

** Enhanced Edition
NEP 2020 Guidelines*

FACTS

of

SCIENCE

Teacher Manual



5



Chapter - 1 — Growing Plants

Page 14

A. Tick (✓) the correct option:

- | | | |
|--------------|-----------------|--------------|
| 1. Seed coat | 2. Both a and b | 3. Dandelion |
| 4. Radish | 5. Dicot | |

B. Fill in the blanks

- | | | |
|----------|-------------|----------|
| 1. Fruit | 2. Seedling | 3. Water |
| 4. Rabi | 5. Plumule | |

C. Answer the following questions

- Seed coat— Outer hard covering of seed
Cotyledon— Provide food to growing embryo.
Embryo— Baby plant growing inside seed.
- Development of seed into seedling. Presence of air, water and sunlight are necessary condition for germination.
- Wing — Cotton
Water — Coconut
Animal — Mango
Explosion of fruit — Balsam
- Practice of growing plants on a large scale is called agriculture. It's stages are as follows—
(i) Ploughing of field (ii) Addition of manure (iii) Sowing of seeds
(iv) Irrigation (v) Spraying of pesticides (vi) Crop harvest
- | | |
|-------------------------------------|-----------------------------------|
| Kharif Crops | Rabi Crops |
| 1. Grown from June to october | 1. Grown from November to April. |
| 2. Depend largely on monsoon rains. | 2. Do not depend on monsoon rain. |
| 3. e.g. Rice, Jowar, maize | 3. Wheat, gram, pea. |
- They take the help of long and fine hair around the seeds which make them light and able to float.

Critical Thinking

- No, because reproductive part of Jasmine plant are not jasmine flowers.
- To prevent the competition between developing roots for water, nutrients, air and sunlight.

Picture Based Activity

Seed	Agent of dispersal	Special features for dispersal
Cotton	Wind	Long and fine hair around seed
Coconut	Water	Spongy fruit helps it to float
Balsam	Explosion of water	Fruits burst open when ripe to scatter seeds
Guava	Animals	hooks and spines around seeds

Things To Do

Do with parental guidance.

Life Skills

Learning activity

Subject link

To be done with parental assistance.

Unit II : Animal World

Chapter - 2 — Animals Life

Page 19

A. Tick (✓) the correct option:

- | | | |
|--------------|------------|---------------|
| 1. Scales | 2. Giraffe | 3. Woodpecker |
| 4. Forelimbs | 5. Slither | |

B. Answer the following questions

- (i) Scale (ii) Shell (iii) Fur/wool (iv) Feather
- It is a defense tactic used by organism to disguise their appearance usually to blend in with their surroundings. e.g. stick insect, chameleons
- Seasonal movement of animals from one region to another is called migration. Animals migrate in search of food, water, mating reasons.
- They breath air into their lungs through nostrils called a blowhole located at right on top of their heads.
- (a) Sharp front teeth and large flat back teeth.
(b) Sharp pointed front teeth and broad flat teeth.
(c) Sharp front teeth.
(d) Both sharp pointed teeth and large broad flat back teeth.

Critical Thinking

Ostrich cannot fly because unlike owls, their flat breastbones lack the keel that anchors the strong pectoral muscles required for flight.

Picture Based Activity

Do with parental assistance.

Things To Do

- No, it belongs to Cnidaria
- Both have aerial mode of habitat
- Through lungs
- Black
- They can survive both inside water as well as on land.

Life Skills

Do with teacher's assistance.

Subject link

Do with teacher's assistance.

Unit III : Human Body

Chapter - 4 — The Nervous System

A. Tick (✓) the correct option:

- | | | |
|-------------|------------|----------|
| 1. Cerebrum | 2. Neurons | 3. Pupil |
| 4. Inner | 5. Medulla | |

B. Write 'Yes' or 'No'

- | | | | | |
|--------|-------|-------|--------|-------|
| 1. Yes | 2. No | 3. No | 4. Yes | 5. No |
|--------|-------|-------|--------|-------|

C. Match the following

- | | | | |
|------|------|------|------|
| 1. d | 2. a | 3. b | 4. c |
|------|------|------|------|

D. Answer the following questions

1. Refer Pg-34
2. Refer Pg-35
3. It is an automatic reaction of body to an event.
4. Refer Pg-36
5. (a) It allow us to feel and gather information of our surrounding.
(b) Help us to detect the taste of food.

Critical Thinking

1. They are made of dead cells.
2. For faster receiving of information of our surrounding by the sense organs, to give information to brain and to accordingly receive information from brain and pass it to effector motor muscles of our body.

Picture Based Activity

- | | | | |
|----------------|-----------|----------|------------------|
| 1. Iris | 2. Cornea | 3. Lens | 4. Blood vessels |
| 5. Optic nerve | 6. Retina | 7. Pupil | |

Things To Do

It is the reflex action.

Life Skills

- | | | |
|------------------|--------------------|----------------------------|
| 1. Neurologist | 2. Ophthalmologist | 3. Otolaryngologist or ENT |
| 5. Dermatologist | | |

Subject link

To be done with parental guidance.

Chapter - 5 — Food and Health

A. Tick (✓) the correct option:

- | | | |
|------------------|--------------|-------------|
| 1. Both of these | 2. Typhoid | 3. Beriberi |
| 4. Insects | 5. Rat fleas | |

B. Answer the following questions

- Carbohydrate – Rice
Protein – Fish
Fat – Butter
Vitamins – Banana
Minerals – Minerals
- A diet that has all the nutrient in right proportion is called balanced diet.
- | Communicable | Non-communicable |
|---------------------------------------|---|
| (i) Spread from one person to another | (i) Do not spread from one person to another. |
| (ii) Carried by vectors | (ii) Not carried by vectors |
- Vitamins— A, B, C, D, E, K
Minerals— Calcium, iron, Potassium, Sodium, Iodine
- Protozoan disease- Malaria, Jaundice, Dysentery, etc.
- It is the use of special substance called vaccine to prevent occurrence of some diseases caused by developing the immunity against the disease.
- Non communicable diseases that are caused due to lack of vitamin and mineral in our diet.

Critical Thinking

We will not get our desired minerals, vitamins and proteins needed for the growth of body.

Picture Based Activity

- | | | | |
|------------|---------------|-----------|---------|
| 1. Spinach | 2. 3rd option | 3. Potato | 4. Fish |
|------------|---------------|-----------|---------|

Things To Do

To be done with teacher assistance.

Life Skills

To be done with teacher assistance as an oral discussion.

Subject link

- | | | | |
|----|--------------------------|---|--------------------|
| 1. | 1 day Vit C intake | = | 1 |
| | 30 days | = | $1 \times 30 = 30$ |
| 2. | 1 day iron tablet needed | = | 2 |
| | 30 days | = | $2 \times 30 = 60$ |
| 3. | 1 week Vit D need | = | 1 |
| | 4 week | = | $1 \times 4 = 4$ |

Chapter - 6 — Safety and First Aid

- A. Tick (✓) the correct option:
- Both of these
 - Throw sand
 - Tie a tourniquet above bitten part and keep the bitten part lower than heart
 - Rabies
- B. Write 'Yes' or 'No':
- No
 - No
 - No
 - Yes
 - No
- C. Give reason For the Following
- Spark from switch can ignite fire.
 - To prevent movement.
 - To prevent transfer of any germs.
 - To avoid further bleeding.
- D. Answer the following questions
- Refer Pg-50
 - (i) Burning paper, wood clothes. etc, (ii) Fire due to burning kerosene, petrol, etc, (iii) Short circuit (iv) Gas leakage.
 - Cover your face with hands and roll on to the floor. A blanket can be put.
 - It is the immediate medical help given to a person who is injured or suddenly fall sick.
 - A crack or break in a bone is called a fracture.
 - If we get a cut or scratch from some dirty or rusted object, then it is important to have anti-tetanus injection.

Critical Thinking

- The carpet will catch fire. Rohan will bring a mug of water and pour it on the flame to extinguish the fire.
- To alert people that the vehicle is carrying a patient facing medical emergency so that people could hear it and make way to pass.

Picture Based Activity

- Spilled oil on floor.
- Burning gas flame with no one in the kitchen.

Things To Do

To be done by teacher assistance.

Life Skills

- 102
- 100
- 108

Subject link

Do with parental assistance.

Unit IV : Space and Environment

Chapter - 7 — Air and Water

A. Tick (✓) the correct option:

- | | | |
|-----------------|-----------------|---------|
| 1. Atmosphere | 2. Stratosphere | 3. Both |
| 4. Distillation | 5. Both | |

B. Write 'Yes' or 'No'

- | | | | | |
|-------|--------|-------|-------|-------|
| 1. No | 2. Yes | 3. No | 4. No | 5. No |
|-------|--------|-------|-------|-------|

C. Answer the following questions

- Blanket of air around the earth.
- Refer Pg- 57
- Refer Pg- 58, Activity 1
- Soluble impurity – Evaporation, Distillation
Insoluble impurity– Filtration, Sedimentation, Decantation
- Refer Pg-60
1. Sedimentation 2. Decantation 3. Filtration 4. Evaporation
5. Distillation 6. Boiling 7. Chlorine tablets

Critical Thinking

- No, it must be closed

Picture Based Activity

- Filtration
- Sedimentation
- Boiling

Things To Do

Do it with parents guidance.

Life Skills

- ✓
- ✓
- ✗
- ✗

Subject link

Do it with teacher guidance.

Chapter - 8 — The Moon and Eclipses

A. Tick (✓) the correct option:

- | | | |
|-------------------------|-------------------|---------------------|
| 1. Second | 2. Drinking water | 3. Half of the moon |
| 4. Navigation satellite | 5. Neil Armstrong | |

B. Fill in the blanks

- | | | |
|------------|------------------|--------------|
| 1. Moon | 2. One-Sixth | 3. Aryabhata |
| 4. Weather | 5. Solar Eclipse | |

C. Write 'Yes' or 'No'

- | | | | | |
|-------|--------|--------|-------|--------|
| 1. No | 2. Yes | 3. Yes | 4. No | 5. Yes |
|-------|--------|--------|-------|--------|

D. Answer the following questions

1. Refer Pg-67

2.

Lunar Eclipse

When the Earth comes in between the Sun and the Moon, it blocks the sunlight from reaching moon and casts a shadow on moon. This is called lunar eclipse.

Solar Eclipse

When the moon comes in between the Earth and the Sun, it blocks some parts of the Sun and casts a shadow on Earth. This is called solar eclipse.

3. Umbra– It is the part of earth shadow where it totally blocks the sunlight

Penumbra– It is the part of earth shadow where it blocks a part of the sunlight.

4. Sputnik 1

5. It is because sound need air and a medium to travel and moon does not have its atmosphere, thus no air.

6. Refer Pg-70

Critical Thinking

Life would be possible on moon then.

Picture Based Activity

Refer Pg-69 and Pg-70

Things To Do

Do with teacher's guidance.

Life Skills

Do with parents' guidance.

Subject link

Do with teacher's guidance.

Chapter - 9 — Light and Shadows

A. Tick (✓) the correct option:

1. Sun 2. Electric Bulb 3. Wood 4. Glass 5. One

B. Fill in the blanks

1. 8 2. Luminous 3. Transparent
4. Opaque 5. Black

C. Give two examples of each

1. Sun, Bulb 2. Pen, Human 3. Glass, Clean water
4. Butter paper, Wax paper

D. Answers the following questions

1. Luminous Object– (i) Give their own light. (ii) e.g., Sun
Non Luminous Object– (i) Do not give their own light. (ii) e.g., Book
2. Light falls on the object to be seen gets reflected, enter our eye through cornea and get focused on retina by lens and the information is carried to brain by optic nerve and we see the things.
3. (i) Transparent– allow light to pass through them completely.
(ii) Translucent– allow partial light to pass through them.
(iii) Opaque– Do not allow light to pass.
4. Refer Pg-76 and 77

Critical Thinking

1. It is because light falling on them pass through them completely and are not blocked to form shadow.
2. It is because as we move, our body simultaneously block the light falling on it and form new shadow and it appear as if shadow is walking with us.

Picture Based Activity

1. T 2. O 3. O 4. T 5. O

Things To Do

Do it with parents assistance

Life Skills

1. ✓ 2. ✓ 3. ✓ 4. ✗ 5. ✗

Subject link

Do it with teachers assistance

Chapter - 10 — Our Environment

A. Tick (✓) the correct option:

1. a and c
2. depletion of ozone layer
3. polluted water
4. noise pollution
5. polluted soil

B. Write 'Yes' or 'No'

1. No
2. No
3. Yes
4. No

C. Answer the following questions

1. It is everything that make up our surrounding that affect us and help us to survive.
2. Refer Pg-80
3. Refer Pg-81
4. Water get polluted when wastes from industries, farm, sewage from homes and hospitals are thrown into water resource without treating it first.
5. (i) Air pollution (ii) water pollution (iii) land pollution
(iv) Noise pollution
6. Biodegradable waste – Waste that can decompose by activity of microbes and mix up in soil.
Non-biodegradable waste – Waste that cannot be decompose in the environment.
7. Refer Pg-82 and 83

Critical Thinking

1. Recycle and Reuse
2. Pollutants have entered through nostrial of grandma and made her feel breathlessness and asthmatic.

Picture Based Activity

1. Air pollution
2. Water pollution
3. Land pollution

Things To Do

Do it with parents guidance

Life Skill

Do it with parent's guidance.

Subject link

Do it with parent's guidance.

Chapter - 11 — Natural Calamities

A. Tick (✓) the correct option:

- | | | |
|-------------------|---------|---------|
| 1. an earthquake | 2. 1 | 3. Lava |
| 4. Active Volcano | 5. Bhuj | |

B. Fill in the blanks

- | | | |
|------------|------------------|-----------|
| 1. Crust | 2. Richter scale | 3. active |
| 4. Dormant | 5. Polluted | |

C. Give one word for the following

- | | | |
|---------------|----------------|----------|
| 1. earthquake | 2. Seismometer | 3. Magma |
| 4. Focus | 5. Tidal wave | |

D. Answer the following questions

- Changes caused by natural forces that cause severe damage to human life and property.
- Sudden shaking of earth is called earthquake. Effect of earthquake—
 - There is a lot of damage to life and property.
 - Many people died and get buried under the debris.
 - Buildings and houses get shattered and collapse down.
 - Cracks develop in roads, buildings and houses.
 - Landslides and fires are caused by an earthquake.
- (i) Active volcano (ii) Dormant volcano (iii) Extinct volcano
- (i) We should not go outside unless there is an evacuation being organized (ii) We should not go to any top floor of a building. (iii) We should not touch power lines or take shelter in old buildings.
- It is a long, high sea wave caused by an earthquake or other disturbance causing major loss of life and destruction of property.
- (i) Destroyed life of people living in coastal area of Tamil Nadu, Kerala, Andaman and Nicobar islands, islands of Indonesia and Sri Lanka.

Critical Thinking

- She is covering herself to protect herself from falling objects due to earthquake.
- It destroys life and property. Agriculture is also affected due to which shortage of food is there.

Picture Based Activity

- | | | |
|---------------|----------------|------------|
| 1. EARTHQUAKE | 2. SEISMOGRAPH | 3. VOLCANO |
| 4. TSUNAMI | 5. TIDAL WAVES | |

Things To Do

Do it with parental assistance

Life Skills

Do it with teacher's assistance

Subject link

Do it with teacher's assistance

Unit V : Materials and Matter

Chapter - 12 — Soil Erosion and Conservation

A. Tick (✓) the correct option:

1. Soil
2. Hilly areas
3. Step like formation on hill slopes
4. Afforestation

B. Fill in the blanks

1. Plants
2. Soil erosion
3. Deforestation
4. Terrace

C. Answer the following questions

1. It is the uppermost layer of the earth made of tiny pieces of rocks and remains of dead plants and animals.
2. (i) Top soil – Topmost layer and fertile.
(ii) Sub soil – Below top soil and less fertile.
(iii) Bedrock – Lowermost layer and not fertile.
3. Removal of topmost fertile layer of soil by action of wind and water is called soil erosion.
4. Protection of soil against soil erosion is called soil conservation.
5. Soil is very important resource and it must not be allowed to erode. The protection of soil against soil erosion is called soil conservation. Two ways to conserve it—
 - Afforestation • Terrace Farming
 - Afforestation— It involves the planting of trees in large numbers. It prevents wind and water from blowing away the soil.
 - Terrace Farming— It is done on the hills. The slope is cut into steps to reduce the speed of flowing water. The amount of soil lost less as the soil eroded from one step is deposited on the the next step.

Critical Thinking

1. Herbivore cause overgrazing, uprooting the plants of an area causing deforestation. Absence of roots to anchor soil causes soil erosion.
2. Terrace farming helps in growing plants that help to reduce speed of flowing water in slopes, thus decreasing soil erosion.

Picture Based Activity

1. SOIL EROSION
2. TOP SOIL
3. TERRACE
4. DEFORESTATION
5. AFFORESTATION

Things To Do

Do it with parental guidance.

Life Skills

Do it yourself

Subject link

15-8= 7

Chapter - 13 — Rocks and Minerals

A. Tick (✓) the correct option:

- | | | |
|-----------|------------|-----------|
| 1. Crust | 2. Granite | 3. Marble |
| 4. Silver | 5. Coal | |

B. Fill in the blanks

- | | | | |
|-------------|--------------|-------------|---------|
| 1. minerals | 2. Three | 3. Building | 4. Coal |
| 5. Quartz | 6. Petroleum | | |

C. Answer the following questions

1. Igneous, sedimentary and metamorphic rock.
2. Crust, mantle and core
3. Sand stone, Conglomerate, Limestone and shale.
4. It is light coloured igneous rock formed when frothy lava cools quickly on the surface of earth. It is used in making building materials like concrete blocks, to polish furniture and floor.
5. Marble, Slate, Gneiss, Quartzite
6. They are naturally occurring chemical substance.
7. Coal is formed from the remains of plants that grew in swampy forests millions of years ago. When they died, they got buried in the swamps. Layers of mud, sand and more dead plants deposited on them. As more and more layers deposited, the heat and pressure in the layers below, gradually changed them to form coal.

Critical Thinking

1. It is because it is soft rock.
2. It is because it has lustre and are malleable and ductile.

Picture Based Activity

- | | | | |
|------------|-----------------|----------|---------|
| 1. Granite | 2. Conglomerate | 3. Slate | 4. Gold |
|------------|-----------------|----------|---------|

Things To Do

Do with teacher's assistance.

Life Skills

Do with parental assistance.

Subject link

Do with teacher's assistance.

Chapter - 14 — Simple Machines

A. Tick (✓) the correct option:

- | | | |
|---------------------|----------------|-----------------|
| 1. Complex machines | 2. First class | 3. Fixed pulley |
| 4. Wheel and axle | 5. Effort | |

B. Fill in the blanks

- | | | | |
|---------------|-----------|----------|---------|
| 1. Archimedes | 2. Second | 3. Lever | 4. axle |
|---------------|-----------|----------|---------|

C. Match the following.

- | | | | |
|----------------|----------|---------|---------------|
| 1. Nail cutter | 2. Crane | 3. Ramp | 4. Screw jack |
|----------------|----------|---------|---------------|

D. Answer the following questions

- Simple Machine— (i) A machine with few or no moving parts that is used to make work easier.
(ii) e.g., wedge, screw etc.
Complex Machine— (i) A machine that is combination of 2 or more simple machines.
(ii) e.g., car, sewing machine, etc.
- Lever, pulley, wheel and axle, Inclined plane, screw.
- When the carpenter joins things together with a screw they are held together through a longer distance and thus cannot be forced apart easily. But when the carpenter join things together with a nail, they are hold together only for a short distance.
- Refer Pg-105-106
- A pulley is a simple machine that consists of a wheel with a grooved rim, a rope, chain or belt running round it.
Fixed pulley and movable pulley
- Wedge is a simple machine that works on the principle of an inclined plane. e.g. Axe

Critical Thinking

- First class lever can be used to use a stone lying nearby as fulcrum, tree as the load and combined effect of effort from people there to remove it.
- No, it will not move easily as friction will be high.

Picture Based Activity

- | | | | |
|------|------|------|------|
| 1. T | 2. F | 3. S | 4. S |
| 5. T | 6. F | | |

Things To Do

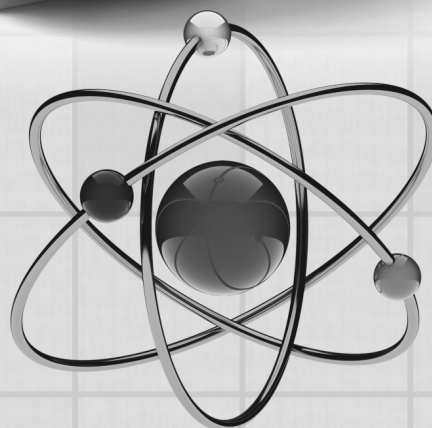
Do with parental assistance.

Life Skills

- | | | |
|-------------------|--------------------|----------------------|
| 1. Sewing clothes | 2. Washing clothes | 3. Doing Calculation |
|-------------------|--------------------|----------------------|

Subject link

Do with parental assistance.



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