



SERIES

SCIENCE

Guide Answers

By A Group of Supervisors



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FIRST TERM

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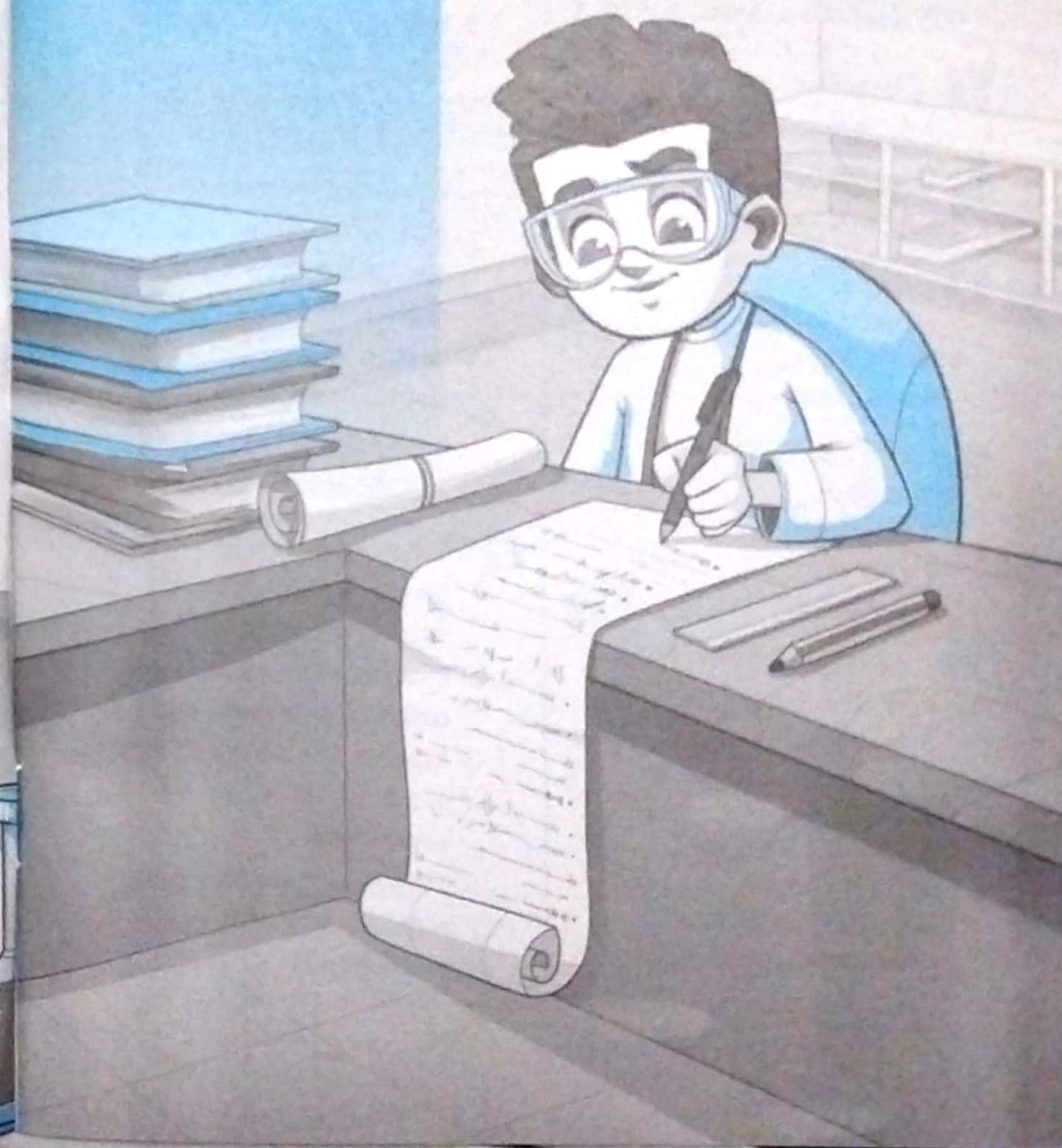
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PART 1

Guide Answers of
Exercises on Lessons



Concept (1.1)

Exercises on Lesson 1

1. 1. d 2. d 3. b 4. d
5. a 6. c 7. b 8. b
9. d 10. b 11. b 12. d
2. 1. c → B 2. d → C
3. a → D 4. b → A
3. 1. (x) 2. (✓) 3. (✓) 4. (x)
5. (✓) 6. (x) 7. (x)
4. 1. habitat.
2. predator – prey
3. adaptation.
4. camouflage.
5. 1. Adaptation.
2. Penguin.
3. Thick white fur.
4. Fennec fox.
5. Camouflage.
6. 1. fat – feathers.
2. blood vessels
3. black – brown – white
4. fennec fox – caracal
5. starred agama – fennec
6. warm – white
7. colorful scales
8. penguin – polar bear.
9. predators – camouflage

7. 1. To keep its body cool during hot sunny days.
2. To keep its body warm.
3. To keep its toes from freezing as the warm blood vessels heat up the cold blood vessels.
4. To hide among the colorful rocks in the desert.
5. Fennec fox has a sandy-colored fur to blend in with desert landscapes, while polar bear has a white fur to blend in with snow in polar region.
6. Because camouflage helps some animals hide from their predators or preys in different environments.
8. 1. The blood moving up into the penguin's body will be cold which may make it freeze.
2. It cannot adapt with the very cold weather in polar regions.
3. It cannot hide and hunt its preys in the desert environment.
4. They cannot hide from their predators or preys in their environments.

9. 1.

P.O.C.	Penguin	Fennec fox
1. Habitat :	Polar habitat.	Desert habitat.
2. Body is covered with :	Dense feathers.	Sandy-colored fur.

2.

P.O.C.	Polar bear	Forest bear
1. Habitat :	Polar habitat.	Forest habitat.
2. Fur color :	White.	Dark (brown or black).

10. (b) and (d)

11. 1. desert
2. sandy – camouflage.

Exercises on Lesson 2 Part A

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

2. 1. b → C
2. d → A
3. a → B
4. c → D

3. 1. (✓) 2. (x) 3. (x) 4. (x)
5. (✓) 6. (✓) 7. (✓) 8. (✓)
9. (✓) 10. (x) 11. (x) 12. (✓)
13. (✓) 14. (x) 15. (x)

4.

Animal	Its adaptation	Structural or Behavioral adaptation
1. Penguin	Has blood vessels weave around each other.	Structural.
2. Polar bear	Has thick white fur.	Structural.
3. Arctic fox	Changes the color of its fur.	Structural.
4. Fennec fox	Hiding inside burrows to stay cool.	Behavioral.
5. Panther chameleon	Has eyes face opposite directions.	Structural.

5. 1. reptiles
2. countershading.
3. tundra
4. panting
6. 1. Structural adaptation.
2. Behavioral adaptation.
3. Fennec fox. 4. Panting.
5. Arctic fox.
6. Panther chameleon.
7. V-shaped feet.
8. Countershading.

7. 1. structural – behavioral
2. structural – behavioral
3. fennec – arctic
4. fennec – arctic
5. structural – behavioral
6. arctic – fennec
7. white – brown
8. fresh – salt
9. structural
10. structural
11. behavioral – structural

8. 1. To hide in a sandy, rocky environment and to protect it from the hot Sun.
2. To cool its body.
3. To keep its body warm in extreme cold climate.
4. To help it sneak up on prey in any season.
5. Because burrows help :
- Fennec fox to stay cool during the sunny day.
- Arctic fox to stay warm at night.
6. Because extra-large ears help the fennec fox to lose the heat to cool its body, while short ears help the arctic fox to stay warm.

7. Because other types of sharks live in salt water only.
8. To hold tightly the branches of trees.
9. Because it is a change in the body structure of living organism to help it survive.

9. 1. It cannot hide from its prey in winter or summer.
2. It cannot cool its body.
3. They cannot hunt easily.
4. It cannot sneak up on prey in summer season.
5. The panther chameleon cannot hunt its prey and avoid becoming a prey at the same time.
6. It puffs up its body with air, opens its mouth wide and changes the color of its scales.

10. 1. Fennec fox. (all items live in cold regions, while fennec fox lives in hot regions).
2. Bull shark. (all items live on land, while bull shark lives in water).
3. Panther chameleon. (all items have fur on their bodies, while panther chameleon has scales on its body).

11

P.O.C.	Fennec fox	Arctic fox
1. Habitat :	Hot desert.	Cold desert.
2. Color of fur :	Tan-colored.	White during winter & brown in summer.
3. Shape of ears :	Extra-large.	Short.
4. Time of entrance to burrows :	During the sunny days.	At night.

12. 1. S 2. B 3. S
4. S 5. S 6. B

13. 1. It pants like dogs to cool its body.
2. It searches for a shaded area during a hot sunny day to cool its body.
3. It hunts during the day and at night, so it can surprise its prey.
4. It puffs up its body with air during danger.

14. 1. Arctic fox – It lives in tundra desert.
2. winter – summer
3. To sneak up on prey in any season.

4. - Structural adaptation : it has short ears and legs to help it stay warm.
- Behavioral adaptation : it lives in burrows to stay warm at night.

Exercises on Lesson 2 Part B

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

2. 1. b 2. e 3. f 4. a 5. d

3. 1. (x) 2. (✓) 3. (✓) 4. (x)
5. (✓) 6. (x) 7. (x) 8. (✓)
9. (x) 10. (✓) 11. (✓) 12. (x)
13. (x) 14. (✓) 15. (✓) 16. (x)

4. 1. Acacia tree.
2. Taproot.
3. Sharp spines.
4. Kapok tree.
5. Buttress roots.
6. Trunk.
7. Mangrove tree.
8. Water lily plant.
9. Wide leaves.
10. Needle leaves.
11. Botanist.

5. 1. a poison – body
2. soggy 3. wind
4. bats

5. acacia tree – Palm tree – barbary fig plant.
6. acacia – pine
7. float – sunlight.
8. water – roots.
9. mangrove – palm
10. water lily – kapok

- 6**
1. To prevent animals from reaching its leaves to feed on.
 2. To prevent animals from eating its leaves.
 3. Because acacia tree uses wind to send smelly message to acacia trees nearby telling them to start making a poison.
 4. To allow wind to move more gently through the leaves without cutting them.
 5. Due to presence of large and wide buttress roots.
 6. To allow the snow slide easily over it, so its branches don't break.
 7. To absorb a large amount of sunlight.
 8. To resist the water waves.
 9. To resist the strong winds.
 10. To prevent animals from eating its fruits and leaves.

- 7**
1. It can't search for water in the deep soil.
 2. Animals can eat these leaves easily.

3. Kapok tree can't stay firmly in soggy soil.
4. The snow can't slide easily over its branches and the branches break down more easily.
5. The sunlight can't reach these plants easily.
6. It can't absorb a large amount of sunlight.
7. It can't resist the strong winds.

- 8**
1. Buttress roots. (all items belong to acacia tree, while buttress roots belong to kapok tree).
 2. Taproot. (all items belong to kapok tree, while taproot belongs to acacia tree).
 3. Polar bear. (all items live in desert habitat, while polar bear lives in polar region habitat).
 4. Acacia tree. (all items live in snow habitat, while acacia tree lives in savannah habitat).

9 1.

P.O.C.	Acacia tree	Kapok tree
1. Type of roots :	Very long (taproot).	large and wide (buttress roots).
2. Shape of leaves :	Tiny leaves.	Hand-shaped leaves.

2.

P.O.C.	Kapok tree	Water lily plant	Pine tree
1. Habitat:	Rainforest	Wetland	Snow
2. Shape of leaves :	Hand-shaped leaves	Wide leaves	Needle leaves

10

Organisms live in deserts	Organisms live in forests
– Starred agama lizard.	– Panther chameleon.
– Fennec fox.	– Kapok tree.
– Palm tree.	
– Barbary fig plant.	

- 11**
1. desert
 2. spines – tough
 3. animals – leaves.

Exercises on Lesson 3

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

9. (x) 10. (✓) 11. (✓) 12. (✓)
13. (✓) 14. (x) 15. (x) 16. (✓)
17. (x)

- 4**
1. Digestive system.
 2. System.
 3. Digestion process.
 4. Mouth.
 5. Teeth.
 6. Saliva.
 7. Stomach.
 8. Small intestine.
 9. Anus.
 10. Esophagus.
 11. Respiration process.
 12. Throat.
 13. Trachea.
 14. Alveoli.
 15. Diaphragm.
 16. Throat.

- 5**
1. digestive – respiratory
 2. teeth – tongue
 3. stomach – small intestine.
 4. esophagus – small intestine
 5. small intestine.
 6. liver – pancreas
 7. blood vessels.
 8. small – large
 9. respiratory
 10. bronchioles – alveoli.
 11. trachea.
 12. diaphragm.
 13. downward – upward.

- 6**
1. To perform different functions.
 2. Because they help in breaking down food into nutrients.
 3. Because solid waste materials leave the body through it.

4. Because the inhaled air is rich in oxygen gas, while the exhaled air is rich in carbon dioxide gas.
5. Because it contracts and moves downward during inhalation to increase the size of chest, while it relaxes and moves upward during exhalation to decrease the size of chest.

7. 1. The digestive system could not do its function correctly.
2. The blood carries these nutrients to all the body parts.
3. The size of chest increases, the air rich in oxygen gas enters the lungs.
4. The size of chest decreases, the air rich in carbon dioxide gas comes out of the lungs.

8. 1. Saliva. (all items are organs through which food passes in the digestive system, while saliva is a liquid substance in mouth that helps in digestion of food)
2. Lungs. (all items belong to the digestive system, while lungs belong to the respiratory system).
3. Anus. (all items belong to the respiratory system, while anus belongs to the digestive system).

9. Organ (1) : Esophagus.
Organ (2) : Small intestine.
Organ (3) : Large intestine.
Organ (4) : Trachea.

10

P.O.C.	Inhalation	Exhalation
1. Diaphragm movement :	Downwards.	Upwards.
2. Size of chest cavity :	Increases.	Decreases.
3. The air is rich in :	Oxygen gas.	Carbon dioxide gas.

11

The organ	The system	
	Digestive	Respiratory
1. Trachea		✓
2. Anus	✓	
3. Stomach	✓	
4. Lungs		✓
5. Small intestine	✓	
6. Esophagus	✓	
7. Diaphragm		✓
8. Nose		✓
9. Large intestine	✓	
10. Liver	✓	
11. Pancreas	✓	
12. Throat	✓	✓

12. 1. Mouth - saliva
2. Esophagus - stomach.
3. Stomach - stomach - digestive
4. Small intestine - pancreas - liver - nutrients.
5. Large intestine - water - undigested
6. Anus - waste.

13. ① Nose. ② Throat.
③ Trachea. ④ Two bronchi.
⑤ Bronchioles. ⑥ Alveoli.
⑦ Two lungs. ⑧ Diaphragm.

Exercises on Lesson 4

1. 1. c 2. d 3. c 4. b
5. b 6. d 7. d 8. d
9. a 10. c
2. 1. (x) 2. (x) 3. (x) 4. (✓)
5. (x) 6. (x) 7. (✓) 8. (✓)
9. (✓) 10. (x) 11. (✓) 12. (✓)
3. 1. oxygen gas 2. Water
3. oxygen gas
4. structural adaptation
5. animals, plants and humans
6. Air pollution
4. 1. Gills.
2. Oxygen gas.
3. Carbon dioxide gas.
4. Water pollution.
5. Air pollution.

5. 1. lungs - gills 2. blood
3. structural
4. air - water 5. plants
6. smog.
7. damage of lungs - asthma

6. 1. Because they enable fish to extract oxygen gas from water for respiration.
2. Because they produce smog which causes damage of lungs, asthma and heart diseases.
3. To decrease air pollution.

7. 1. The pollution of air, water and soil will increase.
2. Smog increases causing breathing problems as damage of lungs, asthma and heart diseases.
3. Humans cannot get clean water to drink and fish cannot get clean water to breathe.

8. 1. c 2. a

9. 1. gills
2. oxygen
3. carbon dioxide
4. structural

Exercises on Lesson 5

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

- 2 1. (✓) 2. (✗) 3. (✗) 4. (✓)
5. (✗) 6. (✓) 7. (✓) 8. (✓)
9. (✓)

- 3 1. Amphibians. 2. Skin.
3. Amphibians.
4. Structural adaptation.
5. Lungs.

- 4 1. reptile – amphibian.
2. lungs
3. gills – lungs – skin.
4. gills 5. decreases.
6. lungs – skin. 7. structural
8. carbon dioxide gas
9. air – water

- 5 1. water. 2. wet
3. an amphibian. 4. lungs
5. oxygen gas 6. amphibians.
7. Amphibians 8. air.

- 6 1. Because skin of frog can absorb oxygen gas directly from water, while fish cannot.
2. Because their skin must be wet all the time, to be able to get oxygen gas directly from water.
3. Because they breathe in oxygen gas from water and air.
4. To help them survive.

- 7 1. The number of amphibians will decrease.

2. Amphibians will survive and their numbers increase.
3. They can live only under water.
4. The number of amphibians will decrease.
5. Salamanders can live on land only.
6. They will respire by using lungs only and can't breathe through their skin, so they can't live under water.

Model Exam (1) on Concept (1.1)

- 1 (A) 1. d 2. b
3. b 4. a
(B) Because they enable fish to extract oxygen gas from water for respiration.

- 2 (A) 1. (✗) 2. (✗)
3. (✗) 4. (✓)
(B) The size of chest decreases, the air rich in carbon dioxide gas comes out of the lungs.

- 3 (A) 1. wet
2. Amphibians
3. oxygen gas
4. Water lily plant
(B) It hunts in different places like salt water or fresh water.

Model Exam (2) on Concept (1.1)

- 1 (A) 1. Thick white fur.
2. Countershading.
3. Mangrove tree.
4. Anus.

- (B) 1. Acacia tree. (all items live in snow habitat, while acacia tree lives in savannah habitat).
2. Bull shark. (all items live on land, while bull shark lives in water).

- 2 (A) 1. b 2. c 3. b 4. a
(B) 1. structural
2. Esophagus

- 3 (A) 1. a 2. b
3. diaphragm – increases
4. carbon dioxide
(B) To perform different functions.

Concept (1.2)

Exercises on Lesson 1

- 1 1. d 2. d 3. c 4. b
5. d 6. a 7. d
2 1. (✗) 2. (✓) 3. (✓) 4. (✗)
5. (✗) 6. (✓) 7. (✗) 8. (✗)
3 1. Echolocation. 2. Eye.
3. Nose. 4. Touch.
5. Echo.

- 4 1. smell – hearing
2. hearing.
3. hearing – echolocation
4. smell
5. sound

- 5 1. hearing. 2. nose
3. eyes
4. echolocation

- 6 1. To communicate with other mongooses to move from one place to another or when searching for food.
2. Because owls have extraordinary senses of hearing and sight that make them able to find their preys in the dark.
3. Because dogs have very sharp senses of hearing and smell.
4. Because dolphins have super sense of hearing, so they can hear all kinds of sound.

- 7 The sound waves bounce back to the dolphin in the form of echo so, the dolphin can detect the location of this object.

- 8 (2) The sound waves travel and hit the prey
(3) The echo helps the dolphin
(1) The sound produced by a dolphin

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

Exercises on Lesson 2

- 1 1. d 2. c 3. a 4. d
5. b 6. a 7. d 8. c
9. d 10. d 11. d 12. d
13. d 14. a 15. d 16. b
17. c

- 2** (1) 1. d 2. a 3. b
(2) 1. d 2. e 3. a 4. c

- 3** 1. (x) 2. (x) 3. (✓) 4. (x)
5. (✓) 6. (x) 7. (✓) 8. (x)
9. (✓) 10. (x) 11. (x) 12. (x)
13. (✓) 14. (x) 15. (✓)

- 4** 1. Nocturnal animals.
2. Jerboa. 3. Echolocation.
4. Owl.
5. Nervous system.
6. Brain. 7. Spinal cord.
8. Sense organs.
9. Sensory receptors.
10. Reaction time.

- 5** 1. dolphins – bats.
2. spinal cord.
3. behavioral
4. hearing – sight.
5. head – eyes
6. structural
7. eyes – brain
8. hearing – ears.
9. hind legs – catch sand when it jumps.
10. ears – brain
11. reaction time.

- 6** 1. nervous 2. structural
3. backbone. 4. brain.
5. hair. 6. strogner
7. quickly. 8. tasting
9. echolocation.

- 7** 1. Because the weather becomes cool at night in these regions.
2. To direct distant sounds into the owl's ears.
3. Because they depend on echolocation to find insects at night.
4. Because it becomes active at night.
5. Because it has long hind legs that make it jump for long distances.
6. To help it grip the sand when it jumps.
7. Because it has large and sensitive ears, so it can detect even a quiet snake.

- 8** 1. They cannot hunt at night.
2. They cannot search for preys everywhere, but in one direction only.
3. The hand will move quickly away in less than one second.
4. It hops in zigzag patterns, so it can escape quickly from danger.

- 9** (4) The brain alerts the jerboa's legs
(3) The brain processes
(1) A jerboa hears a
(5) The jerboa jumps
(2) The sensory receptors that found

- 10** a. The nervous system.
b. ① Brain. ② Spinal cord.
③ Nerves.
c. 1. ② 2. ① 3. ③

- 11** 1. nocturnal 2. ① 3. ②
4. echolocation. 5. Dolphin.
6. structural

Exercises on Lesson 3

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

- 2** 1. (✓) 2. (✓) 3. (✓) 4. (✓)
5. (x) 6. (x) 7. (✓)

- 3** 1. Nerves.
2. Sensory organs.
3. Ear.
4. Brain.
5. Reflexes.

- 4** 1. nose
2. nerves – backbone
3. brain 4. reflex.
5. sensory receptors – brain.
6. ear – nose 7. ears – brain
8. hearing.

- 5** 1. sensory receptors.
2. hearing. 3. brain

- 6** 1. Eyes. (all items are senses, while eyes are sense organs).
2. Taste. (all items are sense organs, while taste is a sense).
3. Lungs. (all items belong to the nervous system, while

lungs belong to the respiratory system).

- 7** 1. Because ears receive the different sounds and send them through nerves to the brain to be processed, so brain can determine the type of musical instrument.
2. Because it is the main control center of the body.

- 8** 1. Messages cannot be transmitted between brain and body parts.
2. Brain cannot process what is seen by the eyes.

- 9** 1. nervous
2. ② – ③ – ①

- 10** 1. ①, ⑤ 2. ③, ⑥ 3. ②, ④

- 11** 1. The main control center of the body.
2. The nerves
3. It carries messages from the brain to the body parts and vice versa.

Exercises on Lesson 4

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

- 2** 1. d 2. c 3. b

- 3 1. (x) 2. (x) 3. (✓) 4. (x)
5. (x) 6. (x) 7. (✓) 8. (x)
9. (✓) 10. (✓) 11. (x)

- 4 1. different 2. Soldier
3. different 4. summer.
5. High

- 5 1. Winter. 2. Summer.
3. Ants. 4. Nurse ants.
5. High-pitched sounds.
6. Low-pitched sounds.
7. Ears. 8. Nose. 9. Bat.
10. The special cane of blind people.

- 6 1. echolocation 2. smelly
3. smell
4. nurse – scout – soldier
5. hearing – notes (tones) – songs.
6. high – cold
7. summer – low
8. sound – light
9. acacia
10. vibrations

- 7 1. To alert the scout ants that the food is low.
2. To communicate with the other ants in case of danger.
3. Because high-pitched sounds travel better through cold water.
4. To communicate with each other in different seasons.
5. To tell the blind person where objects are around him.

6. Because their special canes emit a high-pitched sound that human's ears cannot hear it.

- 8 1. They cannot communicate with each other by smelly messages.
2. The nurse ants send smelly messages to scout ants to alert them to find the food.
3. The soldier ants send smelly messages to alert the other ants that there is a danger nearby.
4. It bounces back to the cane in the form of echo which is turned into vibrations.
5. They cannot locate the objects by the sense of hearing or hunt its preys at night.
6. The cane will make vibration that tell the blind person that there is a wall in front of him.
7. They cannot communicate with each other by songs using their hearing sense.

Model Exam (1) on Concept (1.2)

- 1 (A) 1. a 2. a
3. d 4. c
(B) To help it jump long distances.

- 2 (A) 1. ears 2. brain
3. hearing. 4. weaker
(B) They cannot search for preys everywhere, but in one direction only.

9. d 10. d 11. b 12. b
13. a 14. d 15. c 16. d
17. c

- 2 1. (✓) 2. (✓) 3. (✓) 4. (✓)
5. (x) 6. (x) 7. (✓) 8. (✓)
9. (x) 10. (✓) 11. (✓) 12. (✓)

- 3 1. more light
2. mirror-like membrane
3. source of light.
4. bounce off

- 4 1. Eye. 2. Fishing cats.
3. Sources of light.
4. Brain. 5. The moon.
6. Night vision goggles.
7. Mirror-like membrane.
8. Light.

- 5 1. different 2. light energy.
3. Sun
4. nervous system.
5. back 6. Light
7. brain 8. black

- 6 1. sight. 2. light
3. structural
4. smaller – wider
5. hearing – smelling.
6. light – nocturnal
7. reflect
8. candles – the moon – mirror

- 7 1. Because it has a mirror-like membrane at the back of its eyes which bounces off the light.

- 3 (A) 1. Bats. 2. Summer.
3. Nose. 4. Reflexes.

(B)

Device	Inspired from the adaptation of
Blind people cane.	Bats.

Model Exam (2) on Concept (1.2)

- 1 (A) 1. Reaction time.
2. Taste.
3. Nervous system.
4. Brain

- (B) 1. Nerves.
2. Spinal cord.
3. Brain.

- 2 (A) 1. nose 2. smell
3. behavioral.
4. hearing – sight.

- (B) (4) The brain sends a signal
(1) Hearing the whistle
(3) The brain processes
(2) The nerves of the ears

- 3 (A) 1. (x) 2. (x) 3. (✓) 4. (x)
(B) The nurse ants send smelly messages to scout ants to alert them to find the food.

Concept (1.3)

Exercises on Lesson 1

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

2. Because it gives off its own light.
3. Because the eye pupil of nocturnal animals open wider than the eye pupil of human to allow more light enter the eyes of nocturnal animals.
4. Because light rays fall on objects then reflect off these objects into our eyes causing vision.
5. Because the moon reflects the sunlight.

- 8 1. It doesn't have excellent night vision so cannot hunt at night.
2. It seems to be dark and we can't see it.

- 9 1. The moon (all items are sources of light, while the moon is reflecting the sunlight).
2. Candle (all items are reflecting the light, while candle is a source of light).

- 10 1. (X) 2. (✓) 3. (✓)

Exercises on Lesson 2

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

- 2 1. e 2. c 3. d 4. a

- 3 1. (X) 2. (X) 3. (X) 4. (✓)
5. (✓)

- 4 1. Transparent materials.
2. Opaque materials.

3. Rough surface.
4. Smooth surface.

- 5 1. reflection 2. transparent
3. smooth

- 6 1. straight 2. waves.
3. opaque - transparent.
4. opaque - light
5. rough - light
6. metal - opaque - don't allow
7. one - angle
8. transparent - glass - air.

- 7 1. Because the opaque body doesn't allow light to pass through.
2. Because the glass cup is a transparent material which allows light to pass through.
3. Because the mirror is more smooth than the painted surface.

- 8 1. The shadow of the wood sheet is formed on the wall, because light rays cannot pass through it.
2. Light passes through the glass window.
3. Light rays are reflected in different directions.

- 9 (3) Special nerves in the eyes
(2) The reflected light travels
(4) The brain interprets
(1) Light rays bounce off

- 10 1. a. smooth and shiny surface.
- the light rays are reflected at the same angle at which they strike the object.
b. rough surface.
- the light rays are reflected in different directions.
c. straight
2. c

11

Smooth materials	Rough materials
- Mirror	- Cloth
- Metal	- Wood
	- Paper

12

Opaque objects	Transparent objects
- Wood	- Air
- Metal	- Water
	- Lenses

- 13 1. glass 2. reflect

- 14 1. Wood (all items are transparent objects, while wood is opaque object).
2. Metal (all items are rough materials, while metal is shiny and smooth material).

- 15 1. opaque
2. absorbed - reflected.
3. rough

Exercises on Lesson 3

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

- 2 1. c 2. b 3. d

- 3 1. (✓) 2. (X) 3. (X) 4. (X)
5. (✓) 6. (✓)

- 4 1. sight 2. y mate
3. chemical reaction
4. fish pattern
5. sight - hearing
6. reading - writing
7. producing sounds - displaying light

- 5 1. To communicate with each other.
2. To warn off from their predators or to attract a mate.
3. To light up their bodies and communicate with each other

- 6 It produces a chemical reaction inside its body to light up and attract a mate.

7

Thing	Light	Sound	Both light and sound
1. Car lamps.	✓		
2. Television.			✓
3. Traffic lights.	✓		
4. Radio.		✓	

Exercises on Lesson 4

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

2. 1. b 2. c

3. 1. (✓) 2. (✗) 3. (✓) 4. (✗)
-
5. (✓)

4. 1. Code. 2. Writing.
-
3. Light house.

5. 1. sound – light 2. light
-
3. hearing 4. sight

6. 1. To give a specific meaning according to the arrangement of letters in a word.
-
2. To help people predict our feelings.

7. The eyes send a message through nerves to my brain to stop walking and not cross the road.

8. 1. (✗) 2. (✓) 3. (✓) 4. (✓)
-
5. (✗)

Model Exam (1) on Concept (1.3)

- 1 (A) 1. d 2. c 3. b 4. c

(B) Because the glass is a transparent material, which allows light to pass through.

- 2 (A) 1. (✗) 2. (✗)
-
3. (✓) 4. (✓)

(B) Light rays will reflect in different directions.

- 3 (A) 1. brain – eyes
-
2. sight – hearing – smelling
-
3. nocturnal – reflects
-
4. rough – light

(B) 1. The moon (all items are sources of light, while the moon reflects the sunlight).
2. Flashlight (all items reflect light, while flashlight is a source of light).

Model Exam (2) on Concept (1.3)

- 1 (A) 1. b 2. d 3. b 4. c

(B) Because it has a mirror-like membrane at the back of its eyes which bounces off the light.

- 2 (A) 1. reflect
-
2. one – angle
-
3. flash pattern
-
4. sound – light

(B) It doesn't have excellent night vision so cannot hunt at night.

- 3 (A) 1. (✓) 2. (✓)
-
3. (✗) 4. (✗)

(B) 1. Transparent materials.
2. Eyes.

Concept (2.1)

Exercises on Lesson 1

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

2. 1. (✓) 2. (✗) 3. (✓) 4. (✓)
-
5. (✗) 6. (✗) 7. (✓) 8. (✓)
-
9. (✗) 10. (✗) 11. (✓) 12. (✗)

3. 1. Pulling force.
-
2. Pushing force.
-
3. The Shockwave truck.

4. 1. forces 2. push – pull
-
3. jet engines – parachutes
-
4. rocket.
-
5. parachutes – Shockwave
-
6. leaves – fire extinguishers
-
7. speed

5. 1. Because the Shockwave truck has three jet engines.
-
2. To help slow down the Shockwave truck quickly.
-
3. Due to the pushing force of your leg that acts on it.

6. 1. It starts to move on the ground.
-
2. It turns into the Shockwave truck and moves with high speed.
-
3. The Shockwave truck starts to stop gradually.

7. 1. (2) – (1)
-
2. (2) – (1)
-
3. (2)

8. 1. It will move faster.
-
2. 1. (✓) 2. (✗)

Exercises on Lesson 2

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

2. 1. (✓) 2. (✗) 3. (✗)
-
4. (✗) 5. (✓) 6. (✗)

3. 1. Force.
-
2. Pushing force.
-
3. Pulling force.
-
4. Motion. 5. Gravity.

4. 1. pulling – pushing
-
2. forces 3. pulling
-
4. gravity. 5. pulling – pulling
-
6. pushing 7. motion.
-
8. gravity.
-
9. pushing – pulling
-
10. fixed

5. 1. pushing 2. pulling
-
3. unbalanced 4. gravity
-
5. motion. 6. pull

6. 1. Because the two forces are balanced, so the object doesn't move.

2. Due to the pulling force of the gravity that pulls the pen down toward the Earth.
3. Due to the pushing force of his hand against the ball movement that makes it stops.

- 7 1. The rope will not move because the two forces are balanced.
2. It will fall down on the ground due to the pulling force of gravity.

- 8 1. Balanced. 2. Unbalanced.

- 9 1. Pushing force.
2. Pulling force.
3. Pulling force.
4. Pushing force.

- 10 1. d 2. b

Exercises on Lesson 3

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

- 2 1. (x) 2. (✓) 3. (x) 4. (✓)
5. (✓) 6. (✓) 7. (x) 8. (x)

- 3 1. opposite 2. decreases.
3. friction

- 4 1. Friction. 2. Friction.

- 5 1. friction – opposite
2. force – greater
3. longer 4. greater

5. friction 6. long – short
7. longer

- 6 1. Because the wall applies a force to the car with the same amount of the force that pushes the car toward the wall.
2. Due to the friction force between the bicycle tires and the road that acts in the opposite direction of the bicycle movement.
3. Due to the difference in the forces that act on each of them.
4. Because the small object travels faster than the bigger object when the same amount of force acts on them.

- 7 1. Its speed decreases gradually until it stops.
2. The ball that is affected by the greater force will move a longer distance than the other ball.

- 8 1. Car (A), because it travels a longer distance than car (B).
2. 1. c 2. b 3. d

Exercises on Lesson 4

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

- 2 1. (✓) 2. (x) 3. (x) 4. (x)

- 3 1. energy
2. energy – work
3. energy 4. force

- 4 The second player, because he raises a weight heavier than the first player, so he needs larger amount of energy to do more work.

Model Exam (1) on Concept (2.1)

- 1 (A) 1. c 2. d 3. a 4. b
(B) The rope will not move, so there is no winner team.

- 2 (A) 1. (x) 2. (✓)
3. (x) 4. (✓)
(B) Due to the friction force between the pen and the table surface that acts in the opposite direction of the pen movement.

- 3 (A) 1. long 2. opposite
3. jet engines
4. balanced
(B) 1. parachute
2. the Shockwave truck – rocket.

Model Exam (2) on Concept (2.1)

- 1 (A) 1. increase. 2. force
3. friction 4. force

- (B) Due to the friction force between the ball and the flat road that acts in the opposite direction of ball movement.

- 2 (A) 1. Pulling force.
2. Gravity force.
3. Jet engine.
4. Friction force.

- (B) The car travels a distance longer than the truck.

- 3 (A) 1. b 2. d 3. a 4. c
(B) 1. pushing 2. air

Concept (2.2)

Exercises on Lesson 1

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

- 2 1. c 2. d 3. a

- 3 1. (✓) 2. (x) 3. (✓)
4. (x) 5. (x)

- 4 1. Kinetic energy.
2. Kinetic energy.

- 5 1. increases. 2. pulling force
3. kinetic 4. pulling force
5. stay stopped. 6. kinetic

- 6 1. electric motor – electricity.
2. less 3. decreases.
4. electrical – kinetic
5. kinetic

- 7 1. Because its stored potential energy changes into kinetic energy, that helps it move downward.
2. Because its kinetic energy increases.
3. Because the kinetic energy of the ball transfers to the goal net.

- 8 1. Its stored potential energy changes into kinetic energy.
2. It can't move, so it will stop.
3. Its stored potential energy changes into kinetic energy.
4. The object has potential energy.

- 9 1. b 2. d 3. c

- 10 1. kinetic 2. no 3. potential

Exercises on Lesson 2

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

- 2 1. d 2. b 3. e 4. c

- 3 1. (x) 2. (✓) 3. (✓) 4. (✓)
5. (✓) 6. (✓) 7. (✓)

- 4 1. Potential energy.
2. Kinetic energy.
3. Energy. 4. Work.
5. Potential energy.

- 5 1. work 2. light
3. kinetic 4. potential

- 6 1. energy. 2. work
3. potential 4. potential
5. light – sound – thermal
6. potential 7. increase.
8. decrease.

- 7 1. Because the bird is found at a height from the Earth's surface, so it has potential energy.

2. Because its height from the Earth's surface increases.

- 8 1. The potential energy of the apple changes into kinetic energy.
2. The potential energy of the book will increase.

- 9 1. potential – kinetic
2. potential

- 10 1. c 2. a

- 11 1. a 2. b

Exercises on Lesson 3

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

- 2 1. b 2. f 3. d 4. a
5. c

- 3 1. (x) 2. (✓) 3. (✓) 4. (x)
5. (x) 6. (x) 7. (✓) 8. (✓)
9. (✓)

- 4 1. Chemical energy.
2. Light energy.
3. Thermal kinetic energy.
4. Gravitational potential energy.

- 5 1. kinetic
2. thermal kinetic
3. decreases. 4. sound
5. potential 6. Gas oven

- 6 1. gravitational – chemical – sound
2. gravitational 3. kinetic
4. light – sound
5. sound – kinetic
6. electrical – sound
7. light – thermal
8. chemical – thermal
9. potential – kinetic
10. sound – thermal
11. light – kinetic
12. electrical – sound – light

- 7 1. Because it produces light and thermal energies.
2. Because the potential energy which is stored in the spring changes into kinetic energy.

- 8 1. The electrical energy changes into kinetic and sound energies.
2. The potential energy changes into kinetic energy.
3. The electrical energy changes into light and thermal energies.

- 9 1. Chemical energy (all items are forms of kinetic energy, while chemical energy is a form of potential energy).
2. Light energy (all items are forms of energy, that can't be seen, while light energy is a form of energy that can be seen).

- 10 1. a 2. a 3. d

Exercises on Lesson 4

- 1 1. d 2. d 3. b 4. d 5. b

- 2 1. c 2. a 3. d 4. b 5. e

- 3 1. (✓) 2. (✓) 3. (✓) 4. (x)
5. (x) 6. (✓) 7. (x)

- 4 1. energy 2. potential
3. kinetic 4. chemical

- 5 1. Gasoline.
2. Chemical potential energy.
3. Potential energy.
4. Kinetic energy.

- 6 1. The stored chemical energy of food changes into kinetic energy so human can carry out different activities.
2. The stored chemical energy in the battery changes into light and thermal energies.

- 7 1. Food. 2. Gas oven.
3. Flashlight. 4. Electric fan.

- 8 1. chemical 2. Electrical
3. Sound

Model Exam (1) on Concept (2.2)

- 1 (A) 1. d 2. c 3. d 4. b
(B) Because each of them produces light and thermal energies.

- 2 (A) 1. (x) 2. (✓) 3. (x) 4. (✓)

(B) Its potential energy changes into kinetic energy.

- 3 (A) 1. kinetic 2. Thermal
3. potential 4. chemical
(B) 1. chemical
2. changes into
3. Kinetic 4. Transferred

Model Exam (2) on Concept (2.2)

- 1 (A) 1. Kinetic energy.
2. Electrical energy.
3. Potential energy.
4. Chemical potential energy.
(B) Chemical energy. (all items are forms of kinetic energy, while chemical energy is a form of potential energy).

- 2 (A) 1. b 2. d 3. b 4. c
(B) The electrical energy changes into light and thermal energies.

- 3 (A) 1. (x) 2. (x) 3. (x) 4. (✓)
(B) Because the bird is found at a height from the Earth's surface, so it has potential energy.

Concept (2.3)

Exercises on Lesson 1

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

- 2 1. e 2. c 3. d 4. a

- 3 1. (x) 2. (✓) 3. (x) 4. (✓)
5. (✓)

- 4 1. Wrecking ball. 2. Seatbelt.
3. Airbag. 4. Vents.

- 5 1. kinetic
2. Wrecking ball
3. car 4. changes.
5. Airbags 6. thin nylon
7. kinetic

- 6 1. kinetic
2. seatbelts – airbags.
3. change. 4. airbag
5. energy 6. energy
7. seatbelt

- 7 1. Because the seatbelts are used in cars to keep the driver's body and also the passengers from moving forward when the car stops suddenly.
2. Because the airbags slow the speed of the driver moving forward and they absorb the energy of the passengers during collision.
3. Because the kinetic energy of the bat transfers to the ball.

- 8 1. The kinetic energy of the bat transfers to the ball.
2. The energy of collision will push the driver forward strongly that causes many harms to him.

- 9 1. d 2. c 3. d

- 10 1. The car is damaged more than the train. Because the car is slower and lighter than the train and the car has less energy.
2. Airbags inflate automatically.

Exercises on Lesson 2

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

- 2 1. (✓) 2. (✓) 3. (✓) 4. (x)
5. (x) 6. (✓) 7. (✓) 8. (x)
9. (x)

- 3 1. Speed.
2. Kilometer per hour or meter per second.

- 4 1. decreases 2. increases.
3. large

- 5 1. kinetic 2. more
3. faster
4. meters – hours – seconds.
5. 20 6. decrease.
7. decrease.

- 6 Because the truck has mass more than that of the small car, so the truck has speed and kinetic energy more than that of the small car.

- 7 1. The kinetic energy of the car increases.
2. The speed of the toy car will increase.

- 8 1. The rabbit has the greatest kinetic energy. Because the speed of rabbit is more than that of tortoise.
2. decrease.

9
$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$
$$= \frac{400}{80} = 5 \text{ m/sec.}$$

10
$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$
$$= \frac{200}{2} = 100 \text{ km/hr.}$$

- 11 1. Ramp (A). Because the speed of the truck increases by increasing the angle of inclination.
2. The speed of truck will increase.

12 – Speed of cheetah =
$$\frac{\text{Distance}}{\text{Time}} = \frac{240}{2} = 120 \text{ km/hr.}$$

– Speed of Deer =
$$\frac{\text{Distance}}{\text{Time}} = \frac{210}{3} = 70 \text{ km/hr.}$$

The speed of cheetah is greater than that of deer so, cheetah can attack the deer.

Exercises on Lesson 3

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

2 1. c 2. e 3. a 4. d

3 1. (x) 2. (x) 3. (x) 4. (✓)
5. (x) 6. (✓) 7. (x) 8. (x)
9. (x)4 1. Collision.
2. Sound energy.5 1. increase.
2. kinetic
3. big
4. decreases
5. potential6 1. mass – speed.
2. energy
3. light – sound.
4. collision.
5. kinetic – sound.7 1. Because a part of kinetic energy changes into sound energy.
2. Because if the car increases its speed, its kinetic energy increases that results in exerting a large force during an accident.

8 The damage of the two bicycles would be much more severe.

9 1. c 2. b 3. a

10 1. 1 2. c 3. D

Exercises on Lesson 4

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

2 1. a 2. d 3. b

3 1. (x) 2. (x) 3. (✓) 4. (x)
5. (✓) 6. (x) 7. (✓) 8. (✓)4 1. larger 2. kinetic
3. more 4. decreases
5. decreases 6. equal to5 1. speed – kinetic
2. less
3. chemical – kinetic
4. kinetic
5. kinetic – sound
6. kinetic – thermal – friction
7. friction – kinetic
8. potential – kinetic
9. kinetic – stop.6 1. Because the truck has more mass than the car.
2. Because the car has a smaller mass than the bus, so it needs a smaller engine to be operated.
3. Because some of the kinetic energy changes into sound energy during collision.
4. Because the energy is conserved during the collision, so it cannot be destroyed.7 1. Its kinetic energy will decrease.
2. The damage would be much more severe.
3. The kinetic energy of the truck is more than that of the small car.
4. It stores potential energy and doesn't have any kinetic energy.
5. The potential energy changes into kinetic energy.
6. Some of kinetic energy changes into thermal energy.8 (3) Kinetic energy is transferred from the first ball
(2) Potential energy of the first ball decreases
(4) Kinetic energy of all balls decreases
(1) Raise up the first ball, ...

9 1. c 2. b 3. a

10 1. c 2. b

Model Exam (1) on Concept (2.3)

1 (A) 1. d 2. c 3. a 4. c
(B) Because the kinetic energy of the bat transfers to the ball.2 (A) 1. (✓) 2. (x)
3. (✓) 4. (✓)
(B) The damage of the two bicycles would be much more severe.3 (A) 1. kinetic
2. height 3. equal to
4. increases.
(B) 1. b 2. d 3. c

Model Exam (2) on Concept (2.3)

1 (A) 1. Wrecking ball.
2. Collision.
3. Vents.
4. Sound energy.
(B) 1. b 2. d2 (A) 1. (x) 2. (✓)
3. (✓) 4. (✓)
(B) (2) Potential energy of the first ball decreases
(3) Kinetic energy is transferred from the first ball
(1) Rise up the first ball, ...
(4) Kinetic energy of all balls decreases 3 (A) 1. kinetic – sound
2. 20 3. decrease
4. airbag
(B) Because the vehicle with the large mass has more kinetic energy than that of the vehicle with the small mass, so it causes more damage.

PART 2

Guide Answers of Self-Assessments



PART 2

UNIT ONE : Living Systems

Concept (1.1)

Self-Assessment 1

- 1 (A) 1. b 2. b 3. a
(B) To hide among the colorful rocks from their predators or preys.
- 2 (A) 1. (✗) 2. (✓) 3. (✗)
(B) They can't hide and hunt its preys in the forest environment.
- 3 1. Figure (b).
2. The blood moving up into the penguin's body will be cold which may make it freeze.

Self-Assessment 2

- 1 (A) 1. structural – behavioral
2. behavioral – structural
3. acacia – kapok
(B) It cannot sneak up on its prey by countershading camouflage.
- 2 (A) 1. prey.
2. salt water and fresh water.
3. sunlight.
(B) To prevent the plant from the loss of water.
- 3 1. Starred agama lizard and fennec fox.

2. Palm tree and barbary fig plant.

3. 1. (✓) 2. (✓)

Self-Assessment 3

- 1 (A) 1. d 2. a 3. d
(B) Because it moistens food and begins to break it down.
- 2 (A) 1. (✗) 2. (✓) 3. (✗)
(B) Nutrients will not be absorbed and will not be carried to all the body parts.
- 3 1. trachea. 2. esophagus.
3. lungs. 4. stomach.
5. respiratory – digestive

Self-Assessment 4

- 1 (A) 1. c 2. c 3. b
(B) Because humans breathe in air, and need clean water to drink, while fish need clean water to breathe.
- 2 (A) 1. (✗) 2. (✗) 3. (✓)
(B) 1. • Animal → Starred agama lizard
• Plant → Barbary fig
2. • Animal → Panther chameleon
• Plant → Kapok tree
3. • Animal → Penguin
• Plant → Pine tree

4. • Animal → Bull shark
• Plant → Mangrove tree

- 3 1. It has a very long trunk, so most animals except giraffe cannot reach its leaves to feed on.
2. They have gills to breathe under water.
3. It has white fur helps it blend in with the snow as it sneaks up on its prey.

Self-Assessment 5

- 1 (A) 1. Starred agama lizard (all items are amphibians, while starred agama lizard is a reptile).
2. Palm tree (all items live in water environment, while palm tree lives in desert environment).
3. Acacia tree (all items live in rainforests, while acacia tree lives in savannah grassland).
(B) Because their numbers were decreased in the last few years.

- 2 (A) 1. Amphibians.
2. Skin.
3. Savannah grassland.

- (B) d. Because wet environment is the natural habitat, where amphibians can extract oxygen gas directly from water through skin.

- 3 1. Habitat (A) 2. Habitat (B)
3. Habitat (A) 4. Habitat (A)
5. Habitat (B) 6. Habitat (B)
7. Habitat (A) 8. Habitat (A)
9. Habitat (A) and habitat (B)
10. Habitat (B)

Model Exam on Concept (1.1)

- 1 (A) 1. cool 2. expands
3. mild 4. blood vessels
(B) Because starred agama lizard belongs to reptiles, while golden frog belongs to amphibians.
2 (A) 1. (B) 2. (S)
3. (B) 4. (S)
(B) The digestive system could not do its function correctly.
3 (A) 1. b 2. c 3. a 4. d
(B) 1. Alveoli. 2. Arctic fox.

Concept (1.2)

Self-Assessment 6

- 1 (A) 1. echolocation
2. sight – hearing
3. eyes – tongue.

- (B) Because they use ecolocation to locate their preys under water.

- 2 (A) 1. (x) 2. (✓) 3. (✓)
(B) 1. Sight, smell and taste.
2. Taste, tongue.

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

Self-Assessment 7

- 1 (A) 1. c 2. a 3. c
(B) To connect the sensory organs and the body parts with the brain.
2 (A) 1. (✓) 2. (x) 3. (x)
(B) It cannot jump for long distances to run away from its enemies.

- 3 1. nervous 2. fast 3. owl

Self-Assessment 8

- 1 (A) 1. Brain.
2. Nervous system.
3. Reaction time.
(B) The sound waves bounce back to the bat and helps it to locate the insect.
2 (A) 1. c 2. a 3. d
(B) To help it survive through finding food and protecting itself under water.

- 3 (3) The rabbit's brain processes
(2) The rabbit's nerves
(4) The rabbit's brain sent a signal
(1) The rabbit saw a fox

Self-Assessment 9

- 1 (A) 1. c 2. d 3. b
(B) Because owl has bowl-shaped face and feathers in its head.
2 (A) 1. feeding 2. smell
3. structural
(B) The cane will make vibrations that tell the blind person that there is an object in front of him.
3 1. Bats. 2. Jerboas.
3. Owls. 4. Dolphins.

Model Exam on Concepts (1.1) & (1.2)

- 1 (A) 1. (✓) 2. (x)
3. (x) 4. (✓)
(B) 1. Small intestine (all items belong to the nervous system, while small intestine belongs to the digestive system).
2. Diaphragm (all items belong to the digestive system, while diaphragm belongs to the respiratory system).

- 2 (A) 1. c – B 2. a – D
3. d – A 4. b – C
(B) To alert the scout ants that the food is low.

- 3 (A) 1. reflex. 2. oxygen gas
3. penguin 4. reaction time.
(B) 1. gills 2. soldier

Concept (1.3)

Self-Assessment 10

- 1 (A) 1. (✓) 2. (✗) 3. (✓)
(B) To collect more light to give excellent night vision for hunting.

- 2 (A) 1. c 2. b
(B) It doesn't have excellent night vision so cannot hunt at night.

- 3 1. d 2. d 3. c 4. d

Self-Assessment 11

- 1 (A) 1. (✓) 2. (✗) 3. (✗)
(B) Because air is a transparent object that allows light to pass through.

- 2 (A) 1. d 2. c 3. a
(B) 1. Mirror (all items are rough surfaces, while mirror is smooth and shiny surface).

2. Glass cup (all items are opaque objects, while glass cup is transparent object).

- 3 1. Yes. 2. b

Self-Assessment 12

- 1 (A) 1. (✗) 2. (✓) 3. (✗)
(B) Because they use their wings to form different flash patterns to warn off from predators or to attract a mate to reproduce.

- 2 (A) 1. behavioral
2. humans.
3. sight.
(B) By producing a chemical reaction inside their bodies.

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

Self-Assessment 13

- 1 (A) 1. c 2. c 3. d
(B) Because in a completely dark room there is no light to be reflected by the mirror-like membrane.

- 2 (A) 1. (✓) 2. (✓) 3. (✗)
(B) Fishing cats don't have excellent night vision so cannot hunt at nights.

3

Fishing cats	Firefly beetles
1. mirror-like membrane – eyes.	1. chemical reaction – bodies.
2. light reflection – hunt	2. flash patterns – communicate

Model Exam on Theme (1)

- 1 (A) 1. b 2. c 3. a 4. c
(B) Because they make a chemical reaction inside their bodies, that produces light.

- 2 (A) 1. (✗) 2. (✓) 3. (✗) 4. (✗)
(B) It cannot jump for long distances to run away from its enemies.

- 3 (A) 1. eyes. 2. arctic
3. bats
4. feeding (summer)

- (B) (1) Esophagus
(2) Small intestine
(3) Large intestine
(4) Trachea

Assess Your Learning on Theme (1)

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

- 2 1.

The inhaled air	The exhaled air
Rich in oxygen gas.	Rich in carbon dioxide gas.

2.

Structural adaptation	Behavioral adaptation
It is a change in the body structure of a living organism to help it survive.	It is a change in the behaviors or acts of a living organism to help it survive.

3.

Communication in humans	Communication in animals
• Reading • Watching TV • Cell phone • Producing sounds • Displaying light • Writing	• Echolocation • Producing sounds • Displaying light

- 3 1. (✗) 2. (✓) 3. (✓) 4. (✗)
5. (✓) 6. (✓) 7. (✗) 8. (✗)
9. (✓) 10. (✗)

- 4 1. hearing – ear – brain
2. digestive system – stomach – respiratory system.

- 5 1. Because cats have bigger eyes, wider eye pupils and a mirror-like membrane at the back of their eyes.
2. Because bats depend on echolocation to locate their preys at night.

Concept (2.1)**Self-Assessment 14**

- 1 (A) 1. (✗) 2. (✓) 3. (✓)
 (B) Because by increasing the number of fire extinguishers, the speed of the cart will increase.
- 2 (A) 1. b 2. d 3. a
 (B) - The Shockwave truck.
 - Because it has three jet engines that make it faster than the normal truck.

- 3 1. The Shockwave truck.
 2. It will move with a slower speed.

Self-Assessment 15

- 1 (A) 1. d 2. b 3. a
 (B) The team with greater force will win the game, because the rope will move toward the team of greater pulling force.
- 2 (A) 1. greater
 2. greater
 3. pushing
 (B) To help slow down their movement.
- 3 1. a 2. b 3. a

Self-Assessment 16

- 1 (A) 1. pushing – pulling
 2. balanced.
 3. friction
 (B) Because car (B) is smaller than car (A), so it travels a distance longer than car (A).
- 2 (A) 1. (✗) 2. (✓) 3. (✓)
 (B) The toy car travels a distance longer than the toy truck.
- 3 (A) 1. (✗) 2. (✓) 3. (✓)
 (B) 1 – 2

Self-Assessment 17

- 1 (A) 1. a 2. a 3. b
 (B) Because there is a friction force between the moving body and the ground that acts in the opposite direction of the body movement.
- 2 (A) 1. equal to 2. equal to
 3. shorter
 (B) Due to the effect of pulling force of gravity down toward the Earth.
- 3 (A) 1. ③ and ④
 2. ① and ②
 3. Friction force.
 (B) 1. (✗) 2. (✓) 3. (✓)

Model Exam on Concept (2.1)

- 1 (A) 1. b 2. c
 3. b 4. d
 (B) The Shockwave truck starts to stop gradually.
- 2 (A) 1. (✗) 2. (✓)
 3. (✓) 4. (✗)
 (B) Due to the help of powerful three jet engines.
- 3 (A) 1. energy 2. longer
 3. pulling – pulling
 4. fixed
 (B) Car (A), because it travels a longer distance than car (B).

Concept (2.2)**Self-Assessment 18**

- 1 (A) 1. c 2. d 3. b
 (B) The stored potential energy in the train is changed into kinetic energy.
- 2 (A) 1. (✗) 2. (✓) 3. (✓)
 (B) Because his stored potential energy changes into kinetic energy.
- 3 1. ① – ②
 2. ② – ③
 3. kinetic – increase

Self-Assessment 19

- 1 (A) 1. d 2. c 3. d
 (B) Because its height from the Earth's surface will increase.
- 2 (A) 1. (✗) 2. (✓) 3. (✓)
 (B) Its potential energy changes into kinetic energy.
- 3 1. c 2. a

Self-Assessment 20

- 1 (A) 1. c 2. c 3. b
 (B) Because the battery stores chemical potential energy, while a ball at the top of hill stores gravitational potential energy.

- 2 (A) 1. (✗) 2. (✗) 3. (✗)
 (B) Its kinetic energy changes into potential energy.

- 3 1. a 2. c 3. a

Self-Assessment 21

- 1 1. b 2. c 3. c
- 2 (A) 1. (✓) 2. (✗)
 (B) 1. b 2. c 3. d
 4. a
- 3 1. c 2. a 3. b

Model Exam on Concepts (2.1) & (2.2)

- 1 (A) 1. a 2. c 3. b 4. d

(B) His potential energy changes into kinetic energy.

- 2 (A) 1. (x) 2. (x) 3. (✓) 4. (✓)

(B) Because burning of food produces kinetic energy to carry out different activities.

- 3 (A) 1. potential 2. work
-
3. gravity. 4. long

(B) 1. The Shockwave truck.
2. It cannot stop easily.

Concept (2.3)

Self-Assessment 22

- 1 (A) 1. d 2. c 3. d

(B) To allow the driver to get out of the car.

- 2 (A) 1. (✓) 2. (✓) 3. (x)

(B) The airbags will inflate and fill with a gas.

- 3 kinetic different car.

Self-Assessment 23

- 1 (A) 1. b 2. d 3. a

(B) Speed = $\frac{\text{Distance}}{\text{Time}}$
= $\frac{240}{4} = 60 \text{ km/hr.}$

- 2 (A) 1. (x) 2. (x) 3. (✓)

(B) Its kinetic energy will increase.

- 3 1. b 2. d 3. a

Self-Assessment 24

- 1 (A) 1. d 2. a 3. c

(B) Its kinetic energy will increase.

- 2 (A) 1. (x) 2. (✓) 3. (✓)

(B) Because the speed of the object that moves down a ramp increases by increasing the angle of the ramp.

- 3 1. c 2. b 3. c 4. b

Self-Assessment 25

- 1 (A) 1. c 2. c 3. d

(B) Because some of kinetic energy of balls changes into sound energy.

- 2 (A) 1. (x) 2. (x) 3. (✓)

(B) Their kinetic energy will decrease gradually until they stop.

- 3 1. b 2. a 3. c

Model Exam on Theme (2)

- 1 (A) 1. c 2. b 3. d 4. c

(B) Due to the help of three jet engines.

- 2 (A) 1. (x) 2. (x)
-
3. (✓) 4. (✓)

(B) The energy of collision will push the driver forward strongly that causes many harms to him.

- 3 (A) 1. Pushing force.
-
2. Kinetic energy.
-
3. Speed. 4. Seatbelts.

(B) Chemical energy (all items are forms of kinetic energy except chemical energy which is a form of potential energy).

Assess Your Learning on Theme (2)

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

- 2 1. a. Unbalanced.
-
- b. Left.
-
2. Car (B) has the higher speed
-
- (- speed of car (A) =
- $\frac{100}{20}$
-
- = 5 m/sec.
-
- speed of car (B) =
- $\frac{300}{20}$
-
- = 15 m/sec.)
-
3. potential - kinetic

- 3 1. b 2. c 3. e 4. a

Model Answer
October Tests

Model 1

- 1 (A) 1. b 2. c 3. b 4. a

(B) Because it is change in the behaviors or acts of fennec fox to help it survive.

- 2 (A) 1. (x) 2. (x) 3. (x) 4. (✓)
-
- (B)

	In summer	In winter
Produced sound :	Low-pitched sounds	High-pitched sounds

- 3 (A) 1. Brain. 2. Trachea.
-
3. Pine tree.
-
4. Countershading.

(B) They crush (grind) food during chewing.

Model 2

- 1 (A) 1. exhalation - inhalation
-
2. hearing - echolocation
-
3. small intestine - large intestine.

(B) The brain will process this message and send the suitable respond to the body through nerves.

- 2** (A) 1. buttress roots
2. Reaction time
3. brown
4. backbone.
(B) To scare its enemies during danger.

- 3** (A) 1. It pants like dogs to cool its body.
2. It has long hind legs to jump a long distance.
3. Barbary fig.
4. Owl.
(B) Bat (all other living organisms produce smelly messages, except bat).

Model Answer November Tests

Model 1

- 1** (A) 1. d 2. b 3. a 4. d
(B) Because it doesn't allow light to pass through it.
- 2** (A) 1. (✗) 2. (✗) 3. (✓) 4. (✗)
(B) Its speed decreases gradually until it stops.
- 3** (A) 1. Light. 2. Friction.
3. Code. 4. Gravity.

- (B) (3) The light rays bounce off the object
- (1) The electric lamp emits
- (2) The light rays fall on object

Model 2

- 1** (A) 1. transparent – opaque
2. pushing – pulling
3. diffuse – different
4. chemical – light
(B) The light rays will reflect in one direction with the same angle which they strike the object.
- 2** (A) 1. narrower
2. The Sun
3. unbalanced
4. friction
(B) The Shockwave truck starts to stop gradually.
- 3** (A) 1. (✓) 2. (✓) 3. (✓) 4. (✗)
(B) Due to the pushing force of your leg that acts on it.

PART 3

Guide Answers of Final Examinations



El-Moasser Final Examination Models

Model Exam 1

- 1 (A) 1. b 2. c 3. d 4. c

(B) Because they prevent the driver and passengers from moving forward when the car suddenly stops.

- 2 (A) 1. (x) 2. (✓) 3. (✓) 4. (x)

(B) The kinetic energy will increase.

- 3 (A) 1. Trunk. 2. Nerves.
-
3. Friction force.
-
4. Hour or second.

$$\text{(B) Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$= \frac{300}{30} = 10 \text{ m/sec.}$$

Model Exam 2

- 1 (A) 1. parachutes
-
2. kinetic
-
3. electrical – sound
-
4. light – sound

(B) Due to the pushing force of his hand against the ball that stops it.

- 2 (A) 1. cars
-
2. thermal energy.
-
3. sharp 4. tires

(B)

Opaque objects	Transparent objects
• Wood. • Metal.	• Air. • Water. • Lenses.

- 3 (A) 1. Nurse ants. 2. Gravity.
-
3. Needle leaves.
-
4. Nose.

$$\text{(B) Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$= \frac{160}{2} = 80 \text{ km/hr.}$$

Model Exam 3

- 1 (A) 1. c 2. a 3. b 4. b

(B) Because the mirror has more smooth and shiny surface than the painted surface.

- 2 (A) 1. (x) 2. (✓) 3. (✓) 4. (✓)

$$\text{(B) Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$= \frac{240}{3} = 80 \text{ km/hr.}$$

- 3 (A) 1. Sensory organs.
-
2. Vents or holes.
-
3. Rough surface.
-
4. Diaphragm.

(B)

Organisms live in deserts	Organisms live in forests
– Starred agama lizard. – Fennec fox. – Palm tree. – Barbary fig plant.	– Panther chameleon. – Kapok tree.

Model Exam 4

- 1 (A) 1. Camouflage.
-
2. Nervous system.
-
3. Electrical energy.
-
4. Work.

(B) The Sun.

- 2 (A) 1. c 2. a 3. d 4. d
-
- (B) The ecosystems is still clean without pollution.

- 3 (A) 1. unbalanced
-
2. sound
-
3. Kinetic energy
-
4. nervous system.

$$\text{(B) Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$= \frac{200}{5} = 40 \text{ m/sec.}$$

Model Exam 5

- 1 (A) 1. b 2. a 3. b 4. d
-
- (B) It cannot reach to water in dry season, and cannot survive.

- 2 (A) 1. (✓) 2. (x) 3. (✓) 4. (✓)
-
- (B) 1. Balanced. 2. Unbalanced.

- 3 (A) 1. Fennec foxes.
-
2. Gravity. 3. Airbag.
-
4. Mangrove tree.
-
- (B) To prevent animals from reaching its leaves to feed on.

Model Exam 6

- 1 (A) 1. b 2. d 3. b 4. a
-
- (B) Because camouflage helps some animals hide from their predators or preys in different environments.

- 2 (A) 1. (x) 2. (x) 3. (x) 4. (✓)
-
- (B) – Animals have super sight sense : Owl – Fishing cat.
-
- Animals have super hearing sense : Bat – Dolphin – Owl.

- 3 (A) 1. Small intestine.
-
2. Countershading.
-
3. Energy. 4. Tongue.
-
- (B)
- $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$
-
- $= \frac{150}{5} = 30 \text{ m/sec.}$

Model Exam 7

- 1 (A) 1. b 2. d 3. d 4. d
-
- (B) Some of kinetic energy is changed into thermal energy.

- 2 (A) 1. (✓) 2. (x) 3. (✓) 4. (x)
-
- (B)
- $\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{250}{5}$
-
- $= 50 \text{ m/sec.}$

- 3 (A) 1. Respiration process.
2. Panther chameleon.
3. Kinetic energy.
4. Chemical potential energy.
(B) Because polluted air causes harm to the respiratory system.

Model Exam 8

- 1 (A) 1. (x) 2. (✓) 3. (✓) 4. (x)

(B) Because the speed is equal to distance over time
(Speed = $\frac{\text{Distance}}{\text{Time}}$).

- 2 (A) 1. b 2. b 3. c 4. b

(B) Speed = $\frac{\text{Distance}}{\text{Time}}$
= $\frac{220}{2} = 110 \text{ km/hr.}$

- 3 (A) 1. increases. 2. Water
3. stronger 4. different

(B) The nurse ants send smelly messages to scout ants that alert them to find the food.

Model Exam 9

- 1 (A) 1. eyes – brain.
2. (B) – (A)
3. lungs – gills
4. airbags – seatbelts.
(B) Due to the difference in the forces that act on them.

- 2 (A) 1. (x) 2. (✓) 3. (✓) 4. (x)

(B) Speed = $\frac{\text{Distance}}{\text{Time}}$
= $\frac{400}{20} = 20 \text{ m/sec.}$

- 3 (A) 1. d 2. d 3. c 4. c

Types of communication	The used senses
1. Watching TV.	- Sight and hearing.
2. Flashing lights of fireflies.	- Sight.
3. Echolocation in dolphins.	- Hearing.
4. Using the cell phone.	- Sight and hearing.

Model Exam 10

- 1 (A) 1. c 2. a 3. d 4. c

(B) Because it transfers messages between the brain and body parts and vice versa.

- 2 (A) 1. energy 2. bats
3. kinetic 4. kinetic

(B) Speed = $\frac{\text{Distance}}{\text{Time}}$
= $\frac{100}{2} = 50 \text{ km/hr.}$

- 3 (A) 1. (✓) 2. (✓) 3. (x) 4. (✓)

(B) 1. (1), (3) 2. (4) 3. (2)

Final Examinations of Some Governorates**Cairo Governorate****1 Heliopolis Educational Zone**

- 1 (A) 1. light 2. contracts.
3. kinetic 4. forward.

(B) 1. The main control center in the body.
2. They carry messages from the brain to the spinal cord and other parts of the body and vice versa.

- 2 (A) 1. (x) 2. (x)
3. (x) 4. (x)

(B) Speed of car (A)
= $\frac{\text{Distance}}{\text{Time}} = \frac{300}{10} = 30 \text{ m/sec.}$
Speed of car (B)
= $\frac{\text{Distance}}{\text{Time}} = \frac{100}{10} = 10 \text{ m/sec.}$
So, car (A) is faster than car (B).

- 3 (A) 1. c 2. b 3. a 4. d

(B) Trachea (all items are organs of digestive system except trachea is an organ of respiratory system).

2 Maadi Educational Zone

- 1 (A) 1. c 2. a 3. b 4. b

(B) To communicate with each other in different seasons.

- 2 (A) 1. (✓) 2. (x)
3. (x) 4. (✓)

(B) The brain.

- 3 (A) 1. gills 2. Bat
3. increases. 4. faster

(B) Figure (a), because the light rays are reflected in one direction with the same angle at which they strike the object.

3 El-Nozha Educational Zone

- 1 (A) 1. c 2. d 3. d 4. d

(B) Because camouflage helps some animals hide from their predators or preys in different environments.

- 2 (A) 1. (x) 2. (x)
3. (✓) 4. (x)

(B) It produces a chemical reaction inside its body to light up and attract a mate.

- 3 (A) 1. b 2. d 3. a 4. c

(B)

Point of comparison	Fennec fox	Arctic fox
Shape of ears	Extra-large	Small

4 Helwan Educational Zone

- 1 (A) 1. energy. 2. Brain
3. Acacia tree 4. increases.

(B) Because they depend on echolocation to find their preys at night.

- 2 (A) 1. c 2. a 3. b 4. b

(B) The soldier ants send smelly messages to alert the other ants that there is a danger nearby.

- 3 (A) 1. c 2. d 3. a 4. b

(B) The fishing cat.

Giza Governorate

5 Awseem Educational Zone

- 1 (A) 1. c 2. c 3. d 4. b

(B) The nose.

- 2 (A) 1. (x) 2. (x)
3. (✓) 4. (x)

(B) Structural adaptation.

- 3 (A) 1. pulling 2. brain
3. kinetic 4. all directions

(B) Ant.

6 Agoza Educational Zone

- 1 (A) 1. b 2. c 3. b 4. c

(B) Stomach (all items belong to respiratory system, while stomach belongs to digestive system).

- 2 (A) 1. (x) 2. (x)
3. (✓) 4. (x)

(B) Because they depend on echolocation to find their preys at night.

- 3 (A) 1. Eye 2. Wood
3. gills 4. Mangrove

(B) Brain

Alexandria Governorate

7 Al Montaza Educational Zone

- 1 (A) 1. (x) 2. (✓)
3. (x) 4. (✓)

(B) Bull shark (all items live on land, while bull shark lives in water).

- 2 (A) 1. bats. 2. straight
3. nose 4. gills

(B) Arctic fox.

- 3 (A) 1. d 2. a 3. c 4. c

(B) Because camouflage helps some animals hide from their predators or preys in different environments.

8 Borg Al-Arab Educational Zone

- 1 (A) 1. d 2. a 3. b 4. d

(B) To prevent animals from eating these leaves.

- 2 (A) 1. (✓) 2. (x)
3. (✓) 4. (✓)

(B) The nurse ants send smelly messages to scout ants to alert them to find food.

- 3 (A) 1. Amphibians.
2. Chemical energy.
3. Reaction time.
4. Friction.

(B)

Opaque objects	Transparent objects
Wood	Air
Metal	Water

El-Menoufia Governorate

9 Tala Educational Zone

- 1 (A) 1. Chameleon (all items live in desert habitat, while chameleon lives in rainforest habitat).
2. Acacia tree (all items live in polar habitat, while acacia tree lives in savannah habitat).
3. Light energy (all items are forms of energy that can't be seen, while light energy is a form of energy that can be seen).
4. Stomach (all items belong to respiratory system, while stomach belongs to digestive system).

(B) Structural adaptation.

- 2 (A) 1. Seatbelt. 2. Light energy.
3. Pushing force.
4. Pine tree.

$$(B) \text{ Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{220}{2} = 110 \text{ Km/h.}$$

- 3 (A) 1. (x) 2. (✓)
3. (✓) 4. (x)

(B) The size of chest increases, the air rich in oxygen enters the lungs.

Dakahlia Governorate

10 Dakahlia Edu. Zone

- 1 (A) 1. d 2. c 3. c 4. a

(B) Blood vessels → Alveoli
→ Two bronchi → Trachea
→ Nose.

- 2 (A) 1. (✓) 2. (✓)
3. (✓) 4. (✓)

(B) It cannot see clearly and hunt at night.

- 3 (A) 1. small intestine. 2. nervous
3. 10 4. pushing

(B) Because opaque objects don't allow light to pass through.

Suez Governorate

11 Science Inspectorate

- 1 (A) 1. b 2. a 3. c 4. a

(B) Because the inhaled air is rich in oxygen gas, while the exhaled air is rich in carbon dioxide gas.

- 2 (A) 1. (x) 2. (x)
3. (x) 4. (✓)

(B) The nurse ants send smelly messages to scout ants to alert them to find the food.

- 3 (A) 1. increases. 2. dolphins.
3. decreases
4. Humpback whale

(B) - Air is a transparent material.
- Rock is an opaque material.

Damietta Governorate

12 Damietta Edu. Zone

- 1 (A) 1. d 2. d 3. b 4. c

(B) To keep its body warm in extreme cold climate.

- 2** (A) 1. (✓) 2. (✓)
3. (✗) 4. (✓)

(B) structural adaptation.

- 3** (A) 1. e 2. a 3. d 4. b

(B) Lungs (all items belong to nervous system, while lungs belong to respiratory system).

El-Behira Governorate

13 Kafr El-Dawar Edu. Zone

- 1** (A) 1. sandy 2. 500
3. bodies
4. countershading.

(B) potential – kinetic

- 2** (A) 1. Buttress roots.
2. Gravity force.
3. Light energy.
4. Alveoli.

(B) Seatbelts.

- 3** (A) 1. a 2. a 3. c 4. a

(B) - Speed of car (a)

$$= \frac{\text{Distance}}{\text{Time}} = \frac{100}{20} = 5 \text{ m/sec.}$$

- Speed of car (b)

$$= \frac{\text{Distance}}{\text{Time}} = \frac{300}{20} = 15 \text{ m/sec.}$$

So, car (b) moves faster than car (a).

Beni-Suef Governorate

14 Science Inspectorate

- 1** (A) 1. b 2. d 3. d 4. d

(B) 1. Nervous system.
2. Nurse ants.

- 2** (A) 1. (✗) 2. (✗)
3. (✓) 4. (✗)

(B) 1. Anus (all items belong to respiratory system, while Anus belongs to digestive system).

2. Fennec fox (all items live in polar region, while fennec fox lives in desert region).

- 3** (A) 1. kinetic
2. penguin – polar bear.
3. light – countershading
4. lungs

(B) 1. B 2. A

South Sinai Governorate

15 Science Inspectorate

- 1** (A) 1. c 2. b 3. b 4. c

(B) Because cats have mirror-like membrane at the back of their eyes while human doesn't have mirror-like membrane so human cannot see in dark.

- 2** (A) 1. (✗) 2. (✓)
3. (✓) 4. (✗)

(B) During inhalation, the diaphragm contracts and moves downward while during exhalation process, it relaxes and moves upward.

- 3** (A) 1. c 2. d 3. a 4. b

(B) Because bats depend on echolocation to hunt their preys at night.