:** In the real sense, foods in this category are not really non—perishables, but they can be stored for much longer time as compared to perishables and semi-perishables. They can be stored for several months and the examples of such foods are cereals, pulses, dry fruits, spices, oil etc.



Fig. 7.3 Non-perishable foods

You can also change a perishable foodstuff to a semi-perishable or non-perishable one by giving it some treatment. For example, if you boil milk and refrigerate it you can keep it for few days. If you make a murabba from carrot, then you can keep it for months.

- **Perishable foods can be stored for 1-2 days.**
- **Semi-perishable foods can be stored for some weeks to 1-2 months.**
- **Non-perishable foods can be stored longer as compared to perishables and semi-perishables.**

**INTEXT QUESTIONS 7.1**

1. Classify the following foods as perishable (P), semi-perishable (SP) and non-perishable (NP).
 

1. Bhindi .....	2. Urad dal .....
3. Suji .....	4. Besan .....
5. Jaggery .....	6. Wheat .....
7. Milk .....	8. Banana .....
9. Rice .....	10. Tomatoes .....
11. Apples .....	12. Pappad .....
13. Moong dal .....	14. Sugar .....
15. Cooking oil .....	16. Wheat flour .....
17. Green peas .....	18. Spinach .....

**7.2 QUALITY INDICATORS**

When you purchase anything from the market your aim is get your money's worth. How do you justify that? Well, in the process of selection you are



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looking for certain qualities and if you find them in the product your decision is made. Some of these indicators are common for all food items. For example, freshness, natural colour, smell and cleanliness are some of the common indicators. Besides these are some specific indicators for example, green leafy vegetables need to be fresh and crisp while paneer needs to be fresh and soft and bread has to be fresh and spongy.

It will be a good idea if you can devote some time to work out at least 5-10 quality indicators for all food items or groups of food items. You can apply this knowledge to the selection and purchase of these items whenever need be.



**Activity 7.1:** Work out quality indicators for fruits and vegetables, milk and milk products, meat, fish, poultry and eggs, butter and oils  
Pulses and cereals

S.No	Fruits	Indicators
1.	Banana	(i) should be soft but firm (ii) should have clear and undamaged skin
2.		
3.		

Study the given example and select at least one food item of your choice from each category and write the indicators.

### 7.3 SELECTION, PURCHASE AND STORAGE OF FOOD

What do you do when you go to the market to buy food? You probably quickly run your fingers through wheat, rice, dal, etc., you press a tomato, mango or banana gently to see if it is firm. Why do you do this? You do this to assess the quality of food item. You generally buy more than what you need or what you can consume immediately. Buying food that spoils before you could use it, would mean wastage of money.

The food that you purchased could also spoil if it is not stored properly. This again would mean wastage of food and money. If you leave dals or spices in paper bags, they will absorb moisture and then after sometime fungus and small insects will grow on them. Biscuits would become soggy and loose namkeens would lose their freshness. This means that proper storage of foodstuff is as important as the purchase of quality foodstuff. Let us now learn what we must keep in mind while selecting and purchasing food and the methods of storing different foodstuff. Table 7.1 will enlighten you about the selection, purchase and storage of commonly consumed food items in any household.

**Table 7.1 : Selection, purchase and storage of food**

TYPE OF FOOD	NAME OF FOOD	SELECTION	PURCHASE	STORAGE
A. Non-Perishable Foods	1. Cereals and pulses, e.g. wheat, rice etc.	<ol style="list-style-type: none"> <li>Should be clean i.e., without any stones, bits of stalk or rotting grains.</li> <li>Should not have any lumps or webs which are formed because of insects and weavils.</li> <li>Grains should be big, hard and dry.</li> <li>Should have proper colour and appearance.</li> </ol>	<ol style="list-style-type: none"> <li>Buy from co-operative stores as they are cheaper and reliable.</li> <li>Buy when in season, e.g. wheat in April/May, as it is fresh and has good flavour.</li> <li>Buy in bulk if you have space to store.</li> </ol>	<ol style="list-style-type: none"> <li>Store in clean, dry and air-tight containers.</li> <li>Lumps of salt and turmeric can be used for storing rice.</li> <li>Mix wheat with dry neem leaves.</li> <li>Special Ayurvedic tablets can be used. Tie these in muslin cloth so that it becomes easy to remove before cooking.</li> </ol>
	2. Sugar, jaggery, tea coffee, salt	<ol style="list-style-type: none"> <li>Should be clean and free of dirt, dust and stalk.</li> <li>Should have proper colour.</li> <li>Sugar should be dry.</li> <li>Select only packed iodized salt, tea and coffee.</li> </ol>	<ol style="list-style-type: none"> <li>Buy more quantity only when good, clean variety is available.</li> <li>Buy tea, coffee in small amounts only. They absorb moisture and loose flavour easily.</li> </ol>	<ol style="list-style-type: none"> <li>Store in clean, dry air-tight containers.</li> <li>Tea should be stored in dark place.</li> </ol>
B. Semi-Perishable foods	1. Suji, atta, maida, dalia etc.	<ol style="list-style-type: none"> <li>Should not have lumps or weavils.</li> <li>Should have proper colour and flavour</li> <li>Should be finely powdered.</li> <li>Packets must have standardisation marks.</li> </ol>	<ol style="list-style-type: none"> <li>Buy limited quantities only.</li> <li>Should have a sweetish taste.</li> <li>Spices should be in sealed packets and have standardisation mark. Packet should have recent date of packing.</li> </ol>	<ol style="list-style-type: none"> <li>Dry roast suji and dalia before storing.</li> <li>Store in dry, air-tight tins or bottles so that flavour is retained for longer period.</li> </ol>
	3. Ghee, oils, butter	<ol style="list-style-type: none"> <li>Should not have a stale smell.</li> <li>Should have proper colour.</li> <li>Buy standard brands only.</li> </ol>	<ol style="list-style-type: none"> <li>Never purchase loose ghee/oil as it may be adulterated.</li> <li>Buy according to family needs.</li> <li>Buy brands with standardisation marks.</li> <li>Check date of expiry</li> </ol>	<ol style="list-style-type: none"> <li>Store in air-tight containers.</li> <li>Never leave the tin open as air and moisture make the ghee/oil rancid.</li> </ol>
	4. Cheese and paneer	<ol style="list-style-type: none"> <li>Paneer should be fresh and spongy.</li> <li>Should not have a foul smell</li> <li>Should not be shiny nor feel slippery on touch.</li> </ol>	<ol style="list-style-type: none"> <li>Purchase from a reliable shop.</li> </ol>	<ol style="list-style-type: none"> <li>Lightly fry paneer pieces and store on cooling. This way, paneer lasts much longer.</li> <li>Fresh paneer can be kept in cold water or in the refrigerator for a day or two.</li> </ol>

TYPE OF FOOD	NAME OF FOOD	SELECTION	PURCHASE	STORAGE
C. Perishable Foods	5. Potatoes, onion, ginger, garlic	<ol style="list-style-type: none"> <li>1. Select medium sized vegetable, with no sprouting eyes.</li> <li>2. Onion covering should be dry and free of smell.</li> <li>3. Ginger should be fairly big and dry.</li> </ol>	<ol style="list-style-type: none"> <li>1. Avoid buying green potatoes as they are not good in taste and are harmful.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove from packets and store onions and potatoes in separate wire baskets.</li> <li>2. Keep ginger in wet sand to make it last longer.</li> </ol>
	6. Processed foods, instant foods, jams, jellies, pickles, papads, chutney, etc.	<ol style="list-style-type: none"> <li>1. These should not be in bulging tins/ bottles, and bottle caps should not be broken.</li> <li>2. Tins/tetrapacks should not be damaged or lacking.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check label for FPO, brand names, and expiry date.</li> <li>2. Check packet for damage and weight</li> </ol>	<ol style="list-style-type: none"> <li>1. Store in dry, cool and dark place.</li> <li>2. Never leave tins and bottles open.</li> <li>3. Transfer packet or open tin contents into clean air-tight bottles.</li> </ol>
	1. Fruits and Vegetables	<ol style="list-style-type: none"> <li>1. Should be clean, fresh, firm and crisp.</li> <li>2. Heavier fruits with a thin skin are juicier and of good quality.</li> </ol>	<ol style="list-style-type: none"> <li>1. Purchase only as much as required for the family.</li> </ol>	<ol style="list-style-type: none"> <li>1. Store in a cool, dry place.</li> <li>2. Keep cauliflower and radish with leaves which keeps them fresh longer.</li> <li>3. Keep leafy vegetables wrapped in a moist cloth.</li> <li>4. Coat lemons with oil before storing.</li> <li>5. Do not wash fruits before storing as they spoil faster.</li> <li>6. Keep cabbage and cucumber in 2-3 folds of newspaper or brown paper.</li> </ol>
	2. Eggs	<ol style="list-style-type: none"> <li>1. Select eggs that are clean, fresh and large. Check freshness of eggs by - rough shell - no sound when shaken</li> </ol>	<ol style="list-style-type: none"> <li>1. Buy eggs from poultry farm if it is close by, as rates are lower.</li> </ol>	<ol style="list-style-type: none"> <li>1. Never wash eggs before storing.</li> <li>2. Store eggs with pointed ends downwards.</li> <li>3. Store in a cool place or in a basket in an airy room.</li> </ol>

TYPE OF FOOD	NAME OF FOOD	SELECTION	PURCHASE	STORAGE
	3. Milk, Curd, Cream, Khoa	<ol style="list-style-type: none"> <li>Select milk according to quality needed. <ul style="list-style-type: none"> <li>Toned milk (no cream)</li> <li>Full cream (buffalo milk)</li> </ul> </li> <li>Check colour and taste. Milk has a slightly sweet taste. Stale milk has sour taste and an unpleasant smell.</li> </ol>	<ol style="list-style-type: none"> <li>Buy from clean and hygienic place.</li> </ol>	<ol style="list-style-type: none"> <li>Boil milk and keep in a cool place. If there is no refrigerator, boil milk after every 5-6 hours to keep it free from germs.</li> <li>Never mix old milk with fresh milk.</li> <li>Curd and cream should be stored in cool place, a refrigerator, if possible.</li> <li>Keep away from strong smelling foods e.g., onions, guava, mango etc., as it absorbs the smell.</li> <li>Khoa is soft and sweet but becomes sour if not stored in a cool place.</li> </ol>
	4. Meat, Fish, Chicken	<ol style="list-style-type: none"> <li>Fresh meat is always pink in colour.</li> <li>Meat should be firm, yet soft and have a smooth surface.</li> <li>Should not have a rotten smell.</li> <li>Meat and fish should not feel sticky.</li> <li>Fish gills should be bright red in colour.</li> <li>Press fish with thumb and if depression remains, the fish is not fresh.</li> </ol>	<ol style="list-style-type: none"> <li>Buy from reliable shops only, where meat of healthy animals is sold.</li> <li>Buy in required quantity only and consume immediately.</li> </ol>	<ol style="list-style-type: none"> <li>Keep in cool place.</li> </ol>
	5. Bread	<ol style="list-style-type: none"> <li>Press it between your fingers. If soft to touch and presses easily and comes back to original shape, it is fresh.</li> </ol>	<ol style="list-style-type: none"> <li>Buy from a reliable shop.</li> <li>Buy just enough to last 1-2 days only.</li> </ol>	<ol style="list-style-type: none"> <li>Keep in air-tight containers so that it remains fresh longer and in cool place or refrigerator.</li> </ol>



Notes

- Knowledge of what, where and when to buy helps you to get quality foods.
- Knowledge of how to store foodstuffs helps to prevent spoilage.



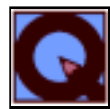
**Activity 7.2:** Go to your neighbourhood market to buy vegetables for dinner. Recall and list the points that you kept in mind while selecting the vegetables.



**Activity 7.3:** You have bought paneer, rice and eggs to be used after two days. Note down the procedure for storing each of them.

**Note:** Use the following tables to record your information.

Food items	Criteria for selection
1.	
2.	
3.	
4.	
5.	



### INTEXT QUESTIONS 7.2

- Define the following terms
  - perishable.....
  - semi-perishable.....
  - non-perishable.....
- Mention common quality indicators for the perishable, semi perishable and non-perishable food items.  
.....

### 7.4 FOOD SPOILAGE: CAUSES AND HAZARDS

What happens when suji, dal, etc., are left in open for a few days? You will see that the insects have grown on them. This happens because they are not stored properly. Similarly, what happens when cooked dal or vegetables are left outside the refrigerator for two days? A white cottony layer can be seen on top of the dal. There is also a very unpleasant smell. Can you eat this dal? No. This dal is not fit for human consumption. It is spoilt.

**Food spoilage occurs when the quality of food is damaged, hence it becomes unfit for human consumption.**

Foods can be spoilt by

- Micro-organisms
- Enzymes
- Insects and rodents



- 1. Micro Organisms:** Do you remember the example of dal which was kept outside for two days and which got spoilt? How did it go bad? What causes this spoilage? The dal has been spoilt by micro-organisms which are present in the atmosphere all the time. They settle on the outer layer of foods and produce certain chemicals leading to spoilage of food. If this food is consumed it may lead to harmful effects. Microorganisms can be in anyone of these forms: bacteria, yeasts or moulds.

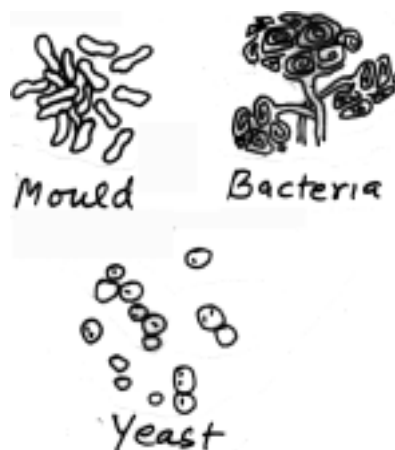


Fig. 7.4 : Microorganisms under the microscope

Some micro-organisms are beneficial also. For example, how do you prepare curd at home? You just add some old curd into warm milk and after a few hours the curd is set. How did this happen? This change of milk to curd also takes place by the action of micro-organisms called bacteria. Formation of spongy texture in idli, dhokla, dosa, bread, etc., is also due to the action of micro-organisms like yeast. Remember, such action of micro organisms is not spoilage of food.

- 2. Enzymes:** Do this experiment: Keep a raw mango in the kitchen for a few days.

Observe the changes in the mango:

*Colour* - The mango changes its colour from green → yellow → brown

*Texture* - It changes from hard → firm → soft

*Flavour* - changes from sweet → offensive.

Mango at this stage becomes unfit for eating. Can you say why these changes take place in the raw mango? This is due to the continuous action of enzymes present in the mango. Such enzymes are present in every foodstuff. Actually, these enzymes are responsible for the growth of food and hence ripening of the fruit. If food is stored properly, action of enzymes can be delayed and food can be protected from food decay.

- 3. Insects and Rodents:** Leave dal, rice, wheat outside for a few days. What happens, if grains are not stored properly. They can be easily attacked by insects and rodents. They spoil food, not only by eating

## MODULE - 2

### Foods and Nutrition



#### Notes

**Micro-organisms** are tiny living creatures which are present everywhere all the time. They cannot be seen with naked eyes.

**Enzymes** are chemical which are already present in foods and help in the ripening of foodstuffs.

Rodents are nibbling animals and include mice, squirrel and rats.



**Notes**

the food but also by dropping their excreta. Such foods are totally unfit for human consumption and get wasted.

Besides, there are other factors which speed up the process of food spoilage. These are heat, moisture and air which help in speeding the growth of micro-organisms which spoil the food. You must have noticed that cooked food spoils faster in summer than in winter. This is because of the presence of heat and moisture in the air. You can keep dry food safely for a very long time because there is no moisture in them and therefore microorganisms cannot work on it.

Food that gets spoilt is not fit for human consumption. There is a change in the quality of the foodstuff. If this food is consumed it could lead to health hazards like nausea and vomiting, diarrhoea and stomachaches.



### **INTEXT QUESTIONS 7.3**

1. Rice can be kept for a long time since its moisture content is:
  - (a) high
  - (b) medium
  - (c) low
 because .....
2. Bacteria is a/an
  - (a) enzyme
  - (b) rodent
  - (c) micro-organism.
 because .....
3. Fruits and vegetables remain fresh if the temperature is
  - (a) warm
  - (b) cool
  - (c) hot
 because.....

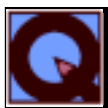
### **7.5 SAFE HANDLING OF FOOD**

Safe handling of food means hygienic handling of food and it is required for food safety as well as for those who consume it. Unsafe food carries germs which can cause diseases. Hence, food meant for human consumption should be handled safely so as to prevent any harmful effects.

Remember the following points while handling food:

- Wash your hands before cooking and eating.

- Wash all fruits and vegetables before cooking or eating them raw.
- While coughing or sneezing, cover your mouth and nose.
- While tasting, use a separate spoon and do not put this spoon back in the food.
- Keep all perishable foods in a cool place or in a refrigerator.
- Use perishable foods at the earliest.
- Keep your kitchen and storage facilities clean.
- Use clean utensils.
- Buy food especially, milk and milk products, meat products, etc., from reliable sources.
- Ensure quality while buying.

**INTEXT QUESTIONS 7.4**

Select the correct answer:

1. Before storing, green leafy vegetables should be wrapped in
  - (a) brown paper
  - (b) moist muslin cloth
  - (c) newspaper
  - (d) polythene packet
2. Eggs should be stored with pointed ends
  - (a) straight
  - (b) downwards
  - (c) upwards
  - (d) angled
3. Rice can be stored using
  - (a) neem leaves
  - (b) special ayurvedic tablets
  - (c) lumps of salt and turmeric
  - (d) all of the above
4. Perishable food items can be stored in refrigerator for
  - (a) one day
  - (b) a week
  - (c) limited time
  - (d) unlimited time.

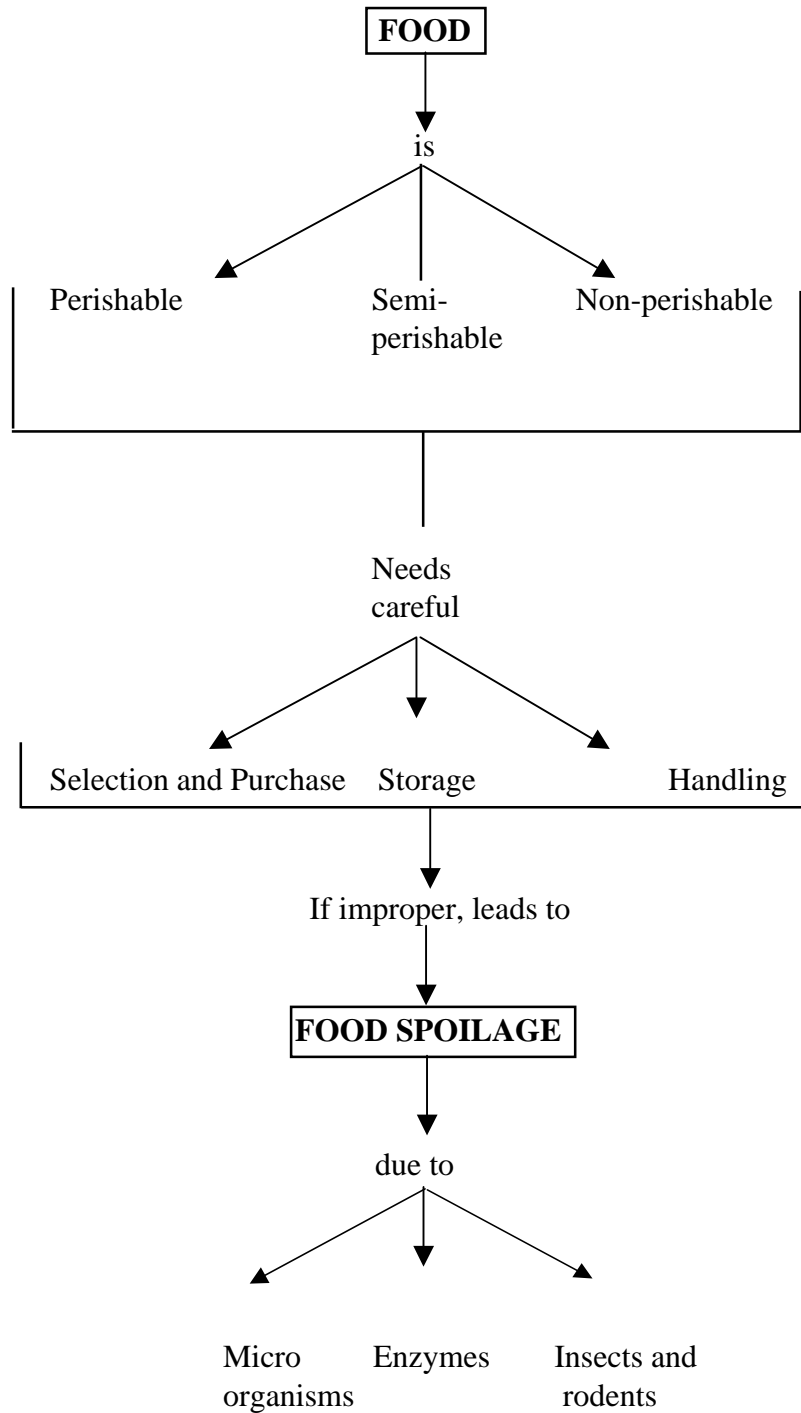
**Notes**



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**WHAT YOU HAVE LEARNT**



**TERMINAL EXERCISE**

- Give three examples each of perishable, semi-perishable and non-perishable foods.
- List two points we must keep in mind while selecting the following foods:
 

(a) rice	(b) vegetables
(c) bread	(d) meat
(e) maida	(f) canned food
- What are the main causes of food spoilage and factors speeding them?

**ANSWERS TO INTEXT QUESTIONS**

- | 7.1 | <b>Perishable</b> | <b>Semi-perishable</b> | <b>Non-perishable</b> |
|-----|-------------------|------------------------|-----------------------|
|     | Bhindi            | Suji                   | Urad dal              |
|     | Banana            | Besan                  | Wheat                 |
|     | Tomatoes          | Jaggery                | Rice                  |
|     | Apples            | Moong dal              | Sugar                 |
|     | Green Peas        | Papad                  |                       |
|     | Spinach           | Cooking oil            |                       |
|     | Milk              | Wheat flour            |                       |
- 7.2 (i) & (ii) Refer to text
- 7.3 1. (c)                      2. (c)                      3. (b)
- 7.4 1. (b)                      2. (b)                      3. (d)    4. (c)

**TERMINAL EXERCISE**

- | 1) | <b>Perishable</b> | <b>Semi-perishable</b> | <b>Non-perishable</b> |
|----|-------------------|------------------------|-----------------------|
|    | Milk              | Jaggery                | Rice                  |
|    | Banana            | besan                  | sugar                 |
|    | Cooked dal        | oil                    | dry spices            |
- 2) Refer Table 7.1
- 3) Three causes - Micro organisms, enzymes, insects and rodents. Factors speeding them - heat, moisture and air.

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**Notes**