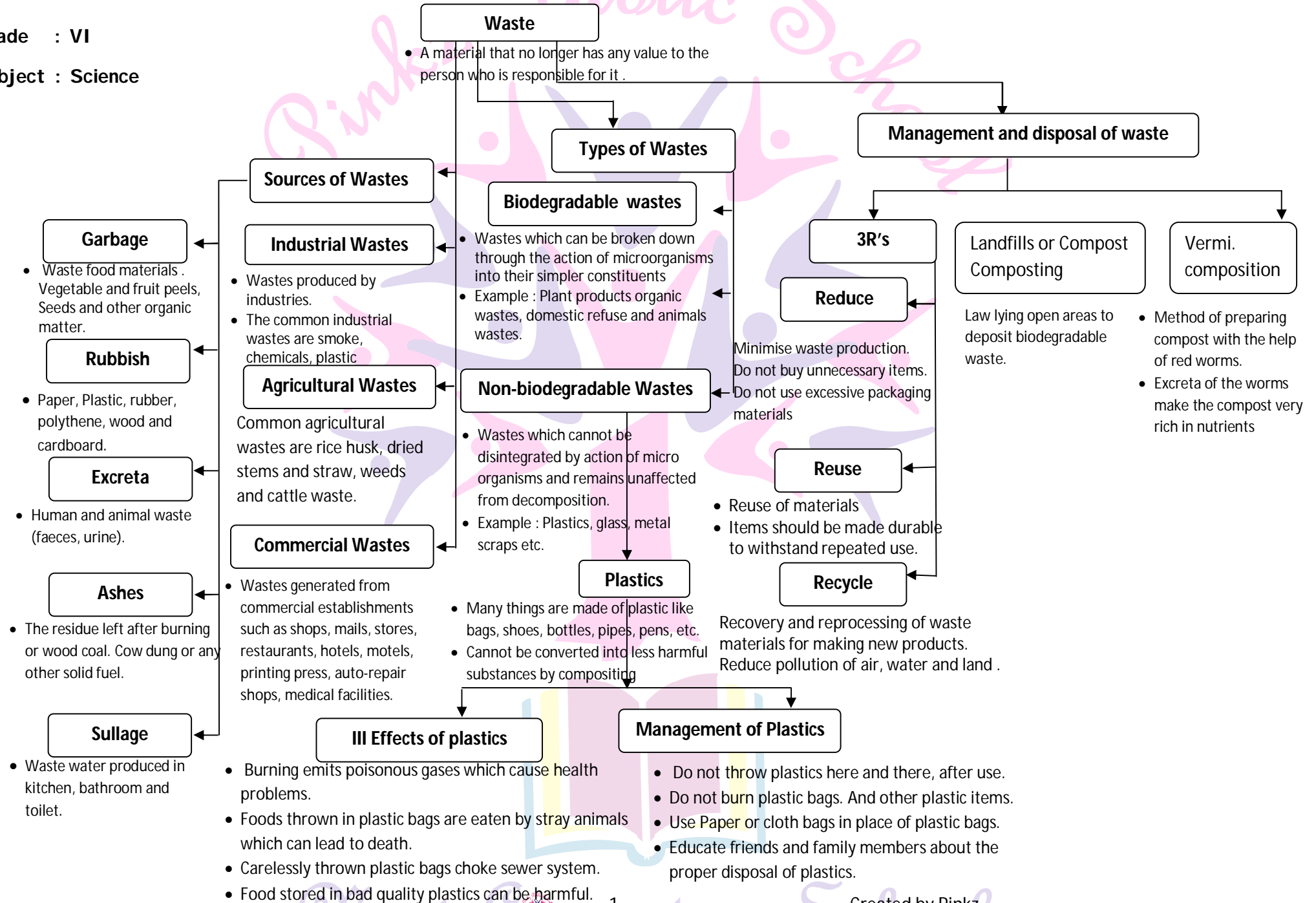


Grade : VI

Subject : Science



I. Know the Terms

- **Waste** : Unwanted or unusable remains or by-products of materials or food are known as waste.
- **Garbage** : Discarded rubbish, refuse, domestic waste, used plastic items and wrapping materials are called garbage.
- **Landfill** : A low-lying open area, which may be used to dump garbage is called landfill.
- **Compost** : The manure (especially of organic origin) obtained by rotting of plants animals, and waste from kitchen, is called compost.
- **Vermicomposting** : The method of making compost from kitchen garbage, like peels of vegetables and fruits, using red worms (earthworms) is called vermicomposting.



- **Biodegradable Substance:** Those substances which can be decomposed by micro-organisms are called bio-degradable substance, e.g. kitchen waste, waste from plants, animals.
- **Non-biodegradable Substance:** Those substances which cannot be decomposed by micro-organisms are called non-biodegradable substance e.g. plastic, metal articles, glass objects, polythene.
- **Recycling:** The process of making new products from used and discarded substance.
Eg:- Paper, Rubber, Polythene.

Next Generation School

Objective Type Questions

(1 mark each)

I. Multiple choice questions

- Which of the following can be recycled?
a. Waste paper b. Kitchen waste c. Leather d. Animal waste
- Which of the following is a landfill park?
a. brindavan Garden, Mysore b. Rock Garden, Chandigarh
c. Indraprastha Park, Delhi d. All of these
- Low lying area where city garbage is dumped is known as:
a. Pond b. Dust bin c. Landfill d. None of these
- Earthworm is a farmer's
a. Enemy b. Friend c. Intruder d. None of these
- Who help in the decomposition of biodegradable waste?
a. Micro-organisms b. Earthworms c. Both a and b d. None of these
- Which of the following is a bio-degradable waste?
a. Chalk box b. Faeces and urine c. Pencil scrap d. All of these
- Which of the following is used for making compost?
a. Tapeworm b. Hookworm c. Redworm d. None of these
- Which of the following is non-biodegradable waste?
a. Broken glass b. Plastic container
c. Wrapper of tea, coffee d. All of these
- Recyclable material is collected in
a. Green bin b. Yellow bin c. Blue bin d. All of these
- Which of the following things can be recycled?
a. Metal articles b. Green leaves c. Bone pieces d. None of these
- The method of preparing compost with the help of earthworms is called. **[NCERT Exemplar]**
a. Composting b. Vermicomposting c. Manuring d. Decomposing
- If you dump kitchen waste in a pit, it may, after some time. **[NCERT Exemplar]**
a. Convert into compost b. Convert into vermicompost
c. Remain as such d. Remain forever in its dried form

13. Which of the following activities does not reflect responsible behaviour with regard to waste disposal? [NCERT Exemplar]

- a. Good carried in paper bags or cloth bags.
- b. Waste collected in polythene bags for disposal.
- c. Waste separated into those that degrade and those that do not.
- d. Making handicraft with used up notebooks.

14. Paheli gave the following ill effects of the practice of burning dried leaves and other plant parts.

- i. Burning degrades the soil
- ii. Burning produces harmful gases/fumes
- iii. Precious raw materials to obtain manure at low cost are lost.
- iv. Lot of heat is generated unnecessarily

The correct reasons of why we should not burn leaves are. [NCERT Exemplar]

- a. i, ii and iv only
- b. i, ii, iii and iv
- c. ii and iii only
- d. ii, iii and iv only

15. A garbage collector separated items mentioned below in the garbage into red, green and blue containers for their transfer to landfill, composting pit, and recycling unit respectively.

Item: [NCERT Exemplar]

- i. Plastic bags
 - ii. Newspapers and journals
 - iii. Screw and nuts
 - iv. Vegetable peels
 - v. Metal chips
 - vi. Egg shells
- Which items were transferred to which bin ?

RED	GREEN	BLUE
(a) (i) and (iv)	(ii) and (iii)	(v) and (vi)
(b) (i) and (iii)	(ii) and (iv)	(iv) and (vi)
(c) (i), (iii) and (v)	(iv) and (vi)	(ii) only
(d) (i) and (v)	(ii) and (iv)	(iii) only

16. The steps required for conversion of kitchen garbage into manure are given below in a jumbled form.

- (i) Put garbage in a pit
- (ii) Cover the bottom of the pit with sand

(iii) Cover the pit loosely with a gunny bag or grass

(iv) Add worms [NCERT Exemplar]

Which of the following shows the correct sequence of the above steps ?

(a) (ii); (i); (iii); (iv)

(b) (i); (ii); (iii); (iv)

(c) (ii); (iv); (i);

(d) (iv); (i); (ii);

17. When your toys become useless, what do you call them ?

(a) Compost

(b) Garbage

(c) Toxic

(d) Recycle

18. Which one of the following items has the capacity to cause floods ?

(a) Paper

(b) Plastic bags

(c) Cotton cloth

(d) Earthen pots

19. Select the process that can not be included in waste management :

(a) Landfilling

(b) Composting

(c) Recycling

(d) Disposal after single use

20. What process involves reclaiming land for other purpose ?

(a) Composting

(b) Landfilling

(c) Recycling

(d) Refusing

1. (a)	2. (c)	3. (c)	4. (b)	5. (c)	6. (d)	7. (c)	8. (d)	9. (c)	10. (a)
11. (b)	12. (a)	13. (b)	14. (b)	15. (c)	16. (a)	17. (b)	18. (b)	19. (d)	20. (b)

II. Multiple choice questions

1. Landfill is a / an.

a. Open area

b. High lying open area

c. Open area near a river / lake

d. low lying open area

2. The rotting of garbage is said to be completed when the garbage

a. Rot completely and not smell

b. Rot almost completely, but still smell bad

c. Rot only partially

d. Not change at all

3. Which of the set of items not good for making compost?

a. Plastic paper, tin foil, wrappers

b. Broken plastic toys, polythene bags, pieces of clothes

c. Egg shells, vegetable and fruit peels and tea leaves

d. Aluminium wrappers, plastics bags

4. Which of the following animals are used for making compost?

- a. Redworms b. Housefly c. Cockroach d. Mosquitoes

5. Leaves falling from trees should be

- a. Dumped in landfill areas b. Dried and burnt
c. Used in making compost d. Dumped near the ponds and lakes

1. d	2. a	3. c	4. a	5. c
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III. Multiple choice questions

1. Which of the following is biodegradable and can be added to a compost pit as a food for the redworms?

- a. Vegetable peels and cooked vegetable left overs
b. Spoiled pickle, dried leaves and green leaves
c. Vegetables peels, fruit leftovers and leaves
d. Plastic bags, fruit leftovers and waste notebooks

Ans: 1. c

I. True or False

1. We generate so much garbage in our day-to-day activities.
2. The garbage provides nutrients to the plants.
3. The blue bin is for materials that cannot be used again.
4. Earthworms are called farmer's enemy.
5. Garbage in the open field produces disease causing small organisms.
6. Garbage is useful to us.
7. We can recycle paper from waste paper used by us.
8. We should burn plastic bag and other plastic items.
9. We should use vermicomposting at home.
10. Paper can be recycled to get useful products.
11. The method of making compost from kitchen garbage using redworms is called thermo composting.

1. True	2. False	3. False	4. False	5. True	6. False
7. True	8. False	9. True	10. True	11. False	



II. True or False

1. Plastic causes soil pollution.
2. More wastes are produced by rural people than urban people.
3. Non-biodegradable wastes are used for composting.
4. Household activities only generate solid wastes.
5. A 'kabadiwala' buy wastes for recycling.
6. Burning wastes is better than composting.

1. True	2. False	3. False	4. False	5. True	6. False
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III. True or False

1. Garbage disposal is not an easy process.
2. Even if a piece of plastic is left underground for many years, it will not decay.
3. Waste that is generated from living things is called non-biodegradable waste.
4. Toxic wastes have an adverse effect on nature and wildlife.
5. Plastic is freely available, therefore it is wise to use and throw plastic bags very frequently.

1. True	2. True	3. False	4. True	5. False
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I. Match the following.

I. Column A	Column B
a. Low lying open area	i. Gizzard
b. Product of rotten garbage	ii. Papier mache
c. Increase micro-organisms in a compost pit	iii. Landfill
d. Compost prepared with the help of redworms	iv. Manure
e. Structure that help redworms to grind their food	v. Meat
f. A paste made of clay and paper	vi. Vermicompost

a. iii	b. iv	c. v	d. vi	e. i	f. ii
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II. Match the following.

a. Agricultural waste	i. Metallic scrap
b. Industrial waste	ii. Crop residue
c. Commercial waste	iii. Paper
d. Domestic waste	iv. Plastic wrappers

a. ii	b. i	c. iv	d. iii
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III. Match the following.

(I) Column A	Column B
(a) Metals	(i) Bio-gas
(b) Leaves	(ii) Vermicompost
(c) Cow dung	(iii) Composting
(d) Vegetable waste	(iv) Recyclable
(e) Paper and food	(v) Recycling

a. v	b. iii	c. i	d. ii	e. iv
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(II) Column A	Column B
(a) Low lying area	(i) Red worms
(b) Compost produced	(ii) Landfill with redworms
(c) No teeth	(iii) Increases micro-organi-sms
(d) 3R's	(iv) Vermicompost
(e) Mixing meat during	(v) Waste management composting

a. ii	b. iv	c. i	d. v	e. iii
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I. Fill in the blanks

1. Burning of leaves produce _____.
2. Municipalities provide two kinds of dustbin one is _____ and other is _____ in colour.
3. The method of preparing compost with the help of redworms is called _____.
4. Redworms do not have _____.
5. Redworm have a structure called _____ which help them in grinding their food.
6. The waste material after using by us is called _____.
7. Redworms do not survive in _____ and _____.
8. We are generating _____ of garbage everyday.
9. We should not put garbage in _____.
10. Plastic bags _____ the drains and the sewer system.
11. Converting plants and animals waste including that from kitchen into manure is called _____.
12. Paper can be recycled to get _____.

1. harmful gases	2. blue, green	3. vermicomposting
4. teeth	5. gizzard	6. rubbish or garbage
7. very hot, very cold	8. household	9. plastic bag
10. chokes	11. composting	12. useful products

II. Fill in the blanks

1. The waste generated by people at homes is called _____.
2. Wastes that contain substances harmful for human health and the environment are called _____.
3. For recycling paper, the series of processes starts with _____.
4. The living creatures used for composting are called _____.
5. It is important to have more than one waste bin at home to _____ the garbage.

1. household waste	2. toxic wastes	3. sorting	4. decomposers	5. segregate
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III. Fill in the blanks

- _____ is generated in homes, industries, agricultural fields and in other human activities. This is called _____.
- Sewage is a liquid waste which cause _____ and _____ pollution.
- Wastewater is treated in _____ treatment plant.
- By-products of wastewater treatment in _____ treatment plant.
- _____ of water can be removed by boiling it or treating it with washing soda.
- Cleaning of wastewater is commonly known as _____.
- Organic matter can be _____ and made into manure.
- In _____ earthworms are added to the compost.
- _____ is the process of burning wastes in a large furnace.
- Organic waste is mostly _____.
- It would be most effective if the segregation of waste is done at _____.

1. Wastewater, sewage	2. Water, soil	3. Sewage
4. Sludge, biogas	5. Hardness	6. Sewage treatment
7. Decomposed	8. Vermicomposting	9. Incineration
10. Biodegradable	11. Source	

Quiz Time

- What is garbage?
- What is landfill?
- What is the colour of the dustbins used by some municipalities for collecting kitchen wastes?
- What is vermicompositing?
- Redworms do not have teeth then what structure helps them to grind their food?
- What are redworms?
- What type of paper is difficult to be recycled?
- What is papier mache?
- Why is it advisable to carry a cloth bag while going to market?

10. What reason do you think is of constantly increasing amount of garbage?

11. Why should we not burn waste plastic bags or other plastic items?

1. Wastes, rubbish, refuse, kitchen wastes, packing and wrapping materials are collectively called garbage.
 2. A low lying open area is called landfill.
 3. Green
 4. The method of preparing compost with the help of red worms is called vermicomposting.
 5. Gizzard
 6. A type of earthworms.
 7. Shiny or plastic coated paper.
 8. A paste made of clay and paper is called papier mache.
 9. It will decrease the use of plastic bag and also reduce production of garbage.
 10. Constantly increasing human population and modernisation.
 11. On burning, plastics products harmful gases that may cause many health problems, including asthma and cancer.
-

NCERT Corner

Intext Question

1. What could be useful garbage? Why is it thrown away in the first place? Is there some garbage that is not actually garbage?

the useful garbage could be the peels of fruits and vegetables, leftover cooked food and fallen leaves of trees. It is thrown away in the first place because its primary use was complete. Some garbage is not actually garbage because it can be converted into compost which is used as fertilise.

2. Why is burning of leaves harmful?

Burning of leaves is harmful because it causes air pollution which may contain harmful toxic gases and cause respiratory diseases in living organisms.

3. Is burning of leaves illegal in India? If not, should it be made illegal?

No, burning of leaves is not illegal in India. It should be made illegal by government of India because it causes a lot of air pollution which is harmful to living organisms.

4. Why should containers used for storing poisonous substances be recycled separately ?

Containers used for storing poisonous substances should be recycled separately because the poisonous chemicals present in these containers contaminate other recycling substances thereby making every recycled substance harmful.

5. Should the containers used for storing harmful substances be used to make plastic bags?

No, the containers used for storing harmful substances should not be used to make plastic bags because plastic bags are used to carry grocery items which may be contaminated.

Textbook Question

1. Answer the following questions :

(a) Which kind of garbage is not converted into compost by the red worms ?

(b) Have you seen any other organism besides red worms in your pit ? If yes, try to find out their names. Draw pictures of these.

(a) Maggots flies, cockroaches, ants, etc.

(b) Yes, these organisms include

Non-biodegradable wastes such as plastic bags, tins, bottles, glass etc. can not be converted into compost by the red worms.



Maggot



Ant

2. Discuss :

(a) Is garbage disposal the responsibility only of the government ?

(b) Is it possible to reduce the problems related to disposal of garbage ?

(a) No, garbage disposal is not the responsibility of the government alone. It is a collective responsibility of both the people and the government. We should reduce the garbage. We must follow 3R approaches : reduce recycle and reuse of substances.

(b) Yes, it is possible to reduce the problems related to disposal of garbage. It can be done by using 3R's rule : Reduce (minimise the use of things that produce wastes), Recycle (recycling of wastes to produce new products) and Reuse (reuse of things).

3. Answer the following questions :

(a) What do you do with the left-over food at home ?

(b) If you and your friends are given the choice of eating in a plastic plate or a banana leaf platter at a party, which one would you prefer and why ?

(a) Left-over food at home should be dumped into compost pits so that it can be converted into manure by micro-organisms. This manure can be used in agricultural fields.

(b) We will prefer banana leaf platter because of the following reasons :

(i) It is biodegradable

(ii) It is eco-friendly

(iii) By the process of composting, it can be converted into manure.

Whereas a plastic plate causes solid waste problem and pollution.

4. Answer the following questions :

(a) Collect pieces of different kinds of paper. Find out, which of these can be recycled.

(b) With the help of a lens, look at the pieces of paper you collected for the above question. Do you see any difference in the material of recycled paper and a new sheet of paper?

(a) I collected pieces of different kinds of paper, viz. notebooks, newspapers, plastic coated papers etc. All of these except plastic coated papers can be recycled. Plastic coated papers can not be recycled because plastic is non-biodegradable.

(b) Yes, there is difference in the material of recycled paper and a new sheet of paper. The surface of recycled paper is rough and it is thicker while the surface of new sheet of paper is smooth.

5. Answer the following questions :

(a) Collect different kinds of packaging materials. What was the purpose for which each one was used ? Discuss in groups.

(b) Give an example in which packaging should have been reduced.

(c) Write a story on how packaging increases the amount of garbage.

(a) Packaging materials

Paper packet

Cardboard

Plastic covers

Glass covers

Wooden boxes

Things to be packed

Light food items

Crockery, shoes

Clothes, dresses

Show pieces

Delicate items

(b) The packing in plastic bags must be reduced, because plastic bags are non-recyclable and harmful to environment.

(c) One day, Rohit wanted to gift a pen to his friend. He bought a pen inside a plastic and paper cover. He also wrapped it with shiny papers. We see that Rohit could have gifted the pen only. But he used plastic, paper cover and wrappers which was futile. This packaging material increases the amount of garbage.

6. Do you think it is better to use compost instead of chemical fertilizers ? Why ?

Yes, it is better to use compost instead of chemical fertilizers due to following reasons :

(i) Compost is eco-friendly and can not cause any type of pollution while chemical fertilizers cause water pollution as well as soil pollution.

(ii) Compost is easy to produce while cost of production of chemical fertilizers is high.

I. Very Short Answer Type Question.

1. What is the effect of solid waste ?

If not handled properly, they give foul smell and give an ugly look to natural beauty.

2. What happens if the garbage is dumped at a place ?

It becomes breeding ground for flies and mosquitoes.

3. What should be done to aluminium foils and other metals found in the garbage ?

They should be taken out and recycled.

4. What should be done to agricultural waste and cow dung ?

It must be used for running a biogas plant.

5. What do you understand by the segregation of garbage ?

Sorting out the garbage in various groups is known as segregation.

6. Which type of paper is difficult to be recycled ?

Plastic coated paper is difficult to recycle.

7. What type of garbage is used for composting ?

Plant wastes, animal wastes and waste food are used for composting.

8. Why should we not burn dried leaves ?

They can be converted into useful manure by composting. Burning them will produce harmful gases.

9. How do the redworms grind their food ?

Redworms have gizzard for grinding the food.

10. What is garbage ?

Garbage is an unwanted or undesired material or substance. It is also referred to as rubbish, trash, waste or junk depending upon the type of material.

11. What should you do with the leftover food at home ?

Leftover food at home should be dumped into the compost pit.

12. Are all types of garbage harmful to us ?

No, some of the garbage that can be recycled or converted into compost which is useful.

13. Read the items mentioned in Columns I and II and fill in the related process in the Column III.

Column I	Column II	Column III
(a) Organic waste	Earthworms	(i)
(b) Garbage	Dig pit and fill with garbage	(ii)
(c) Old newspaper	Paper bags	(iii)

(i) Vermicomposting

(ii) Landfilling

(iii) Recycling

14. Correct the definitions of certain terms given below by changing only one word.

[NCERT Exemplar]

(i) Compost : Substances converted into manure for use in industries.

(ii) Landfill : Garbage buried under water in an area.

(iii) Recycling : Reuse of unused material in the same or another form.

[NCERT Exemplar]

(i) Compost : Substances converted into manure for use in agriculture.

(ii) Landfill : Garbage buried under soil in an area.

(iii) Recycling : Reuse of used material in the same or another form.

15. Provide the suitable terms that express the meaning of each of the following statements.

- (a) Greeting cards made from newspaper.
- (b) Contents of the waste bins.
- (c) Worms converting certain kinds of waste into manure.
- (d) An area where a lot of garbage is collected, spread out and covered with soil.

[NCERT Exemplar]

- a. Recycling
- b. Garbage
- c. Vermicomposting
- d. Landfill

II. Very Short Answer Type Question.

1. What are blue coloured dustbins used for?

Blue coloured bins are used for collecting materials that can be recycled.

2. Give example of material that can be used again.

Plastics, metals and glass.

3. What type of garbage is thrown in green bins?

Kitchen and other plants or animals wastes.

4. Define composting.

The rotting and conversion of some materials into manure is called composting.

5. Explain the term vermicomposting.

The method of preparing compost with the help of redworms is called vermicomposting.

6. What are redworms?

Redworms are a type of earthworms which help in preparing compost from the kitchen wastes and parts of plants or animals.

7. What are green coloured bins used for?

Green coloured bins are used for collecting materials that cannot be used again.

8. Name any two things that add to garbage.

- (i) Cans
- (ii) Plastic bags.

9. What is the suitable season for the survival of redworm?

They need normal temperature, neither very hot nor very cold. Redworms also need moisture around them for survival.

10. How do redworms prepare vermicompost?

Redworms have a special structure called gizzards in their bodies with which they grind food material and convert it into manure.

I. Short Answer Type Question.

1. Give an example in which packaging could have been reduced.

The usage of plastic bags must be reduced as packaging of cooked food items in plastic bags might affect our health. Also, plastic bags are non-recyclable and burning of plastic bags may release harmful gases that can cause many diseases.

2. Define vermicomposting.

The method of preparing compost with the help of red worms is called vermicomposting.

3. Which kind of garbage is not converted into compost by the redworms ?

The garbage which contains pieces of cloth, broken glass, aluminium wrappers, polythene bags, nails, broken toys, and old shoes cannot be converted into compost by redworms.

4. (a) How is it possible to manage the problems related to disposal of the garbage ?

(b) What is 'compost' ?

(a) The problems related to disposal of the garbage can be managed by landfilling. A landfill is a low-lying open area, where garbage can be dumped.

(b) Compost is a mixture that consists largely of decayed organic matter and is used for fertilising and conditioning land.

5. What food do the redworms eat ?

They eat food items like fruit and vegetable wastes, tea and coffee remains and weeds from the garbage.

6. How does the packaging increase the amount of garbage ?

Plastic bags, cans, aluminium foils, and many other package materials are used and thrown after use as garbage. Things like ghee, oils, soaps, cereals, snacks, even vegetables are available in smaller packets in which a lot of packaging material is used. 2

7. Give some advantage of waste recycling.

Waste recycling has some significant advantages. It :

- (i) leads to less utilization of raw materials.
- (ii) reduces environment impacts arising from waste treatment and disposal.
- (iii) makes the surroundings cleaner and healthier.
- (iv) saves our landfill space.
- (v) saves money.
- (vi) reduces the amount of energy required to manufacture new products.

8. To what use can you put the following kinds of garbage and how ?

(i) rotting smelly garbage

(ii) dry leaves collected in a garbage

(iii) old newspapers

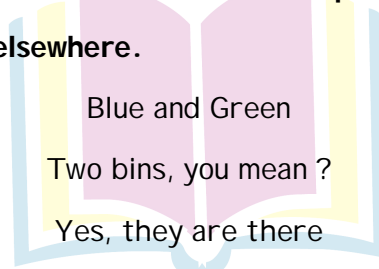
[NCERT Exemplar]

- (i) Rotting smelly garbage can be converted into compost which is used as manure.
- (ii) Dry leaves collected in a garbage can be used as manure.
- (iii) Old newspapers can be recycled to make paper bags.

9. Paheli was writing a letter to her friend. She crumpled and threw the first draft of her letter on the floor as it had become untidy. Similarly she crumpled and threw 6 more papers on the ground. In the end, she picked them up and put them in a polythene bag and threw it on the road outside her house. Do you think Paheli's actions were responsible ? What would you have done if you were in her place ? [NCERT Exemplar]

No, I think that Paheli's action was not responsible. If I would have been in her place, I would have used those papers for doing rough work or re-used them in handicraft.

10. Read the poem written below and then answer the questions from the information gathered from the book or elsewhere.



Blue and Green
Two bins, you mean ?
Yes, they are there
to throw your waste.

But not in a hurry
Nor in a haste.

Select from waste, sieve if seems muddy Separate all items and when they are ready
Place in a blue bin, or one that is green For a voyage to the landfill, or for composting.

(i) Name the two kinds of waste that need to be separated from each other in two different waste bins.

(ii) Name two items of waste each that need to be sent to a (a) landfill, (b) for composting. [NCERT Exemplar]

- | | | |
|----------------------------------|------|---------------------------------------|
| (i) News papers and magazines. | bin. | Collected in blue waste bin |
| Peels of vegetables and fruits.. | | Collected in green waste bin |
| (ii) (a) For landfill. | | Plastic bags and metal scraps |
| (b) For composting | | Vegetable and fruit peels, egg shells |

11. Beera, a farmer would clear his field everyday, and burn dry leaves fallen on the ground. After some time he found that those living in huts near his field were suffering from cough and breathing problems. (i) Can you explain why? (ii) Also suggest an environment friendly way to dispose of the dry leaves. [NCERT Exemplar]

(i) Smoke, fumes and harmful gases are produced on burning of dry leaves which cause cough and breathing problems in the nearby area.

(ii) An environment friendly way to dispose of the dry leaves is to convert them into manure.

II. Short Answer Type Question.

1. We should not add wastes containing salts, pickles, oil, vinegar, meat and milk products in vermicomposting pit to feed the redworms. Why?

Addition of substances such as salts, oil, pickles, vinegar, meat and milk products to vermicompost pit causes growth of disease-causing small organisms. They may cause harm to redworms and hinder in preparation of vermicompost.

2. How can the non-useful component be reused?

The non-useful components of the garbage are separated by Safai Karamcharis. This separated non-useful components of garbage is spread over the landfill and then covered with a layer of soil. Once the landfill is completely full, it is usually converted into park or a playground. For the next 20 years or so, no building is constructed on it.

3. What do we do to the useful components (biodegradable) of the garbage?

Generally, useful components of the garbage are used to make compost. Compost are usually developed near the landfill.

(i) For preparing compost, waste materials like fruit and vegetable peel, egg shells, used tea leaves, waste food, dry leaves, newspapers etc. should be dumped in a pit.

(ii) The pit is covered with soil.

(iii) After 20-25 days, observe the garbage. If the garbage is rot, turned black in colour and no foul smell is emitted, it means rotting of garbage is complete and compost is ready to use.

4. What do you mean by composting?

The garbage containing plant and animal wastes, waste food, when left as such in pits or heaps is acted upon by bacteria, fungus-like organisms causing rotting. Rotting leads to the formation of manure. It is conversion of complex molecules into simple molecules which can be used by plants for growth and development. Thus, rotting and conversion of some organic materials into manure is called composting.

5. Why should we not burn dried plant leaves and husk? What is the best way to get rid of them?

Burning of dried leaves, husk and other plant parts produces smoke and gases that are harmful to our health. Dried leaves, husk and other plant parts can be used for preparing compost.

6. List waste products produced from an industry.

The waste products produced from an industry are:

- (i) Chemicals
- (ii) Smoke
- (iii) Ash
- (iv) Empty containers such as glass bottles, plastic articles, wrappers.
- (v) Plastic bags
- (vi) Broken things, iron or other metals

7. What will happen if garbage is left open in bin?

- (i) Garbage will rot and bad smell will spread all around the surroundings.
- (ii) Garbage will become breeding spot for flies, mosquitoes and other disease-causing small organisms.
- (iii) Due to flies, mosquitoes and other organisms many diseases will spread in the community.
- (iv) Rotting garbage may cause air pollution and spread of respiratory disease such as breathing problems.

8. Make a list of waste materials which you expect will be in the hospital waste.

Hospital waste may contain the following things:

- | | | |
|--|--------------------------|----------------------------|
| (i) Empty bottles | (ii) Syringe | (iii) Needles |
| (iv) Amputee | (v) Used cotton | (vi) Injection bottles |
| (vii) Used bandages | (viii) Pieces of plaster | (ix) Tablet wrapper |
| (x) Empty paper boxes | (xi) Polythene bags | (xii) Left over food items |
| (xiii) Peels of fruits and vegetables. | | |

9. What is papier-mache? How does it help us?

Papier-mache is a paste made from pulp of waste papers and clay used for moulding into boxes, trays, etc. This helps in recycling of paper.

10. Can you replace the following packaging material with those which can be recycled or reused.

- (1) Milk packets of polythene.**
- (2) Dry eatables in polythene.**
- (3) Gift items packed with shiny material.**
- (4) Glass tumblers packed in thermocole box.**

- (1) Glass bottles or recycling polythene.
- (2) Paper bags coated with thin sheet of aluminium or recycling polythene.
- (3) Beautifully designed paper or recycling shiny material.
- (4) Glass tumblers packed in straws placed cardboard boxes. As thermocole cannot be recycled.

11. Why is it illegal to burn leaves and other plant wastes?

Burning of leaves and other plant wastes is illegal because they produce smoke and gases that are harmful to our health. They may lead to asthma and lung diseases. Instead of burning, these plant wastes must be converted into manure.

12. List the different steps practised in waste management.

The steps practised in waste management are mainly divided into four groups:

- (1) wastes collection
- (2) waste segregation
- (3) reduction and resource recovery
- (4) treatment and disposal of wastes.

13. What are composting benefits? Ans. Benefits of compost:

- (1) It increases the fertility of the soil.
- (2) It contains trace elements, e.g. copper, manganese and molybdenum.
- (3) It is rich in nutrients.
- (4) It improves the texture of the soil and increases the water absorption capacity of the soil.

I. Long Answer Type Question.

1. What is composting ? Do you think it is better to use compost instead of chemical fertilizers? Why?

Converting plant and animal waste into manure is called composting.

Yes, it is better to use compost instead of chemical fertilizers due to the following reasons.

- (i) Compost provides better and natural nutrients to the growing plants.
- (ii) It is better absorbed by the roots.
- (iii) It is cheaper than the chemical fertilizers.
- (iv) Chemical fertilizers do not get decomposed easily by natural methods thus increase soil and water pollution.

2. Write the main drawbacks of plastics.

The drawbacks of plastics are as follows :

- (i) The major drawback of plastic is its non-degradability.
- (ii) Consuming food packed in plastic bags could be harmful to our health.
- (iii) All kinds of plastics give out harmful gases, on burning. These gases may cause many health problems, such as cancer, in humans.
- (iv) Some animals such as cows swallow plastic bags filled with garbage, and they can die due to this.
- (v) The plastics also block the sewerage system and the drains as a result of which the water spills over the roads during rains.

3. Put a tick (✓) against the garbage items given in Table 16.1 which could be converted into manure. Put a cross (x) against the others.

	Garbage Items	Make manure or not
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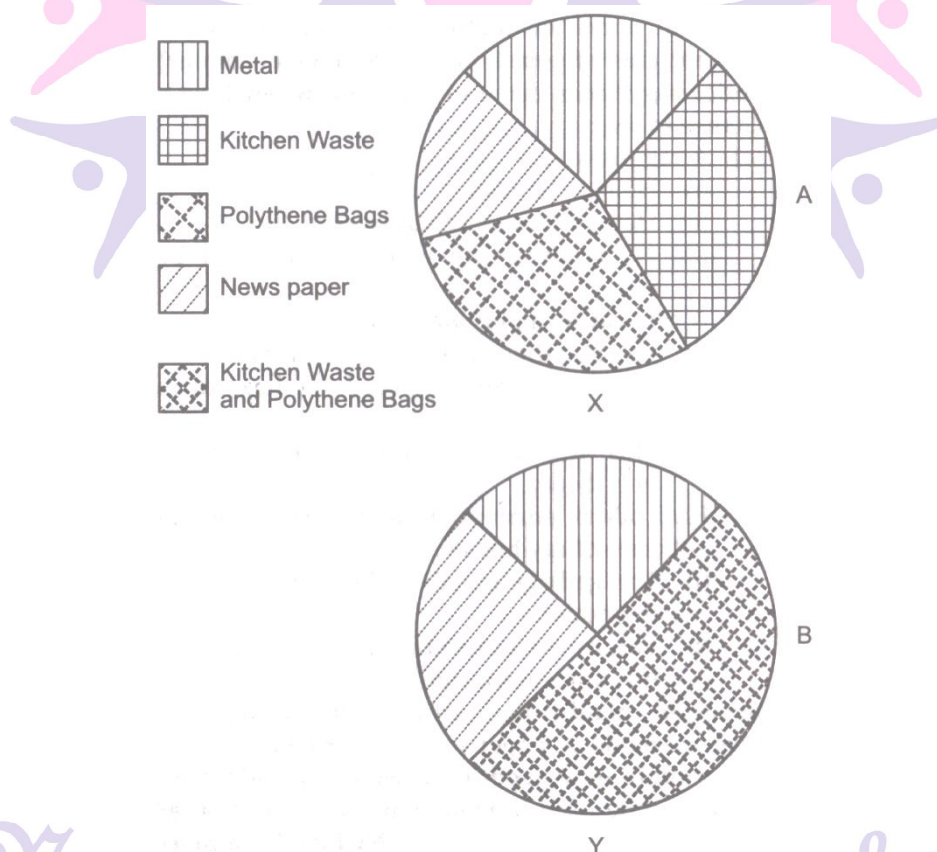


(i)	Egg shells	
(ii)	Straw	
(iii)	Dry flowers	
(iv)	Pebbles	
(v)	Broken pieces of glass	
(vi)	Nails and screws	
(vii)	Plastic bangles	
(viii)	Leftover food	
(ix)	Broken steel vessel	
(x)	Dead animals	

[NCERT Exemplar]

i. ✓	ii. ✓	iii. ✓	iv. ✗	v. ✗	vi. ✗	vii. ✗	viii. ✓	ix. ✗	x. ✓
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4. The pie charts A and B shown in Fig. are based on waste segregation method adopted by two families X and Y respectively.



[NCERT Exemplar]

I think that family 'X' is more environmentally conscious because this family disposes of its kitchen wastes and polythene bags separately. Kitchen wastes are biodegradable while

polythene bags are non-biodegradable. The biodegradable material can be converted into compost.

5. Given below are steps in vermi-composting and each step has been given in alphabet.

Rearrange the steps in the correct sequence and write the alphabets on the chart provided. One step is done for you.

- A Sprinkle water to keep it moist.
- B Cover with a gunny bag or grass.
- C Spread sand on the floor of the pit.
- D Place red worms in the pit.
- E Add vegetable peels and fruit waste in the pit.
- F Dig a pit in a suitable place in your garden.

[NCERT Exemplar]

Answer: -

- Step I F
- Step II C
- Step III E
- Step IV A
- Step V D
- Step VI B

6. Write 3 sentences on what comes to your mind when you get a chance to see the following :

- (a) A rag picker.
- (b) A cow eating a polythene bag.
- (c) Foul odour emanating from garbage at the entrance of your house.

[NCERT Exemplar]

Following things come to my mind when I get a chance to see :

(a) A rag picker :

- (i) He may be poor.
- (ii) He sorts out recyclable waste.
- (iii) He removes the garbage generated by others.

(b) A cow eating a polythene bag :

- (i) The polythene bag is harmful for cow.

(ii) Cow is getting exposed to hazardous materials.

(iii) This is due to improper disposal of polythene.

(c) Foul odour emanating from garbage at the entrance of my house :

(i) The garbage is collected for some days in the house.

(ii) This causes unhealthy surroundings.

(iii) It is unpleasant sight.

7. Beautiful handcrafted articles like boxes and toys are made of paper pulp in our country. Can you explain how paper pulp which is made from paper can be used to make hard boxes and other articles ? [NCERT Exemplar]

We can make hard boxes and other articles by using paper pulp in following steps :

(i) Create a stencil by unfolding a small, one piece cardboard box and trace it on a piece of card board that is of the same size on your mould. Cut out that shape.

(ii) Place the box stencil between mould and deckle.

(iii) Raise the mould, deckle and stencil to the surface in one continuous motion and then remove them from the pulp.

(iv) Remove the box from the stencil and leave the paper to dry.

(v) Assemble the box by folding and taping the edges. Decorate it as per requirement.

8. Recently, a ban on plastic bags has been imposed in many places. Is the ban justified ? Give reasons in three sentences. [NCERT Exemplar]

The ban on use of plastic bags is justified due to following reasons :

(i) Plastic bags are non-biodegradable.

(ii) These cause hazards to marine and aquatic life.

(iii) These cause solid waste problems.

9. Why should we not burn plastic items ?

We should not burn plastic items due to following reasons :

(i) Plastic items are non-biodegradable, they do not burn easily.

(ii) On burning, they produce toxic gases which cause respiratory problems.

(iii) They cause soil pollution.

(iv) When animals eat burnt pieces of plastic items, then these pieces may choke them to death.

10. What happens when

(a) Cooking medium is made to flow down a drain ?

(b) Insecticides, motor oil, paints are poured down the drain ?

(c) Tea leaves, cotton swabs and old soft toys are thrown into the drain ?

[NCERT Exemplar]

(a) If cooking medium is made to flow down a drain it may clog the pores of soil and also block pipelines.

(b) If insecticides, motor oil, paints are poured down the drain, this may kill useful microorganisms which help in purification of water.

(c) If tea leaves, cotton swabs and old soft toys are thrown into the drain, it can block the pipe lines which hinders the water supply of the area.

11. Answer the following questions in one or two words or sentences :

(a) Why should we prefer to use paper bags rather than polythene bags ?

(b) Who, out of the following should properly dispose of the garbage—father, mother, elder brother, younger sister ?

(c) Which one out of beetles, roundworms and earthworm are used for vermicomposting and why? [NCERT Exemplar]

(a) We should prefer to use paper bags rather than polythene bags because paper bags can be recycled while polythene bags are non-biodegradable and cannot degrade.

(b) Every member of the family should properly dispose of the garbage.

(c) Earth worms are used for vermicomposting because they convert the waste products obtained from plants into useful produce, i.e., compost.

I. Long Answer Type Question.

1. List the biodegradable and non-biodegradable waste products in your school. What are the best ways to get rid of this garbage?

Biodegradable wastes:

(i) Paper container

(ii) Chalk boxes

(iii) Pencil scraps

(iv) Faeces and urine

(v) Loose and torn waste paper of exercise notebooks and diaries

(vi) Dropout leaves and twigs

(vii) Fruit peels and flower wastes

Non-biodegradable wastes:

(i) Broken glass wares

(ii) Plastic and geometrical instruments

- (iii) Plastic and polythene containers
- (iv) Wrappers of toffee, aluminium foil
- (v) Broken iron wire pieces

Disposal of Wastes:

Biodegradable garbage can be put in a pit made in one corner of the school compound. Cover the garbage with soil, spray some quantity of water. When this pit is full of degradable items cover it with a mixture of dung and clay for a few weeks.

After a few weeks when an odour stops coming out from the pit. It indicates that all the degradable material has been converted into compost manure. The non-biodegradable garbage can be sold to Kabari or can be dumped in a landfill.

2. What are the uses of plastic?

Uses:

- (i) Plastic container can be used to store edible goods.
- (ii) Goods packed in plastic pack can be taken anywhere easily and are water proof.
- (iii) Plastic containers or articles are good-looking, light in weight, cheap and durable.
- (iv) Plastic containers such as bottles can be used to store chemicals. No chemical effects on it.
- (v) Plastic can be recycled.

3. What are the demerits of plastic?

Demerits of plastic:

(i) Plastics give out harmful gases upon heating or burning. These gases may cause many health problems, including cancer in humans.

(ii) Some people often fill garbage in plastic bags and throw it away in open. When stray animals look for food in these bags, they swallow plastic bags along with food. Sometimes, they die due to this.

(iii) The plastic bags thrown away carelessly on roads and other places get into drains and the sewer system. These plastic bags choke the drains. As a result dirty water spills on road. It causes spread of bad smell and diseases.

4. What suggestions you will give to members of locality to solve the problem of waste material?

I will suggest the member of my locality to use biodegradable waste in preparing compost.

To take people in confidence, you should make efforts to show the path for preparing compost:

(i) You should select a corner of your locality.

(ii) Dig a pit at open place and ask all the residents to throw their kitchen waste in this pit. Cover the biodegradables in the pit with layers of soil.

(iii) Cover the pit with the mixture of soil and dung.

(iv) After 5-6 weeks, open the pit and show it to the resident of your colony. Also explain that their disposed off material has converted into compost manure.

(v) You can convince RWA (Resident Welfare Associations) to use this manure for colony parks and also in plant pots kept in individual houses for beautification.

5. Why should we be careful in using plastic bags to store cooked food items?

(i) Sometimes the plastic bags may not be suitable for keeping eatables. Consuming food packed in such plastic bags could be harmful to our health.

(ii) Many a time shopkeepers use plastic bags that have been used earlier for other purpose.

(iii) Sometimes bags collected by rag pickers are also used after washing them. Use of such recycled plastic bags to keep food items could be harmful for our health. So, shopkeepers can be stressed upon the use of plastic bags approved by the authorities.

6. List the steps for preparing vermicompost.

(i) Dig a pit about 30 cm deep or select a wooden box.

(ii) Spread a net or chicken mesh at the bottom of pit or box. You can also spread 1 to 2 cm thick layer of sand.

(iii) Spread some vegetable wastes including peels of fruits over the sand layer. You can use green leaves, husk or pieces of newspaper, dried stalks of plants and dried animal dung.

(iv) Sprinkle some water to make the layer wet.

(a) Do not use excess of water

(b) Press layer of leaves or waste so that it has sufficient air and moisture.

(iv) Now, buy some redworms and put them in the pit.

(vi) Cover them loosely with a gunny bag or an old sheet of cloth or a layer of grass.

(vii) Redworms need food. So you can provide them as food—vegetable and fruit peels, coffee and tea remains and weeds from the field or garden. Bury this food about 2-3 cm inside the pit.

(viii) Do not put salt, pickles, oil, vinegar, meat and milk preparations. This may cause growth of disease-causing organisms. Redworms do not survive in very hot or very cold surroundings.

(ix) After 3-4 weeks, put some waste food in one corner of the pit. Most of the worms will shift towards newly added food.

(x) Remove the compost from the vacated part and dry it in the sun for a few hours. The vermicompost becomes ready for use.

7. Observe the bins and waste material heaps and suggest what materials can be used for preparing handicrafts materials.

The following handicraft items can be prepared from the waste materials usually seen in bins and waste storage.

1. Designs and sceneries on cardboard, pencil scrab can be used.
2. We can prepare basket, toys, flower vase, etc.
3. Egg trays can be prepared by papier-mache prepared from waste paper decorated with the help of different colours and can be used.
4. Empty earthen cup (kullarh) can be used as Janjhi by making small hole in it and putting a burnt candle. Light comes out in different designs.
5. Flower vase can be prepared with the help of ice-cream sticks.
6. Different types of toys are prepared with the help of plastic cup, spoon, plate, forks.
7. Models of historical monuments can be designed with the help of empty injection bottles and ampules. You can prepare other objects with the help of your friends, brothers, sisters, relatives, parents and teachers.

8. Explain one way of recycling of waste paper. way to recycle the waste papers is as given below:

(i) Collect old newspapers, magazines, used notebooks, envelopes and torn out used papers.

(ii) Make small pieces of paper of these items and put them in a bucket or any other container submerged in water for one or two days.

(iii) Make thick paste of wet paper by pounding it. Spread the waste paste on the wire mesh fixed to the frame. You can use a large-sized sieve in place of a frame.

(iv) Pat the layer of paste gently to make the layer of the paste as uniform as possible. You may spread an old cloth or a sheet of newspaper on the paste to soak up the extra water.

(v) Remove the layer of paste from the frame and spread it on a sheet of newspaper in the sun. Put some weight on the corners of the newspaper so that these do not curl up.

You can decorate the paper by adding food colours, dried leaves, flower petals or pieces of coloured paper in the paste.

This will help you to get a recycled paper with beautiful patterns on it.

9. What can we do to reduce overuse of plastics?

(i) Re-use of the plastic bags whenever it is possible to do so without any adverse affects. Neglect re-use of plastic bags for storage or storage of food items to store food items.

(ii) Insist shopkeepers to use paper bags or jute bags to carry goods purchased.

(iii) Do not use plastic bags, especially to store eatables.

(iv) Do not throw plastic bags.

(v) Don't fill plastic bags with wastes of plants and animals, such as peels of vegetables and fruits, egg shells, bone pieces of animals, and throw them here and there in open places.

Animals may eat such plastic bags for the sake of food items. Later on these cause death of animals such as cow, buffaloes, dogs and other stray animals. These plastic bags, sometimes suffocate them or choke the alimentary canal which causes indigestion of food and elimination of undigested food.

(vi) Do not burn plastic bags and other plastic items because they emit harmful gases.

10. Municipality provides two types of dustbins for garbage collection. One coloured with blue colour and other with green colour. From following wastes which you will put in the which dustbin?

Plastic materials, metals and glass items, wastes of plants and animals, peels of fruits and vegetables, dried leaves and twigs, remains of meat like flesh and bones.

(i) The material which can be recycled should be put in the blue dustbin. These materials are: plastic materials, waste metals and glass. It means that the materials which can be recycled and reused should be put in the blue dust bin. These materials cannot rot but can be recycled.

(ii) The wastes of plants and animals, peels of fruits and vegetables, dried leaves and plant twigs, kitchen wastes and other wastes of plant and animal wastes, etc. should be dumped in the green bin or bag. This means that biodegradables are collected in the green dustbin which can be used to prepare compost.

11. Can you make something useful of these waste material?

Powder containers, cold-drink cans, plastic bottles, shoe-box.

a. Powder container: Their use depends upon their size, shape and the material they are made of. For example.

i. Elongated metallic powder container can be used as pen-pencil stand, to grow money-plant, etc.

ii. Plastic containers can be recycled.

b. Drink cans: Storing liquids like oils, growing herbaceous plants like money-plants, etc.

c. Plastic bottles : Storing liquids such as oils and recycling plastic.

d. Shoe-box: Making small red-cross box, storage for pen-pencils and other small articles.

I. Higher Order Thinking Skills (HOTS)

1. If you and your friends are given the choice of eating in a plastic plate or a banana leaf platter at a party, which one would you prefer and why?

We would prefer the banana leaf platter because banana leaf is easily biodegraded whereas plastic plates are non-biodegradable and add up to the soil pollution.

2. Why do rag-pickers always seem to suffer from some disease or the other?

Rag-pickers come across different sorts of wastes. While they are collecting rags they are subjected to chemical poisons, infectious materials and hazardous materials discarded as wastes. Since they are always malnourished they tend to suffer from diseases like tuberculosis and cancer, related growth and anaemia.

3. What would happen if waste material is not collected from the waste material bins for many days?

- i. A toxic odour will develop in the surroundings.
- ii. Large number of mosquitoes and pests will begin to settle.
- iii. Many diseases will spread.
- iv. The air gets polluted.
- v. Unhygienic conditions will develop.

4. Why is an earthworm called a farmer's friend?

Earthworm helps in converting biodegradable wastes into compost which is very fertile for soil.

5. Can a junk dealer be called the environment's friend? Give reasons to support your answer.

Yes, because he collects all the junk and deposits it for recycling. This way he helps in preventing waste accumulation in environment.

II. Higher Order Thinking Skills (HOTS)

1. Why should animal products not be used in vermi-composting ?

Animal products should not be used in vermicomposting because if we put animal products and pickles, oil, vinegar etc., they enhance the growth of disease causing bacteria which may cause the red worms to die.

2. Some things can be recycled while some can not. Why should we not throw away any thing that can be recycled ?

We should not throw away any thing that can be recycled because recycling things can reduce the amount of garbage.

Value Based Questions

1. While passing through a street, Sohan saw some safai karamcharis were burning the waste paper and dry leaves near the municipal dustbin.

(i) Why were they burning the waste paper and dry leaves ?

(ii) What was evolved on burning these things ?

(iii) Suggest any other method to reduce wastes like leaves.

(iv) Name one method that saves trees or plants.

(i) To reduce the wastes in that area.

(ii) Smoke and dust particles.

(iii) Composting is a method used to reduce wastes like leaves, as it is eco-friendly process.

(iv) Recycling of waste papers.

2. What is waste management ? Is garbage disposal the responsibility of the government ?

Waste management is the collection, transportation, processing, recycling and reusing of the usable waste materials. Proper disposal of garbage should be a concern of every citizen and not just of the government. Each and every individual must reduce activities that pollute the environment. A lot of waste is generated from homes, offices, schools, hospitals, etc. It includes food waste, paper, plastic, glass, metal, etc. Therefore, it is required that every individual must reduce the production of wastes and must help in the proper disposal of wastes.

Skill Based Questions

1. Observe the picture of worms given below. They do not have teeth then how they grind food. For what purpose we use them?



- i. They are a type of earthworm called redworm.
- ii. They do not have teeth. They have a structure called gizzard, which help them to grind the food. Addition of powdered egg shells or sea shells can help in grinding of food.

Note: A redworm can eat food equal to its own weight in a day.

- iii. We use them to convert the bio-degradable waste into useful compost.

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2. Draw a picture to show a landfill.



3. Observe the following picture and tell what it shows.



This figure shows the burning of leaves which produce harmful smoke and gases for our health.

Know the Links

- <https://en.m.wikipedia.org>
- <https://techterms.com>
- <https://www.techopedia.com>
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