

CHAPTER : 26

TIME AND ENERGY SAVING EQUIPMENT

Modernization and changing times have empowered women. Empowerment depends on time and working capability, and the way in which time and energy is carried out in simple, easy and convenient manner. Industrial revolution has given many tools which have made work easy and has saved time and energy. These tools are known as time and energy saving tools. These tools and appliances are more prevalent in developed countries than in developing countries. The demand of these appliances is less in developing countries because of following reasons: (1) high cost of tools, (2) homemaker not having sufficient information of these tools (3) rural environment and illiteracy.

Need of tools:

1. To increase capacity to work
2. To improve the quality of work
3. To make proper use of time and energy
4. To make work easy and simple
5. To create an environment of happiness, satisfaction and pleasure at home
6. To achieve good health

New inventions have made work easy, simple and convenient.

The tools that help make daily activities easy are—

1. Pressure cooker, 2. Microwave, 3. Gas stove, 4. Roti maker, 5. Electric heater, 6. Electric

tandoor, 7. Electric toaster, 8. Hand blender, 9. Electric oven, 10. Dishwasher, 11. Refrigerator, 12. Washing machine, 13. Cooking range, 14. Solar cooker, 15. Mixer, 16. Vacuum cleaner, 17. Cooler, etc.

1. Pressure cooker—

This is an appliance in which food is cooked at high temperature and pressure. Cooking in pressure cooker takes 53% less time and 55% less consumption of fuel than in open pot.

Principle— Cooking food at high temperature and pressure.

Construction— A pressure cooker has following parts—

- (i) **Main body—** This is a pot shaped structure made of aluminium, steel or mixed metals and coated material.
- (ii) **Lid/ cover—** The lid is made of same metal as the body. There is an insulated handle attached to the lid. Lid is made in such a manner that it shuts the cooker tightly from inside and outside. There is a groove for fixing a rubber gasket on the lid.
- (iii) **Vent tube—** It is present in the center of cooker's lid. It removes the excess steam from inside the cooker.
- (iv) **Safety valve—** It prevents cooker from bursting. If food is cooked with the valve it

gets off less water than this valve melts but does not let the cooker burst.

- (v) **Rubber gasket**– A rubber gasket is put in the space on the periphery of lid. It helps in proper closing of lid.
- (vi) **Vent wet**– It controls the pressure on the vent tube.
- (vii) **Net**– It is a net with large holes from which steam passes. While cooking many items in cooker together it is placed at the bottom of the cooker and water is put before placing the food pots.
- (viii) **Pots for making food**– For making more than one food item, metallic pots of different sizes which fit in cooker are used.
- (ix) **Handle**– It is used for placing and removing the cooker on gas. One part of it is attached to the lid and the other to the pot. When the cooker is closed, the two parts together make the handle.

To save time and energy right choice of tools is important. The tool should be chosen according to our requirements so that it can be used rightfully and taken care of. Knowledge of tool and its working should be possessed. Then only the tool will be useful.

2. Solar cooker

Solar cooker is aluminium made box and is operated with the help of solar energy. There are two types of lids on this cooker. A transparent glass is placed on the first cover. The upper large lid is made of aluminium from outside and inside of it a simple glass is present. This lid can be fixed at various angles using a clip. This lid is placed at an angle where it receives direct sun rays and the rays fall directly on glass of second lid. The inner walls of box made of aluminium are black coloured. 4 aluminium boxes are placed in this big box. Different food items are placed

in these small boxes. These boxes are also black coloured from outside. Black color absorbs 100% steam. Four wheels are placed at the bottom of the solar cooker for moving it from one place to another. This cooker does not require fuel or electricity for cooking food. Environment does not get polluted and there are no risks of fire, gas or electricity accidents.

3. Refrigerator–

Refrigerator is the most useful appliance in the kitchen. Temperature in this is very low compared to the external environment. As a result food does not get spoiled and can be stored for a long time in a safe manner.

Principle– Refrigerator works on the principle of vaporization. In the refrigerator, Freon gas is filled in metal tube at 27.7° F boiling point. This gas takes heat from food materials at very low temperatures and get vaporized. This lowers the temperature of food and food does not get spoiled.

Construction– This appliance looks like a cupboard. It has following parts–

- (i) **Cabinet**– A sheet of steel is present which is heat resistant.
- (ii) **Door**– Like the cabinet this too is made of steel. This can also be made heat resistant. On the four sides of door on the outside rubber gasket is present.
- (iii) **Freezer**– This is made of aluminium and is present as the above cabinet at 0°C temperature. It freezes ice, ice cream, etc.
- (iv) **Chill tray**– It is a plastic tray at the bottom of refrigerator to collect the water when freezer is de-frozen.
- (v) **Shelf**– It is rod shaped shelf made of metal. Different items are kept on shelves.
- (vi) **Crisper**– This is a rectangular box at the bottom of fridge. It is covered with a thick glass cover.

It is used for storing vegetables and fruits.

- (vii) **Place for eggs**– It is a plastic tray on the inside of door.
- (viii) **Place for keeping butter**– This is also present on the inside of door.
- (ix) **Place for bottles**– This is a stand-like structure present on the inside of door.
- (x) **Bulb**– In the cabinet, below freezer a bulb is present. It lights when fridge is opened and gets automatically off when door is closed.
- (xi) **Regulator**– It is present exactly below motor cabinet. Generally open but sometimes it is present as a closed machine.

The food items to be kept in the refrigerator should not be less than room temperature. Food items should be kept covered. Door of fridge should not be opened again and again. Do not let excess of ice to freeze in freezer, place food items at their place only. Immediately clean any spilled water, milk or anything liquid. All the above mentioned things are important for proper working of refrigerator.

4. (A) Vacuum cleaner

With the help of vacuum cleaner, every corner of house, floor, carpet, and sofa can be cleaned in less time and with less energy.

Principle– In this atmospheric pressure pushes air towards low pressure area which creates vacuum. Consequently dirt, dust etc are pulled inside machine and gets collected in a bag.

Types of vacuum cleaner–

1. Electricity operated simple vacuum cleaner
2. Automatic vacuum cleaner

On the basis of position of collecting bag in the vacuum cleaner, it can be of two types–

- (1) External collecting bag vacuum cleaner
- (2) Closed bag vacuum cleaner

Construction– (1) External collecting bag vacuum cleaner

- (i) **Main part**– It is made of chromium, rubber is present on all the four sides. This part is known as body. Wheels are present at the bottom part. These wheels help in moving the cleaner from one place to another.
 - (ii) **Bag**– This has minute holes to collect the dirt and dust particles.
 - (iii) **Fan**– A fan is present below motor for creating vacuum.
 - (iv) **Handle**– It is made of metal with a plastic or rubber knob.
 - (v) **Bottleneck**– It is attached with cleaner.
 - (vi) **Electrical wires and plug**– Wires and plug are attached with cleaner to supply electricity from the electrical board to the cleaner.
 - (vii) **Switch**– A switch is present at the bottom of cleaner which is regulated with the foot.
4. (B) Closed bag vacuum cleaner–
- (i) **Body**– It is made of rust free metal which is enamel polished. Wheels and switch are present at the bottom of the body which is regulated with motor.
 - (ii) **Motor**– Motor is present for regulating fan.
 - (iii) **Suction head**– It has a cover made of rust free metal. A hole in the middle of the cover lets the air pass out.
 - (iv) **Vacuum head**– A holed cover is present on this head from which air passes out.
 - (v) **Bag**– It is made of thick, strong cloth in which dirt gets collected.
 - (vi) **Tube**– One part of it is attached with suction head and other with a brush and pump.
 - (vii) **Whisk**– It is useful for cleaning carpets, floor and sofa.

(viii) **Pump**– Insecticide is sprayed with it while cleaning.

(ix) **Cleaning bag**– It contains disinfectants. Disinfectant is sprayed using pump.

(x) **Electrical wires and plug**– Electrical wires and plug are present to supply electricity from electricity/ switch board.

How to use– Connect the electrical switch to the switch board. Switch on the whisk and pump to clean the required area. Switch off the plug when cleaning is done and clean the dirt from bag. Keep the vacuum cleaner at a safe place.

5. Mixer

It is an electrical appliance which performs many functions. Kneading dough, grinding dry/wet spices, crushing food material, grinding lentils, onion, garlic to make a paste, making potato chips, making juice of fruits etc can be done with mixer. All this can be done to save time and energy.

Construction– It has the following parts–

- (i) **Motor**– It is present at the lower part of the appliance which helps in turning the rod or shaft. Speed of motor can be increased or decreased.
- (ii) **Grinder**– It is bowl-shaped made of plastic or Bakelite. The inside is made of steel and has sharp moving blades with a plastic lid. Dry/wet spices, lentils can be grinded in it.
- (iii) **Jar**– It is glass-shaped, transparent and is made of steel or plastic. It is covered with a lid and has sharp blades at the bottom. It is used for making milkshake, buttermilk, etc.

All the above mentioned parts work using electricity. Regulator works to start and stop the machine and regulates the speed of motor.

While using mixer it should be taken care that the jar or grinder is filled up to $\frac{3}{4}$ parts. Motor should not be used above the rating time limit. Use mixer once and then give a rest of 15-20 seconds before

using it again. Mixer should be cleaned properly after use.

EXERCISE–

1. Choose the correct option–

- (i) Need for time and energy saving appliances
 - (a) For increasing working capacity
 - (b) For economic achievement
 - (c) For fashion and urbanization
 - (d) None of these
- (ii) The principle of pressure cooker is
 - (a) Cooking food at high temperature and pressure
 - (b) Cooking tasty food
 - (c) Cooking food using solar radiation
 - (d) Cooking food at low pressure
- (iii) Food does not get spoiled in refrigerator because of
 - (a) High temperature
 - (b) Low temperature
 - (c) Vacuum
 - (d) Pressure

2. Fill in the blanks–

- (i) Solar cooker is made of _____ metal.
 - (ii) Refrigerator works with the help _____
 - (iii) House _____ can be done in less time and with less energy using vacuum cleaner.
3. List the appliances with their use which save time and energy.
 4. Write the principle for working of pressure cooker.
 5. Write about the use of refrigerator.
 6. What do you know about solar cooker?
 7. Write the construction and the method of use of mixer.
 8. Write about a vacuum cleaner.
 9. Explain the principle and construction of refrigerator.

ANSWERS:

1. (i) a (ii) a (iii) b
2. (i) aluminium (ii) electricity (iii) cleaning