

Answers

Chapter 1

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|-------|-------|------|
| 1. c | 2. b | 3. b | 4. c |
| 5. a | 6. a | 7. d | 8. a |
| 9. c | 10. b | 11. b | |

VERY SHORT ANSWER QUESTIONS

12. Seed drill, because it is a modern agricultural implement unlike the others which are all traditional tools.
13. The field will be watered, tilled and ploughed before sowing seeds.
14. (i) False: Apart from good quality seeds, using appropriate agricultural practices are important for getting higher yield.
- (ii) False: It actually enriches the soil.
- (iii) False: Some crop plants need transplantation.
- (iv) False: Rhizobium (bacteria) present in the cells of root nodules of leguminous, plants fix nitrogen.
- (v) True.
15. October to March.
16. Loosening the soil/maintaining high moisture levels in soil.

SHORT ANSWER QUESTIONS

17. *Kharif*: Rice or Soyabean, *Rabi*: Pea or Wheat.
- Pea/Soyabean are legumes that will fix nitrogen with the help of Rhizobium.

18. (i)-c; (ii)-a; (iii)-b; (iv)-d

19. Crops cultivated without using any chemicals like fertilisers, pesticides, weedicides etc. are called organic foods.

20.

B	S	E	I	L	O	R	U	A	Z	Z
O	E	A	R	T	H	W	O	R	M	K
E	E	Z	L	G	O	H	Y	H	I	U
X	D	N	U	R	E	A	S	I	C	S
D	M	O	X	P	T	K	Y	Z	R	B
C	L	R	B	U	L	L	F	O	O	X
P	W	K	V	R	A	O	E	B	B	C
I	Q	P	G	B	G	C	W	I	E	M
M	A	N	U	R	E	V	J	U	S	P
Q	X	F	U	S	A	Z	T	M	U	V

Living : Seed, Earthworm, *Rhizobium*, Microbes, Ox

Non living: Plough, Urea, NPK, Manure, Hoe

21. (a) Seed drill.

(b) The advantages are,

- (i) seeds are sown at a uniform distance and depth to avoid over crowding.
- (ii) after sowing, seeds are covered by soil which prevent them from being eaten by birds.
- (iii) It saves time and labour.

22. (a) Animal husbandry.

(b) Animals are provided with proper food, shelter and care.

23. *Khariff* : Maize , Paddy, Groundnut, Cotton.

Rabi : Mustard, Pea, Wheat, Gram.

LONG ANSWER QUESTIONS

24. (i) He did not use good quality seeds.
(ii) His field was not well irrigated.
(iii) Manures/fertilisers were not properly applied.
(iv) Weeds were not removed. More can be added to the list.
25. The following items are required – seeds and seedlings of vegetable plants from nursery, kitchen waste, water.

Steps for raising the garden:

1. Kitchen waste will be collected and composted in a pit.
 2. A patch of land will be identified for the garden.
 3. Soil will be dug up and levelled with the help of a spade.
 4. Sowing of seeds / transplanting of seedlings.
 5. Select seeds/seedlings as per the season. Water the plants regularly with a water-can.
 6. Compost will be applied.
 7. Weeds will be removed periodically with the help of *Khurpi*.
26. (a) Rainy season
(b) Seeds are first grown in a nursery and later seedlings are transplanted in the field.
(c) Grains are sun dried to reduce the moisture content and later stored in jute bags or grain silos.
27. (i) SILOS (ii) THRESHING (iii) IRRIGATION (iv) RIVER
- Activity carried out in fields after maturation of crop-Harvesting
28. (i) Use of fertilisers and weedicides are hazardous to environment. Tractor causes air pollution.
(ii) Modern agricultural implements saves on both time and labour as compared to traditional equipments.
(iii) An example of a weedicide is 2, 4-D. Farmers should cover their mouth and nose while spraying weedicides as they can cause health hazards.
29. Students may come up with practical solutions during the course of discussion.
30. Tilling and ploughing, sowing, manuring, irrigation, de-weeding, harvesting.

Chapter 2

MULTIPLE CHOICE QUESTIONS

1. b 2. b 3. c 4. d
5. b 6. b 7. b

VERY SHORT ANSWER QUESTIONS

8. (a) antibodies (c) Anthrax
(b) tuberculosis (d) fermentation
9. (a) Preservatives (c) Carrier/vector
(b) *Rhizobium* (d) Antibiotics
10. (a)-(iii); (b) (ii); (c)-(iv); (d)-(i)
11. Baking bread/manufacture of alcoholic drinks
12. Fermentation
13. Nitrogen
14. Tuberculosis is an air-borne disease which easily spreads when the infected person coughs.
15. If the child is suffering from diarrhoea, the orally given vaccine may be excreted out because of frequent motions.
16. Oil prevents bacteria from attacking the pickle and spoiling it.

SHORT ANSWER QUESTIONS

17. (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

- | | | |
|-----|----------------------|---------------------------|
| 18. | Friendly | Harmful |
| | Yeast | Malarial parasite |
| | <i>Lactobacillus</i> | Bread mould |
| | <i>Rhizobium</i> | <i>Bacillus anthracis</i> |

19. The probable reason is that the *chaat* was contaminated by pathogenic microbes due to unhygienic conditions near the shop or the utensil used for serving could have contaminated.
20. The 'unused kneaded flour', if left in warm conditions, gets infected by microbes which cause fermentation and spoils the flour. The *pooris* would remain in relatively good condition because they were deep fried in heated oil that kills microbes.
21. (a) Polio/Chicken Pox/Influenza
(b) Virus can reproduce only inside the cells of host.

LONG ANSWER QUESTIONS

22. (a) Yellow vein mosaic of lady's finger/okra
(b) Virus
(c) The disease spreads from one plant to another through insects.
(d) (i) Citrus canker caused by bacteria (ii) Rust of wheat caused by fungus or any other disease
23. Vaccines contain dead or weakened microbes of a particular disease. When a vaccine is introduced into a healthy body, the body fights and kills them by producing suitable antibodies. These antibodies remain in the body and protects it when the microbe enters the body again.
24. (a) Yeast causes fermentation converting sugar into alcohol and carbon dioxide.
(b) Carbon dioxide
(c) Lime water turns milky
25. (a) Bread mould. It is a fungus.
(b) Moist and stale bread.
(c) It grows well in moist conditions.
(d) No, the fungus spoils the bread by producing poisonous substances.
26. (a) Fresh milk is boiled before consumption to kill the microorganisms in it. But packed milk is pasteurised and does not contain any microorganisms. It can thus be consumed without boiling.
(b) Raw vegetables and fruits get easily infected by microorganisms and get spoilt. They are kept in refrigerator

as low temperature inhibits growth of microbes. Jams and pickles contain sugar and salt as preservatives. They do not get infected by microbes easily.

- (c) Beans and peas are leguminous plants and have *Rhizobium* in their root nodules. These bacteria can fix atmospheric nitrogen to enrich the soil with nitrogen and increase its fertility.
 - (d) Though mosquitoes live on land, their larvae grow in water. If water stagnation is prevented the larvae cannot survive.
27. (a) Cholera: By maintaining personal hygiene and good sanitation practices.
- (b) Typhoid: Eating properly cooked food, drinking boiled food, getting vaccinated against the disease.
- (c) Hepatitis A: Drinking boiled water and getting vaccinated against the disease.
28. (a) Lightning fixes nitrogen.
- (b) Nitrogen fixing bacteria and blue green algae fix atmospheric nitrogen.
- (c) Nitrogenous waste from excretion and death.
- (d) Bacteria turn compounds of nitrogen into gaseous nitrogen.

Chapter 3

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|-------|------|------|
| 1. b | 2. c | 3. d | 4. a |
| 5. b | 6. d | 7. d | 8. b |
| 9. c | 10. d | | |

VERY SHORT ANSWER QUESTIONS

11. Cellulose.
12. Rayon.
13. Terylene and cotton.
14. Plastic is easily moldable so the articles can be made in any shape and size.
15. Due to its non-biodegradable nature it causes environmental pollution.
16. Burning of plastic and synthetic fabrics produces lots of poisonous gases causing air pollution.
17. (a), (b), (c) and (f)
18. Plastic is a non-reactive material. It does not react with air and water and thus does not rust.

SHORT ANSWER QUESTIONS

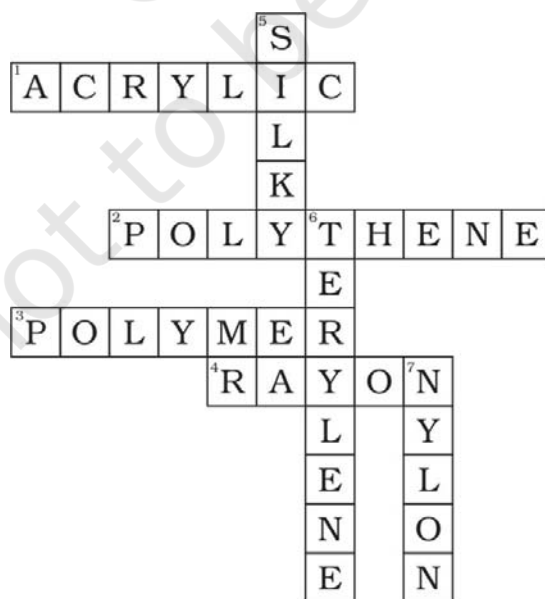
19. Nylon ropes are strong, elastic and lighter as compared to cotton and jute ropes.
20. Acrylic blankets are cheap, light in weight, more durable and are available in variety of colours and designs. They can be easily washed at home.
21. Thermoplastics get deformed easily on heating and can be bent easily on heating. On the other hand thermosetting plastics when molded once can not be softened on heating.
22. (i) monomers (iv) acrylic
(ii) man-made (v) melamine
(iii) nylon

23. (a)-(iii), (b)-(iv), (c)-(v), (d)-(ii), (e)-(i)
24. (a) rayon (d) plastic
 (b) polymer (e) polyester
 (c) terylene (f) teflon

LONG ANSWER QUESTIONS

25. (i) True
 (ii) False, synthetic fibres melt on heating
 (iii) True
 (iv) False, most of the plastics are non biodegradable.
26. **Hint:** Write uses of synthetic polymers like nylon, acrylic, terylene, PET, plastics, etc.
27. **Hint:** Plastic is a non-biodegradable material and as such it causes land pollution. At the same time burning such materials in the form of garbage causes serious air pollution.
 Reducing it's use, reusing it for some other purpose and recycling may limit its overall consumption and reduce environmental pollution.
28. **Hint:** By hanging weight with the threads of same thickness of any synthetic fibre and cotton separately will show that more weight is required to break a synthetic thread. (Also see activity 3.1 of NCERT science book of class VIII).

29.



26. The tablet is not made of iron metal, instead it contains a salt of iron.

27. (a)-(iii), (b)-(iv), (c)-(i), (d)-(v), (e)-(ii).

LONG ANSWER QUESTIONS

28. Statements (b), (d) and (e) are not correct.

(b) Metals are good conductor of electricity and also good conductor of heat.

(d) Oxides of non-metals are acidic in nature and oxides of metals are basic in nature.

(e) A more reactive metal replaces a less reactive metal from its salt solution in water.

29. **Hint:** Write the activity based on the fact that when an iron nail is put in a beaker containing copper sulphate solution, iron replaces copper from the solution, since it is more reactive. Copper metal and iron sulphate are the products which are obtained as a result of the chemical reaction.

30. Oxygen, water, blue, red, non-metals.

Questions maybe

- (i) Which gas is formed when sulphur reacts with oxygen?
(ii) What is the nature of oxides of non-metals?

31.

A	X	T	M	S	P	K	L	G
X	T	S	U	L	P	H	U	R
I	L	R	H	M	N	D	I	L
C	I	R	O	N	S	E	J	K
A	L	U	M	I	N	I	U	M
R	M	U	Q	T	R	S	T	U
B	N	P	C	O	P	P	E	R
O	X	Y	G	E	N	V	W	X
N	Y	Z	T	A	B	G	H	K

Ans.

Metals

Iron

Copper

Aluminium

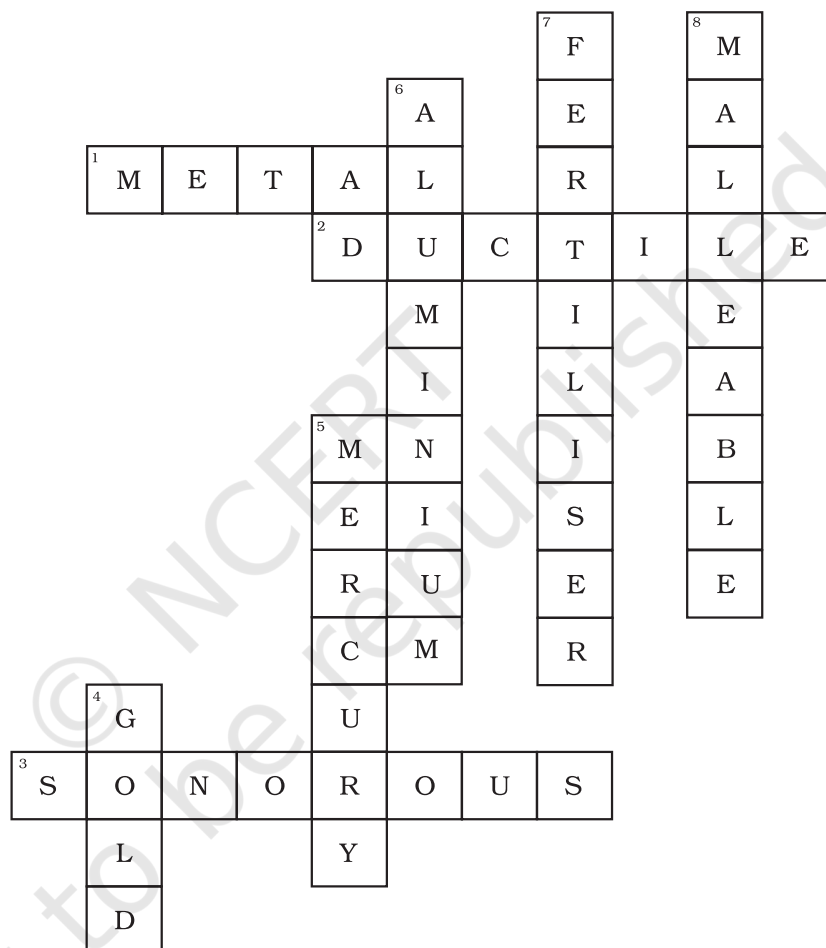
Non-metals

Carbon

Oxygen

Sulphur

32.



Chapter 5

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|-------|-------|-------|
| 1. d | 2. c | 3. d | 4. d |
| 5. c | 6. d | 7. a | 8. a |
| 9. c | 10. d | 11. c | 12. c |

VERY SHORT ANSWER QUESTIONS

13. Decantation
14. CNG stands for Compressed Natural Gas. It is considered to be a better fuel because it is less polluting.
15. Kerosene is used as fuel for stoves, lamps and jet aircrafts.
16. (a) fuels (d) coal, natural gas
(b) carbon dioxide (e) exhaustible
(c) liquid, unpleasant
17. (a) coal (b) petroleum (c) refinery
(d) kerosene (e) sunlight
18. (a) carbonisation, (b) fossil fuels, (c) unpleasant, (d) coal gas, (e) refining, (f) air pollution.
19. (a) False, (b) False, (c) True, (d) True, (e) True.

SHORT ANSWER QUESTIONS

20. These resources are present in unlimited quantity in nature and are not likely to be exhausted by human activities.
21. Exhaustible natural resources are
coal, natural gas, petroleum, minerals, forests.
Inexhaustible natural resources are
air, sunlight, oxygen.

22. It is used for extraction of many metals and also for the manufacture of steel.
23. Coal is black in colour and hard as stone. It is one of the fuels used to cook food. Earlier it was used in railway engines to produce steam to run the engine. It is used as fuel in thermal power plants to produce electricity and in various other industries.
24. **Hint:** Oil is lighter than water hence floats over it.
25. forests, floods, soil, soil, temperature, pressure, temperature.
26. (a)–(iii), (b)–(iv), (c)–(i), (d)–(ii)

LONG ANSWER QUESTIONS

27. Coal when processed in industry gives coke, coal tar and coal gas.
- Coke is used in the manufacture of steel and in extraction of many metals.
- Coal tar is used as starting material for manufacturing various substances such as synthetic dyes, drugs, explosives, perfumes, paints etc.
- Coal gas is used as fuel.
28. It takes a very long time for the formation of fossil fuels. It also requires specific conditions and it doesn't happen quite often. Therefore, their limited stock will last only for a few hundred years.
29. **Hint:** It is related to global warming due to formation of carbon dioxide and some other gases.
30. • Ensure correct tyre pressure.
• Ensure regular maintenance of the vehicle.
• Drive at a constant and moderate speed.
• Switch off the engine at traffic lights or at a place where you have to wait.

31. This is an open ended question. Let children imagine and write.

32. **Hint:**

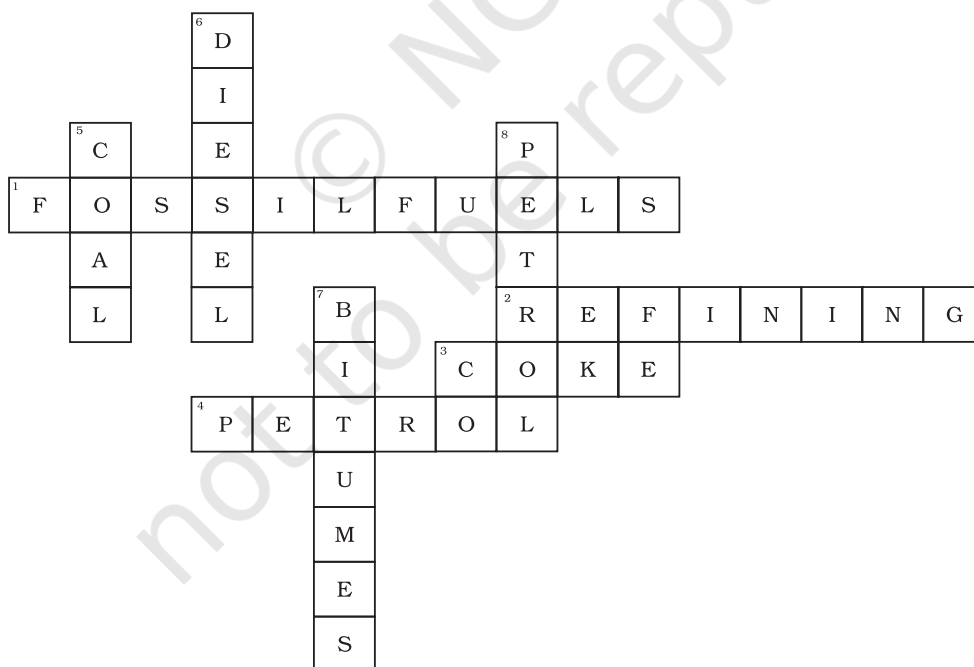
Sunlight is present in unlimited quantity in nature whereas it takes millions of years to form petrol from dead remains of organisms.

33. • Petroleum gas in liquid form (LPG) — used as fuel for home and industry.
 • Petrol — used as fuel for automobile and aviation.
 • Kerosene — used as fuel for stoves, lamps and for jet aircrafts.
 • Diesel — used as fuel for heavy motor vehicles, electric generators.
 • Lubricating oil — used for lubrication
 • Praffin wax — used in ointments, candles, vaseline etc.
 • Bitumen — used in paints and road surfacing.

34. Open ended question. Let children write their views.

35. Open ended questions. Let children write their ideas.

36.



Chapter 6

MULTIPLE CHOICE QUESTIONS

- | | | | |
|-------|-------|-------|-------|
| 1. d | 2. c | 3. c | 4. b |
| 5. d | 6. a | 7. c | 8. c |
| 9. c | 10. c | 11. d | 12. b |
| 13. d | 14. c | 15. c | |

VERY SHORT ANSWER QUESTIONS

16. (a) Chemical, oxygen; (b) fire, blanket (c) lowest, ignition; (d) low, inflammable (e) burning.
17. (a) diesel; (b) glass; (c) matchstick; (d) heat, flame; (e) calorific
18. In jar B, because oxygen is a supporter of combustion.
19. Anu should keep her test tube in the outermost zone which is the hottest part of the flame.
20. It is because CNG produces harmful products in very small amount and is a cleaner fuel.

SHORT ANSWER QUESTIONS

21. (a) Combustible — charcoal, straw, card board, paper, candle wood,
(b) Non-combustible — chalk, stone, iron rod, copper coin, glass.
22. (a), (c) are true statements.
(b) Magnesium is a combustible metal
(d) Calorific value of coal is higher than that of wood.
23. (a)–(iv), (b)–(vi), (c)–(v), (d)–(iii), (e)–(i), (f)–(ii)
24. (a)–(iii)–(x), (b)–(ii)–(z), (c)–(i)–(y)

25. Iron wire will become red hot and glow. It will not produce a flame.
26. (a) combustion, (b) combustible, (c) ignition, (d) petrol, (e) ignition, inflammable, (f) calorific value.
27. Due to insufficient availability of oxygen in the closed room carbon monoxide gas is produced which can kill persons sleeping in that room.
28. (a) False – A chemical process in which a substance reacts with oxygen to give off heat is called combustion.
(b) False – Carbon dioxide is the best extinguisher for fires involving electrical equipment.
(c) True.
(d) False – Increased concentration of carbon dioxide in air is believed to cause global warming.
(e) True.
(f) False – outer zone is the hottest zone of a flame.
(g) True.
29. **Hint:** Sudden formation of large amount of gas due to chemical reactions.
30. **Hint:** calorific value.

LONG ANSWER QUESTIONS

31. **Hint:** Petrol will catch fire instantly because it is highly inflammable.
32. **Hint:**
- Water is not suitable for fires involving oil.
 - Manu should have switched off the flame of the burner and put a lid on the frying pan. By doing this the contact between fuel and oxygen is cut off and the flame will go off.
33. **Hint:** Three essential requirements.
- a. Fuel
 - b. Air
 - c. Heat to acquire the ignition temperature

The job of fire extinguisher is to cut off the supply of air or to bring down the temperature of fuel or both.

34. **Hint:**

Types of fuels

Solid fuel – Coal, wood, etc.

Liquid fuel – Kerosene oil, petrol etc.

Gaseous fuel – CNG, LPG etc.

Uses

Coal – cooking etc.

Kerosene oil – Fuel for stoves, lamps etc.

LPG – Fuel for industry etc.

Add more uses.

35. **Hint:** CNG, because the calorific value of CNG is higher than that of petrol. Therefore CNG will be more economical. At the same time it produces the least air pollutants.

36. **Hint:**

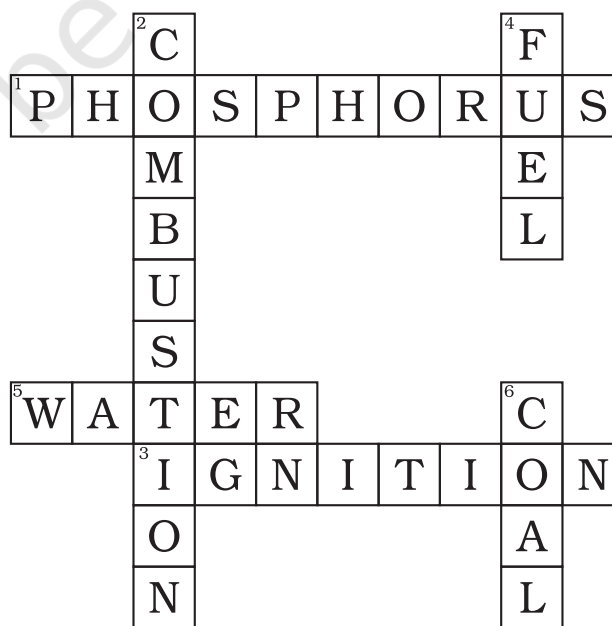
(i) Wood produces lot of air pollution.

(ii) Use of wood as fuel encourages cutting of trees leading to deforestation.

37. **Hint:**

- At high temperature, some times dry grass catches fire which spreads through out the forest.
- Camp fire may also be a reason.
- Human negligence.
- Lightening.

38.



Chapter 7

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|-------|-------|------|
| 1. a | 2. d | 3. c | 4. c |
| 5. a | 6. a | 7. c | 8. a |
| 9. c | 10. b | 11. a | |

VERY SHORT ANSWER QUESTIONS

12. To maintain balance in nature/to conserve the natural ecosystem.
13. Saving paper using recycled paper/donating old books/spreading awareness about harmful effects of deforestation/any other relevant answer.
14. (i) True (ii) False (Plants of a particular area are collectively termed as fauna). (iii) False (Deforestation leads to an increase in the water holding capacity of the soil). (iv) True.
15. Reforestation can take place naturally by leaving the deforested area undisturbed for a long time. But this process takes a long time in terms of years.
16. Satpura National Park.

SHORT ANSWER QUESTIONS

17. Wildlife sanctuaries are protected areas where human activities like plantation, cultivation, grazing, falling of trees, hunting and poaching are prohibited completely.
18. Endemic organisms are confined to a limited geographical area. They cannot adapt or live outside their natural habitat. Any disturbance to their habitat will adversely affect them.
19. Even small organisms are important in an ecosystem because every organism forms a part of a food chain/food web/ecosystem.

20. Introduction of a new species may affect the existence of local species due to competition.
21. Yes. Soil erosion removes the fertile top layer of the soil thereby, exposing the hard rocky lower layers which are less fertile.
22. The biodiversity found in Panchmarhi Biosphere Reserve is similar to that found in upper Himalayan peaks and lower Western Ghats.
23. Conservation of natural forests and meeting the basic needs of the people living in or near the forests.
24. Biodiversity refers to the variety of organisms existing in the Earth, their interrelationships and their relationship with the environment.

LONG ANSWER QUESTIONS

25. Yes. Plants absorb carbon dioxide from the atmosphere for photosynthesis. Deforestation results in decreased number of trees leading to accumulation of carbon dioxide in the atmosphere. Carbon dioxide in the atmosphere traps heat rays reflected by the earth which results in global warming.
26. Deforestation results in decreased water holding capacity of soil. This reduces the infiltration of water into the ground which causes floods. On the other hand, deforestation leads to higher level of carbon dioxide in the atmosphere which causes global warming. Scarcity of trees disturbs the water cycle and may reduce rainfall leading to droughts.
27. To prevent deforestation, save energy and water needed for manufacturing the paper. Chemicals used to manufacture the paper also cause pollution.

Chapter 8

MULTIPLE CHOICE QUESTIONS

- | | | | |
|-------|-------|-------|-------|
| 1. c | 2. b | 3. c | 4. a |
| 5. b | 6. d | 7. c | 8. d |
| 9. a | 10. a | 11. c | 12. a |
| 13. c | 14. c | 15. b | 16. c |
| 17. d | 18. a | 19. d | 20. d |
| 21. d | 22. b | 23. c | 24. b |

VERY SHORT ANSWER QUESTIONS

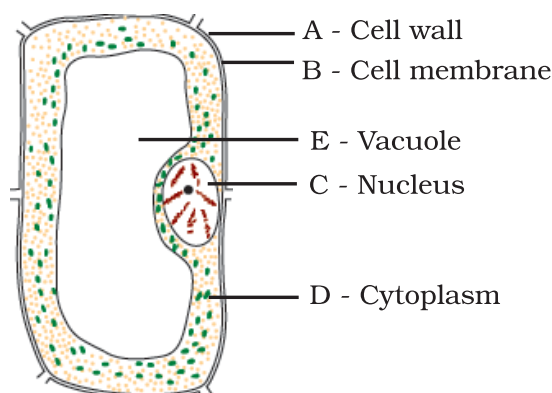
25. Chloroplast and chlorophyll
26. Microscope
27. Nails and hair are both made up of dead cells. They do not have nerve cells. Hence we don't feel the pain when they are cut.
28. Nucleus/chromosomes.
29. Unicellular and Eukaryotic/Protozoan.
30. Cell wall protects the cell contents, gives shape to the cell.

SHORT ANSWER QUESTIONS

31. No, the statement is wrong.
Both unicellular and multicellular organisms respire/all organisms respire.
32. Ans. A-iii, B-iv; C-ii; D-i

33. A. It represents an animal cell
B. It represents a eukaryotic cell

34.



35.

Cell	Tissue	Organ
RBC	Blood	Blood vessels
WBC	Muscle	Heart
Nerve cell	Nerve	Hand
		Brain

36. A- Nucleus; B-Cell membrane; C-Genes/Chromosomes

37. a-cell wall; b-cell membrane; c-cytoplasm; d-cell organelles; e-nucleus; f-chromosomes.

38. Although cell organelles have specific structures and perform specific functions but they cannot be called structural and functional units of living organisms. This is so because they can perform their functions only when they are within a living cell. They cannot function outside the cell as an independent unit.

39. As plants cannot move they need protection against variations in temperature, high wind speed, atmospheric moisture, etc. Therefore, for protection plant cell..... membrane. This layer is called the cell wall. Plant cells have an additional layer surrounding the cell membrane.

40. ➤ I agree because of the cells in the body of an elephant is not necessarily bigger than those in a rat, it is not true that bigger organisms have cells of bigger size in their body.
- The size of the cell in an organism is related to the function to performs. For example, the nerve cells in both, the elephant and the rat is are long and branched. They perform the same function, that of transferring messages.

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Chapter 9

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|-------|------|------|
| 1. c | 2. d | 3. b | 4. c |
| 5. a | 6. d | 7. b | 8. b |
| 9. d | 10. a | | |

VERY SHORT ANSWER QUESTIONS

11. During fertilisation, only the nucleus of the sperm moves into the egg cell and fuses with the egg nucleus to form the zygote. The sperm degenerates.
12. egg, caterpillar, pupa, silk moth
13. It ensures the continuation of species generation after generation.
14. Dogs do not lay eggs.
15. A layer of jelly covers the eggs of frog and provides protection.

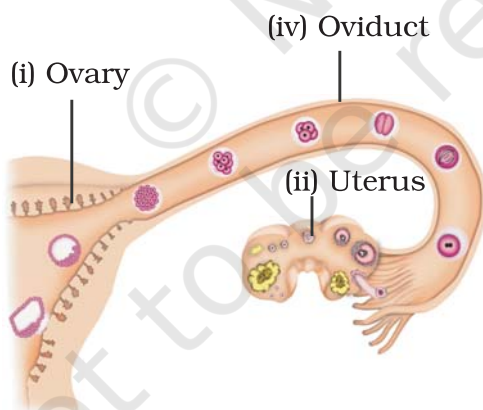
SHORT ANSWER QUESTIONS

16. Single, asexual, nucleus, body, binary
17. In human beings, body parts of an adult are present from the time of birth itself. Whereas, in metamorphosis, the parts of the adult are different from those at the time of birth.
18. Although mother gives birth to a child, fertilisation involves two gametes, one from the mother and the other from father. The zygote, therefore has both father and mother's contribution. Since the zygote develops into the baby it has characters of both parents.
19. Hydra reproduces by budding where an outgrowth arises from the parent and develops into a new individual. Amoeba reproduces by binary fission in which the division of nucleus is followed by division of the cell resulting in two individuals.

20. (a) F; External fertilisation occurs only in water.
(b) F; The eggs of fish are covered by a jelly for protection.
(c) F; Human sperm has a head, middle piece and tail.
(d) T
21. Because they have to be motile and reach the non-motile female gamete.
22. The figure shows an amoeba undergoing binary fissions with a dividing nucleus.
23. (a) A-sperm; B-ovum (egg)
(b) Fertilisation
(c) Sperm nucleus fuses with the egg nucleus to form the zygote.

LONG ANSWER QUESTIONS

24. Female fish release eggs into water and male fish releases sperms. Sperms swim randomly in water and comes in contact with the eggs. The nucleus of the sperm moves into the egg and fuses with it. Since fertilisation occurs in water, outside the female body, it is external fertilisation.
- 25.



26. Hens are oviparous in which internal fertilisation takes place. The fertilised egg develops into an embryo inside the body. However, the development of chick from the embryo takes place outside the body.

Frogs are oviparous in which both fertilisation and development of zygote to embryo and young ones occurs outside the body.

27. (i) (a) Embedding of the embryo in the uterus.
(b) Fertilisation.
(c) Zygote formation and development of an embryo from the zygote.
(d) Zygote showing fusion of nuclei.
- (ii) The correct sequence is
c, b, d, a
- (iii) Zygote formation
The sperm and the egg nuclei fuses to form a single nucleus resulting in the formation of a fertilised egg or zygote.
(Note: One step is explained as an example. Students may explain any other step.)

Chapter 10

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|------|------|------|
| 1. c | 2. b | 3. d | 4. d |
| 5. b | 6. d | | |

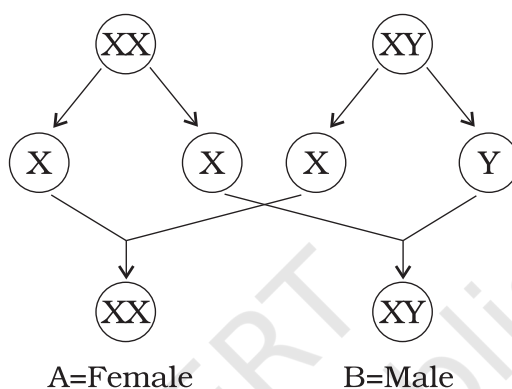
VERY SHORT ANSWER QUESTIONS

7. (a) menarche, menopause (b) metamorphosis
(c) muscles, larynx (d) Adrenalin
8. (a) fertilised egg.
(b) blood stream, target site.
(c) Testosterone, estrogen, secondary sexual.
(d) pituitary gland.
9. (a) Target site
(b) Sweat glands/salivary glands/oil glands (any one)
(c) Hormones
(d) Puberty
10. Testosterone.
11. Estrogen.

SHORT ANSWER QUESTIONS

12. a-i; b-iv; c-ii; d-i.
13. Lila's diet is not a balanced diet because her meals does not contain the adequate nutritional requirement. She takes only proteins and carbohydrates in every meal. She requires to take vitamins and minerals in her meals to protect her from various diseases. Thus, I would suggest her to include fruits and vegetables in her meals.
14. Two features seen in boys at puberty are:
 - (i) Growth of facial hairs
 - (ii) Voice becomes hoarse.Two features seen in girls at puberty are:
 - (i) Development of breasts.
 - (ii) Region below the waist becomes wider.

15. Several medicines have adverse side effects and have specific dosage levels which if not followed may harm the body. Drugs can be addictive too and can ruin our health and happiness.
16. No. They are not healthy eating habits because potato chips and burgers have very little nutritional value.
17. (a) nutrients, (b) thyroxine, (c) ductless, (d) high-pitched, deep
- 18.

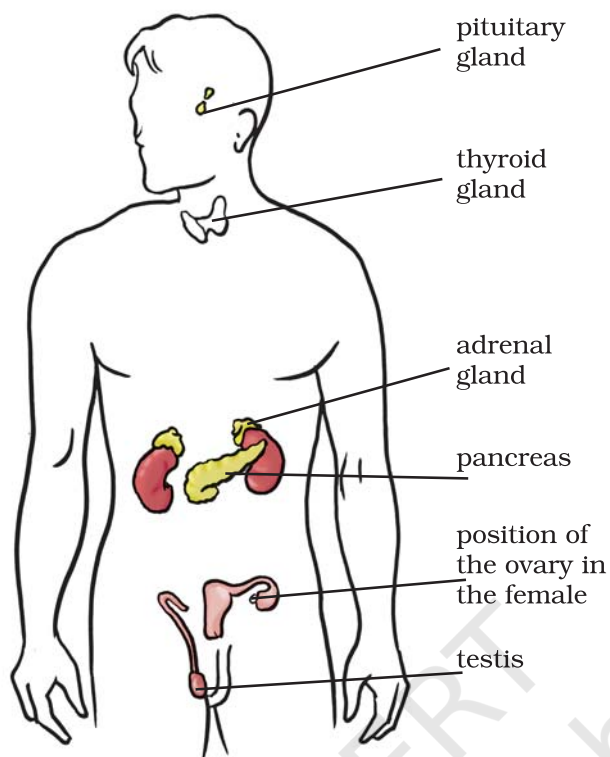


LONG ANSWER QUESTIONS

19.

Body Changes	
Boys	Girls
Broad shoulders	Wider region below waist
Wider chests	Development of mammary glands
Growth of muscles	Acne and pimples on face
Growth of facial hair	Development of sex organs
Acne and pimples on face	High-pitched voice
Development of sex organs	Development of pubic hair
Development of pubic hair	

20.



21.

S. No.	Food items	Major Nutrient	Functions
1.	Pulses and nuts	Proteins	Growth, repair of body cells
2.	Orange and Amla	Iron and Vitamins	Formation of blood keeps the body healthy
3.	Sugar, Roti	Carbohydrates	Provide energy
4.	Oils	Fats	Provide energy
5.	Vegetables	Vitamins and Minerals	Keeps the body healthy and disease free

22. (a) Adrenaline (b) Growth hormone
(c) Insect hormones (d) Thyroxine

23. No, this thickening of the uterine wall is not permanent.

If the egg gets fertilised, it starts developing and gets embedded in the uterine wall resulting in pregnancy. During pregnancy no more eggs are released and the thickened lining is discharged only when the baby is born. However, if fertilisation does not occur, the released egg and the thickened lining are shed off resulting in menstruation.

24. The swelling on the neck of Radha may have been because of goiter, a condition of the thyroid gland during which the gland produces insufficient quantity of thyroxine. However, the protrusion in John's throat would be Adam's apple, a result of growth of voice box in adolescent boys.

25. (a) The red line represents the height of boys.
(b) The blue line represents the height of girls.
(c) At the onset of puberty, girls grow faster in height than the boys and by the age of 18 years, approximately both reach their maximum height.
(d) No, the rate of growth in height varies among individuals. Some may grow in height suddenly at puberty and then slow down, while others may grow gradually.

26. During adolescence, the secretion of sweat glands and sebaceous glands increases leading to formation of acne and pimples. Regular face wash keeps the face clean and dry and helps to reduce the pimples.

27. In our country, the legal age for marriage is 18 years for girls and 21 years for boys. This is because teenage mothers are not prepared mentally or physically for motherhood. Early marriage and motherhood causes health problems in both mother and the child. It also curtails employment opportunities for the young woman and may cause mental agony as she is not ready to shoulder responsibilities of motherhood.

Also, the boys before that age may not be mentally matured and financially secure enough to take on the responsibilities of a family.

28. (Open Ended) students may write about the effects of nutrition, hormones, exercises, disease, etc. on the height.

Chapter 11

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|------|------|------|
| 1. a | 2. c | 3. b | 4. d |
| 5. d | 6. b | 7. a | 8. a |

VERY SHORT ANSWER QUESTIONS

9. Muscular force.
10. While walking we apply force on the ground.
11. Towards east.
12. Magnetic force.
13. Electrostatic force.
14. Force of gravity.
15. Yes
16. Upward force is larger than the force of gravity.
17. Yes

SHORT ANSWER QUESTIONS

18. The force changes the shape of the dough.
19. Force of gravity. No, without the parachute his speed will be higher.
20. Both the forces are of equal magnitudes and applied in the opposite directions.
21. Electrostatic force. The balls have similar charges. They move away due to repulsion between similar charges.
22. Earth and fruits.

23. He should apply a force to pull the cart up the slope.
24. Magnetic force (in the upward direction) and force of gravity or the weight of the car (downward). Magnetic force is larger than the force of gravity.

LONG ANSWER QUESTIONS

25. The archer stretches the string of the bow by applying muscular force. In the process the shape of the bow changes. When the string is released, it regains its original position that provides the initial force to set the arrow in motion. The force of gravity that acts on the arrow in the downward direction brings it to the ground.
26. Blunt blades have larger area compared to the sharp-edged blades. Thus, the applied force produces a lower pressure in case of blunt blades, which makes it difficult to cut the cloth.
27. Rod B will go deeper as it has a smaller area of contact, therefore the same force (weight of the rod) produces more pressure. In case of rod A the same force produces less pressure.
28. The woman wearing sandals with flat soles will feel more comfortable while walking on the sandy beach. The flat soles have larger area compared to the sandals with pointed heels. Since the two women are of the same weight, they will apply same force on the ground. Therefore, the pressure exerted by the pointed heels will be more compared to that with sandals having flat soles. As a result the pointed heel sandals will sink more in the sand than the flat sole sandals. Hence, walking with flat sole sandals will be more comfortable.
29. When we prick the surface of an inflated balloon with a needle it exerts a larger pressure because it has a smaller area of contact compared to the finger. The large pressure pierces the surface of the balloon easily.
30. B, D, A, C. Because pressure of a liquid column depends upon the height of the liquid column and not on volume of the liquid.

Chapter 12

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|------|------|------|
| 1. d | 2. b | 3. a | 4. c |
| 5. b | 6. d | 7. c | 8. d |

VERY SHORT ANSWER QUESTIONS

9. Larger force will be required to move the heavier block.
10. Yes.
11. The bicycle with worn out tyres is more likely to skid.
12. Force of friction will be zero as the net force on the box is zero.
13. No

SHORT ANSWER QUESTIONS

14. When rubber soles are used for a long time, their surfaces become smooth. Hence, the friction between the sole and the floor decreases. Therefore, slippers become slippery.
15. Yes, rolling friction. If an air cushion is introduced between the wheel and the rails, the friction will decrease.
16. The wearing off of cartilage will increase the friction. As a result the movement of joints will become difficult which may lead to joint pains.
17. She may rub soil to increase friction between the rope and her hand.
18. To increase friction between handle of the bat and hands, to have a better grip.
19. To increase friction to make it more effective for grinding again.

20. On the surface covered with sand, it will cover the least distance because sand offers maximum friction against its motion.
21. Because initially they had to apply force to set the card in motion but once the car started rolling, they had to apply force only to balance rolling friction of the car, the value of which is very less.

LONG ANSWER QUESTIONS

22. Friction between grinding stone and the cutting edge of the knife produces heat. As the friction is very large in this case, a large amount of heat is produced and we see sparks flying.
23. The friction between sand paper and metal sheet is very large, compared to that between the ordinary paper and the metal sheet. Thus the sand paper is able to remove the outer dull layer from the metal sheet more effectively and makes it more shining.
24. If the seat cover is very smooth then the friction between our body and the seat is very small. Therefore, when the brakes are applied we tend to slip.
25. They can put rollers below the heavy load. Since, the rolling friction is smaller than the sliding friction putting rollers below the heavy load will make the task easier for them.

Chapter 13

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|-------|------|------|
| 1. b | 2. a | 3. d | 4. a |
| 5. c | 6. a | 7. a | 8. c |
| 9. a | 10. c | | |

VERY SHORT ANSWER QUESTIONS

11. 1650 m
12. Yes, larynx (vocal cords)
13. The speed of sound is lower than that of the speed of light and therefore sound reaches him later than light.
14. Yes, eardrum.
15. Sitar and Ektara (any other musical instruments which produces sound by a vibrating string)

SHORT ANSWER QUESTIONS

16. Time period : 2 s
frequency : 0.5 oscillations/sec
17. If the sound produced by a vibrating body is in the audible range, the sound produced will be heard by us otherwise we will not be able to hear the sound even though the body is vibrating.
18. The frying pan will vibrate. We will not be able to hear the sound of vibration because sound cannot travel in vacuum.
19. No, In space there is vacuum and sound cannot travel in vacuum.
20. Vehicle noise, bursting of crackers, loudspeakers.
(Any other reasonable sources of noise pollution should be accepted)

LONG ANSWER QUESTIONS

21. The loudness of sound depends upon the amplitude of vibration. The amplitude of string is larger when it is plucked with greater force and hence the sound will be louder in that case.
22. **Hint:** Explain how a vibrating body produces sound and how it travels through the air and is heard by us by our ears.
23. The loudness of the sound will decrease as the air is removed slowly from the plastic bottle. If the air in the plastic bottle is removed completely, there is vacuum in the bottle. The sound cannot travel through vacuum and we cannot hear the sound of the alarm clock at all.
24. The noise level is quite low at night. Therefore the sound of the clock appears much clearer at night than in the day.
25. i) Trees must be planted along the roads and around the buildings.
ii) Use of horns should be minimised.
iii) Silencers must be installed in transport vehicles and industrial machines.

(Other reasonable measures should be accepted)

Chapter 14

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|------|------|------|
| 1. d | 2. a | 3. d | 4. a |
| 5. d | 6. c | 7. d | |

VERY SHORT ANSWER QUESTIONS

8. (a) Cathode (c) Conductor
(b) Electroplating (d) Chromium
9. A coating of zinc is provided to protect iron from corrosion and rust.
10. No
11. Heating effect of electric current.

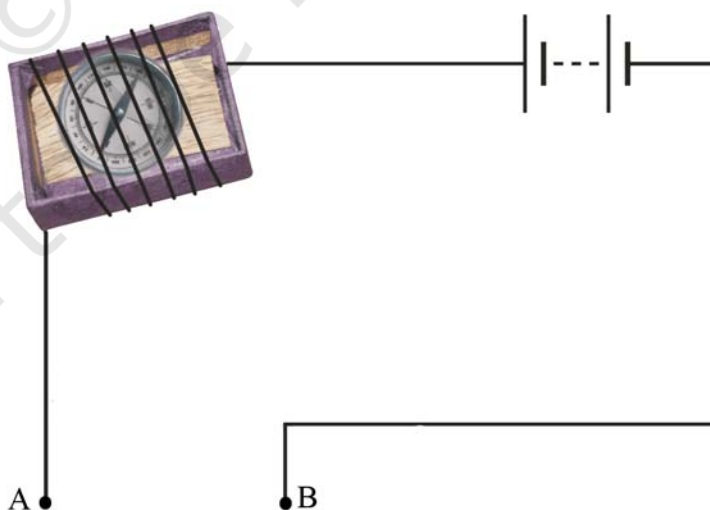
SHORT ANSWER QUESTIONS

12. Addition of another cell increased the current through the bulb sufficiently to make it glow.
13. The current through liquid B could be weak and therefore unable to make the bulb glow. However, it was strong enough for the LED to glow.
14. The spoon should be connected to the negative terminal of the battery. The other electrode should be made of silver.
15. Tin is less reactive than iron. Tin coating prevents food from coming in contact with iron and thus prevents it from getting spoiled.
16. Diagram A shows the correct observation.

LONG ANSWER QUESTIONS

17. No, Yes, No, Yes
18. • Bubbles of gas may be formed on the electrodes.

- Deposits of metal may be seen on electrodes.
 - Change in the colour of the solution may take place.
 - The solution may get heated. (Any three)
19. Yes, copper from the copper sulphate solution will be deposited on the carbon rod. Copper from the copper plate will be dissolved into the copper sulphate solution for electroplating.
20. (i) plate A – Pure copper
(ii) plate B – Impure copper
(iii) the solution – Copper sulphate
- Copper from impure copper plate is transferred to the pure copper plate by the process of electroplating.
21. Yes, air is a poor conductor of electricity. No, under certain conditions, such as during lightning, air may conduct electricity.
22. If the water is distilled water and lemon juice is not added, no current will pass through the circuit. If the water taken is salty, then a feeble current will pass through the circuit and bubbles will be seen on the negative electrode.
23. (i) It indicates the presence of current in the circuit.
(ii) The bulb did not glow because the current was not sufficient to make it glow.
(iii) Deflection in the magnetic compass will increase.
(iv) Deflection in the compass will increase further.
- 24.



Whenever current flows through the circuit the magnetic compass needle shows deflection due to magnetic effect of current.

Chapter 15

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|-------|------|------|
| 1. a | 2. c | 3. c | 4. c |
| 5. d | 6. a | 7. a | 8. c |
| 9. d | 10. a | | |

VERY SHORT ANSWER QUESTIONS

11. (a) True (b) True (c) True (d) False (e) True
12. No
13. The two will attract each other.
14. No divergence of strips will take place.
15. They will repel each other.

SHORT ANSWER QUESTIONS

16. No, it will not be effective. Since lightning conductor was not connected properly to the earth, therefore, the charge will not pass through to the earth.
17. No, it will not occur. The charge separation cannot take place in conductors. Therefore charges will not accumulate on clouds and so lightning cannot take place.
18. A is the lightning conductor and B is the copper plate.
19. No. There is no need to install lightning conductor in the building.
20. Electric charge gets accumulated on the screen. On touching the screen the charge discharges through our body. Thus, we get a slight shock.
21. Lightning conductor does not allow the charge to accumulate on a building as it conducts the charge to the earth, protecting building from being struck by lightning.

22. If a positively charged object is brought in contact with the clip of an electroscope, the negative charge given earlier will be neutralised and the strips will collapse.
23. The charge that was in the electroscope strips will get discharged through our hand. The strips will come back to the original state.

LONG ANSWER QUESTIONS

24. During the development of a thunderstorm, the air currents move upwards while the water droplets move downwards. These vigorous movements of air currents cause separation of charges. The positive charges collect near the upper edges of the clouds and the negative charges accumulate near the lower edges. There is accumulation of positive charges near the ground also. When the magnitude of the accumulated charges become large, the air cannot resist their flow. As a result negative and positive charges meet producing a streak of bright light and sound, called lightning.
25. (i) Take shelter under a table and stay there till the shaking stops.
(ii) Stay away from tall and heavy objects that may fall on you.
(iii) If you are in bed, do not get up. Protect your head with a pillow.
(If a child gives any other reasonable precautions, it should be accepted)
26. Lightning is an electrical discharge. During lightning atmospheric electric charge may discharge through landline telephone wires and may become dangerous. Therefore it is safer to use a wireless telephone instead of a landline telephone during lightning.
27. (i) Stay away from poles or other metallic objects.
(ii) Stay away from tall trees.
(iii) Stay away from open vehicles like motorbikes, tractors, construction machinery etc.
(If a child gives any other reasonable precautions, it should be accepted)
28. The aluminium strips will not show any repulsion. The charged body will not transfer any charge to the ebonite rod as ebonite rod is an insulator. As a result there will be no charge on the aluminium strips and no repulsion will occur.

Chapter 16

MULTIPLE CHOICE QUESTIONS

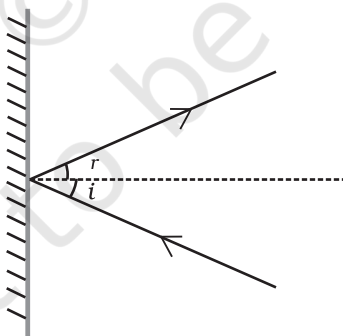
- | | | | |
|------|------|------|------|
| 1. a | 2. b | 3. d | 4. a |
| 5. a | 6. c | 7. b | 8. c |

VERY SHORT ANSWER QUESTIONS

9. Iris.
10. Persistence of vision.
11. Infinite number of times.
12. 30° .
13. 12 cm.

SHORT ANSWER QUESTIONS

14. Light is split into its constituent colours. Rainbow is an example.
- 15.



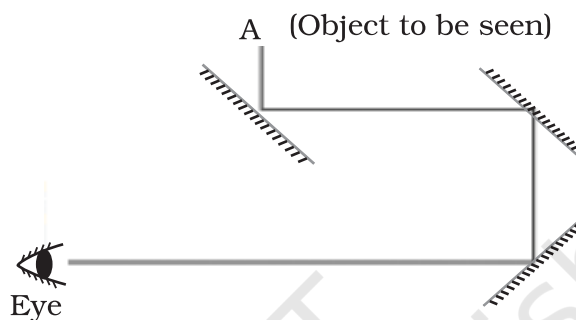
16. No, the image of the child cannot be obtained on a screen.
17. A large pupil and large cornea allows more light to enter their eyes and they can see objects even in faint light.
18. The type of lens in our eyes is convex. It forms images on the retina.

19. In people suffering from cataract the eye lens becomes clouded. Cataract is treated by replacing the opaque lens with a new artificial lens.

LONG ANSWER QUESTIONS

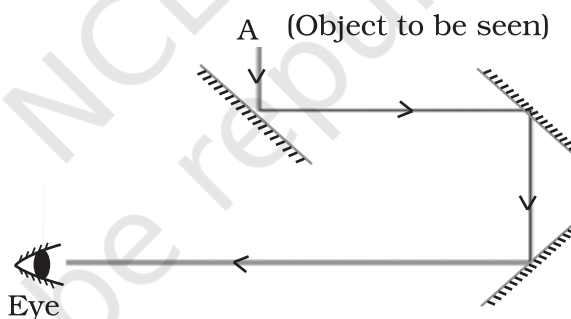
20. (a) Three

(b)



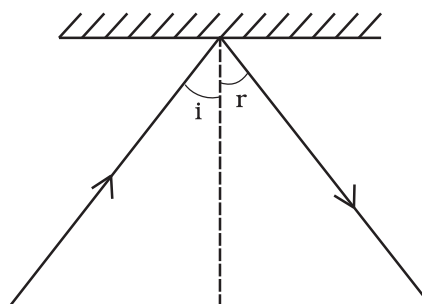
(c) 45°

(d)

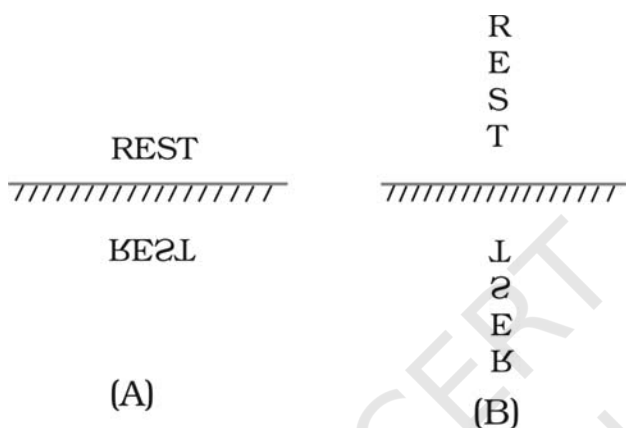


(e) No, he will not be able to see the objects.

21. The Fig. in all the three cases after correction should be as in the given Fig.



22. The cartoon film we see is actually the projection of static pictures on the screen in a specific order. Usually the static pictures are shown in a sequence at the rate of 24 pictures per second one after the other giving us the perception of movement.
23. The kaleidoscope gives a number of images formed by reflection from the mirrors inclined to one another. Designers and artists use kaleidoscope to get ideas for new patterns to design wallpapers, Jewellery and fabrics.
- 24.



25. 1. Ciliary muscle
2. Iris
3. Lens
4. Cornea
5. Retina
6. Optic Nerve

Chapter 17

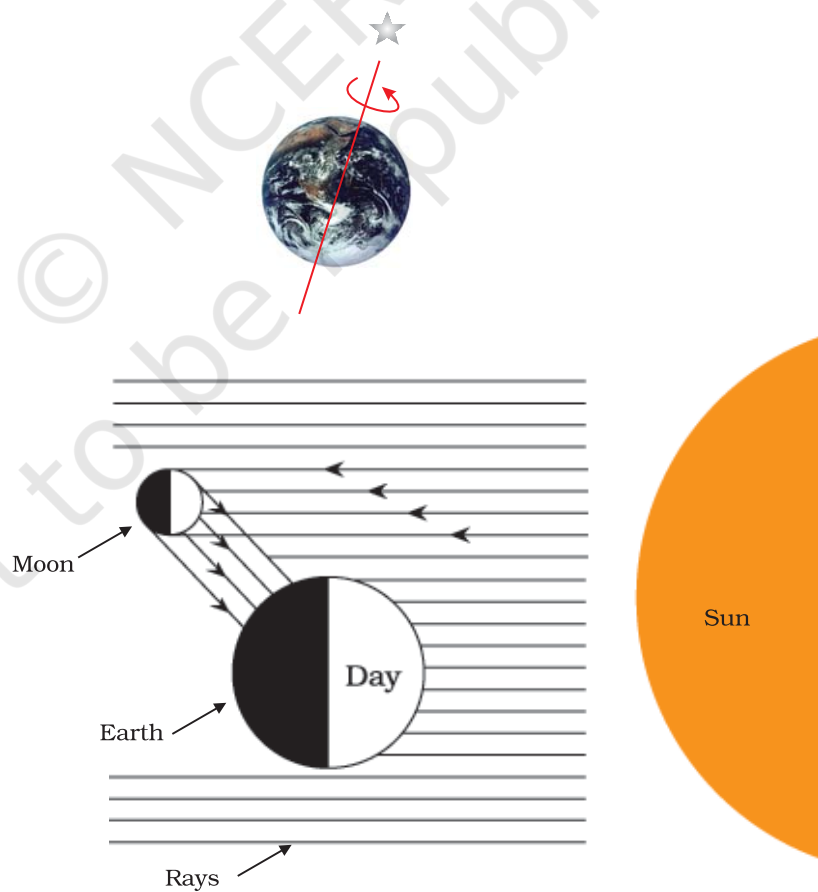
MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|------|------|------|
| 1. d | 2. a | 3. b | 4. c |
| 5. a | 6. d | 7. a | |

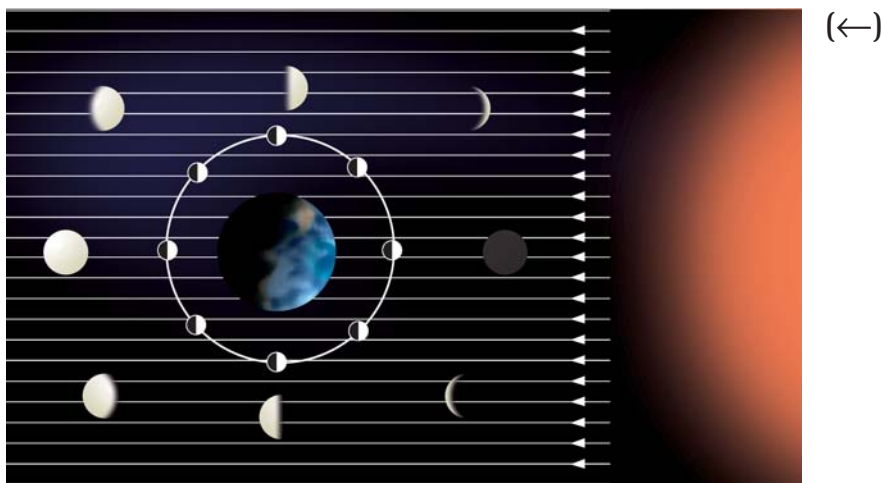
VERY SHORT ANSWER QUESTIONS

8. No, they emit light all the time.
9. Boojho is correct.
10. a. False; b. False; c. True; d. True; e. True; f. False
11. Approximately 29 days.
- 12.

13. C



14.

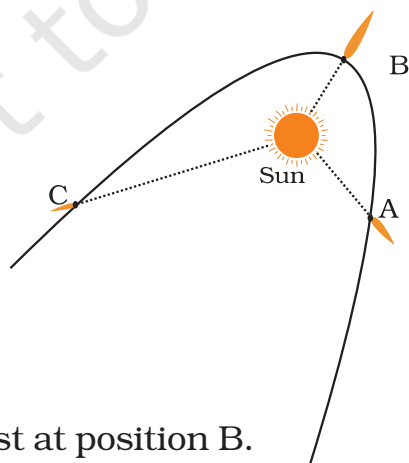


SHORT ANSWER QUESTIONS

15. We will see the change after 10 years.
16. The brightness of a meteor is extremely small compared to that of the sun, therefore, it is not seen during day time.
17. It changes its shape because we see only that part of the moon from which the light of the sun is reflected towards us.
18. No, because the position of the moon keeps changing during the night.

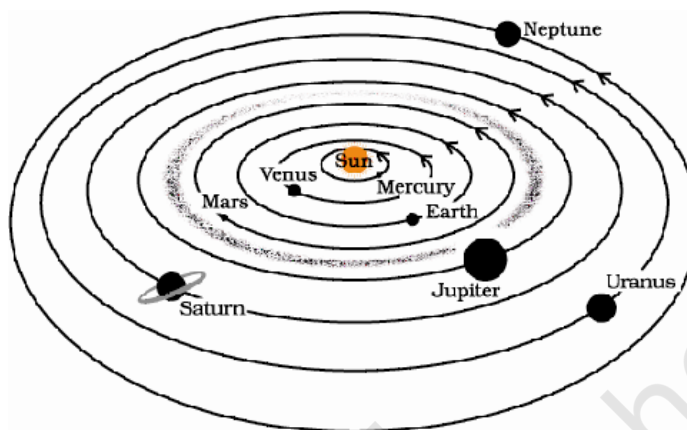
LONG ANSWER QUESTIONS

19. No. The phases are seen because the moon does not emit its own light and reflects the light of sun.
- 20.



The tail will be longest at position B.

21. This is because the period of rotation of the moon on its axis is equal to the period of its revolution round the earth.
22. (a) in the eastern part of the sky; (b) in the western part of the sky
- 23.



24. **Hint:** Life may no longer exist. (See page 227-228 of textbook)
25. Locate the two end stars of Ursa Major. Imagine a straight line passing through these stars as shown in the figure below. Extend this imaginary line towards the north direction. This line will lead to a star which is not too bright. This is pole star.



Chapter 18

MULTIPLE CHOICE QUESTIONS

- | | | | |
|------|-------|-------|-------|
| 1. b | 2. c | 3. b | 4. a |
| 5. a | 6. c | 7. d | 8. c |
| 9. b | 10. d | 11. c | 12. a |

VERY SHORT ANSWER QUESTIONS

13. Chlorofluorocarbons.
14. (i) Combustion of fuel
(ii) Industrial activities
15. (i) sulphur dioxide
(ii) nitrogen dioxide
16. These data can be used to generate awareness about air pollution among people.
17. Solar energy and wind energy.
18. Lead, arsenic, fluorides (any two)

SHORT ANSWER QUESTIONS

19. It is not right to burn dry leaves as it causes air pollution. The right way to dispose off the dry leaves is to convert them into compost.
20. A large number of automobiles stop for a short period at red light through out the day and release a large quantity of gases which create air pollution.
21. (a) unwanted, harmful, living, non-living, air pollution.
(b) industries, air, refineries, gaseous, sulphur dioxide, nitrogen dioxide.
(c) brushing, tap, litres
(d) drinking, potable
(e) microorganisms, dissolved.

22. (a)–(iii), (b)–(iv), (c)–(ii), (d)–(i)
23. Statements (b) and (d) are correct statements. The correct form of statements (a), (c) and (e) are as follows–
- (a) We can survive for some time without food but we cannot survive even for a few minutes without air.
 - (c) Carbon monoxide is produced by incomplete burning of fuels such as coal, petrol, diesel.
 - (e) Water which is suitable for drinking is called potable water.
24. (a) nitrogen, oxygen
(b) carbon monoxide, smoke
(c) Methane, greenhouse gases
(d) global warming
(e) sewage, polluted

LONG ANSWER QUESTIONS

25. **Hint:**

- CFCs stand for chlorofluorocarbons.
- Refrigerators, air conditioners etc.
- Damage the ozone layer of the atmosphere.

26. **Hint:** Pollutants in air are discolouring white marble of Taj Mahal. The pollutants like sulphur dioxide and nitrogen dioxide react with the water vapour present in the atmosphere to form sulphuric acid and nitric acid respectively.

27. **Hint:** CO_2 takes heat and does not allow it to escape into space. As a result, the average temperature of the earth's atmosphere is gradually increasing.

28. **Hint:**

- To reduce air pollution.
- To control global warming.

29. **Hint:**

1. Filtration
2. Boiling
3. By adding chlorine tablets.

30. **Hint:**

Reduce – While brushing your teeth, bathing etc.. we should not keep our taps on.

Reuse – Water used for washing vegetables, rice etc. can be used for gardening.

Recycle – Dirty water can be recycled after purification.

31. (i) (a) point sources (b) non-point sources.

(ii) Easily identified source or place of pollution is called point source e.g. municipal, industrial discharge pipe etc.

(iii) Agricultural run off, acid rain.

32.

¹ C	H	L	O	R	O	F	L	U	O	R	O	C	A	R	B	² O	N	
																Z		
	⁷ G									⁴ O						O		
³ ₅ C	A	R	B	O	N	M	O	N	O	X	I	D	E			N		
H	N									Y						E		
O	G									G								
L	A									⁶ P	E	S	T	I	C	I	D	E
E										N								
R																		
A																		