

Answer key for the exercises in the lesson

Exercises for Summative Assessment

I. Fill in the blanks.

1. The magnitude of earthquakes is measured in Richter scale.
2. Cyclonic winds rotate anti-clockwise in the northern hemisphere and clockwise in the southern hemisphere.

3. When there have been no rains for several years, droughts occur.
4. Anthrax virus is a deadly germ used in biological warfare.
5. The atom bomb was dropped on Nagasaki and Hiroshima in Japan by the USA.

II. Distinguish between:

1. Natural and human-made disasters.

Natural disasters	Human-made disasters
1. Natural disasters are the sudden, unexpected occurrences due to geographical factors that cause massive and rampant destruction. They can be due to internal and external disturbances on the Earth. 2. Examples are earthquakes, volcanoes, floods and droughts	1. Human-made disasters are massive and rampant destruction caused by human activities. 2. Examples are industrial accidents, environmental pollution, wars and terrorist attacks

2. Cyclone and flood

Cyclone	Flood
1. Cyclones are powerful, spinning storms which form over warm tropical waters. 2. Wind speeds during a cyclone can reach up to 120 km per hour. 3. Tropical cyclones move anti-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.	1. Floods happen when a river has too much water in its channel. 2. The water then breaks through the river banks and spreads over the surrounding land.

3. Biological warfare and nuclear warfare.

Biological warfare	Nuclear warfare
1. Biological agents like anthrax or viruses causing epidemics, are released into the air or water bodies to cause death and destruction by the enemies or terrorists. These weapons can be manufactured or cultured at a cheap cost and can be used without technical devices. Biological weapons can work instantly without much of visible symptoms initially. If the diagnosis gets delayed, it can kill people in large numbers and make the region further prone to epidemics. It is believed that just a 100gm of anthrax released over a big metropolitan city, can kill about three million people.	1. Exposure to nuclear radiation at close quarters can be fatal for all living beings. In nature, radioactive substances are found below the earth or in such low concentration that they pose no danger to humans. Scientists invented ways of harnessing the energy stored in such radioactive substances. Nuclear bombs have been invented which can cause death and destruction on a horrific scale. Nuclear bombs were used by the USA during World War II. The Japanese cities of Nagasaki and Hiroshima on which the bombs fell were wiped off the face of the Earth.

2. In such cases, the following precautions need to be taken. It is advisable to wear a tightly fitting gas-mask or cover the mouth and nose with a cloth, move away from the site immediately, inform the governmental agencies, follow instructions of the local authorities, and seek medical attention without wasting much time.	2. Precautions to be taken are that one should check for the symptoms of nausea, dizziness, vomiting, etc. They are symptomatic indicators of exposure to radioactivity. You can also feel a wave of heat. In such situations stay calm and follow the advice of the local authorities and close the doors and windows of your house and stay indoors.
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III. Answer the following questions.

1. What are disasters? How are they classified?

A disaster can be defined as a sudden, unexpected occurrence that causes massive, rampant damage to lives and property of people. Earthquakes, floods, cyclones, droughts, wars and major industrial accidents, are all examples of disasters. We can classify disasters broadly into two categories based on the cause, i.e., natural disasters (caused by geographical factors) and human-made disasters (caused by human activities).

2. What is disaster management?

According to the World Bank, disaster management is the body of policy and administrative decisions and operational activities which pertain to the various stages of a disaster at all levels. In other words, disaster management studies how the impact of disasters can be mitigated or lessened, tries to prepare people to deal with disasters and its aftermath of death and destruction, and tries to monitor, predict and prevent the occurrence of disasters.

3. Define epicentre. What are the precautions to be taken before, during and after an earthquake?

The point of origin in the interior of the earth from where the seismic energy is released is called seismic focus. The point perpendicularly above it on the surface of the earth is called the epicentre. The shockwaves, called seismic waves, which travel outside from the epicentre in concentric circles, cause the damage to places lying enroute. The closer a place to the epicentre the greater is the damage. Before an earthquake, one should prepare a home earthquake plan. During an earthquake, the following precautions can be taken.

- Identify a safe place at home, school and office – under a sturdy table or desk or against an inside wall where nothing can fall on you.
 - Practice the three vital steps of drop, cover and hold on. Drop under a sturdy desk or table, hold on, and protect your eyes by pressing your face against your arm. If there is no table or desk nearby, sit on the floor against an interior wall away from windows, bookcases, or tall furniture that could fall on you.
 - If you are outside during an earthquake, stay away from buildings, trees, and electric poles which can fall on you.
 - All buildings in the earthquake prone regions should be made as per the specifications laid down by the Indian government. They should be bolted firmly to the ground.
 - Learn first aid and to operate a fire extinguisher.
 - Last but not the least, do not panic, and stay calm.
- For coping with the aftermath, the following steps should be taken.
- After the earthquake subsides, check for any injuries you might have received.
 - Expect aftershocks. Each time you feel one, drop, cover and hold on.
 - Inspect your home for damage. Take everyone outdoors if your home is unsafe.
 - Look out for people who need your help – the injured or the ones who are still trapped under debris.
 - Administer first aid, and then call for help. Call either the police or the control personnel.
 - Look for and extinguish small fires. Eliminate fire hazards. Turn off the gas if you smell gas or think it is leaking.
 - Listen to the radio for instructions.

- Use the telephone to report life-threatening emergencies.
- Offer help in the relief camps set up to take care of the victims.

4. What is a cyclone? What is the kind of damage inflicted by a cyclone?

Meteorologically, cyclone is a system of rotating winds over a vast area, spinning inward to a low pressure centre (anti-clockwise in the northern hemisphere and clockwise in the southern hemisphere.). It usually causes stormy weather, commonly called a low pressure. Cyclones are accompanied by strong winds, heavy prolonged rains, and storm surges. Cyclones can cause immense damage. Torrential rains during a cyclone can cause flooding, extremely strong winds which carry debris can be lethal, cyclones damage buildings and property, destroy crops, capsize boats at sea, uproot trees, cause rampant deaths due to drowning, and destroy infrastructure, thus paralysing road and rail services.

5. What are floods? Write a brief note on floods in India and how they are dealt with.

Floods happen when a river has too much water in its channel. The water breaks through the river banks and spreads over the surrounding land. Floods are an annual feature in India. During the monsoon months many of the rivers flood their banks. Bihar and Orissa are the worst affected states. Millions of people are left homeless and all their earthly possessions washed away by the raging waters of the flood. Many drown. The government with the help of the army and navy launches rescue operations to move marooned people to safer places. Food packets are air-dropped for people who are still trapped in unreachable places. Relief camps are opened where the affected can stay till the flood waters recede. After the water recedes, rehabilitation work starts. Bleaching powder is sprayed all over the place to prevent the outbreak of epidemics. Houses are rebuilt and lost cattle are accounted for. However, for many small farmers, the annual floods are a blessing. The river water deposits rich alluvium in

their fields, thereby preparing the land for the next crop.

6. Mention a few effects of droughts. What are the measures that can be taken to reduce its impact?

Some of the effects of droughts are hunger, thirst and famine, wild fires, diseases, social conflicts, migration and relocation. The following precautions can be taken in drought-risk areas.

- Construction of reservoirs in advance to store water for emergency.
- Educating farmers periodically to avoid over cropping and overgrazing.
- Checking deforestation and planting of trees.
- Rainwater harvesting.
- Formulating policies and programs to limit settlement in drought-prone areas.
- Formation of communities to monitor the crop and food situation in the region.
- Spreading awareness about the situation and drought related problems.
- Urging people not to waste water or food.

7. List a few human-made disasters.

Human-made disasters are caused because of the negligence and mistakes of human beings. Sometimes they may even be caused due to some deliberate actions of individuals, groups or governments. They include terrorism, wars, riots, use of weapons of mass destruction, industrial accidents, large fires, and collapse of economic and social structures.

8. Explain in brief about weapons of mass destruction.

The weapons of mass destruction refer to nuclear, biological and chemical warfare. They can cause death on a massive scale and cause permanent damage to health among the living. An example of nuclear weapons is the atom bomb. An atom bomb was dropped at Hiroshima and Nagasaki in Japan by USA during World War II, after Japan bombed Pearl Harbour. Bombs are another type of weapon of mass destruction which is used by terrorists to blow up crowded places. Germ

Warfare refers to a situation where germs of deadly diseases like smallpox, jaundice, etc are released among the enemy to infect and kill them. Chemical Warfare is another method of creating mass destruction. Chemicals like 'Agent Orange' and 'Napalm' are used during war, while sometimes chemicals are released to pollute water and cause epidemics.

9. What precautions can be taken during chemical disasters?

Precautions to be taken to mitigate chemical disasters are as follows:

- Find out whether the industrial units close to your city use hazardous chemicals.
- Find out about the emergency plan to deal with industrial accidents.

- Find out about the antidotes needed in case of poisoning of people, animals, water resources, etc., and their availability.
- Find out from the hospitals, if they are capable of handling cases of exposure to chemicals.
- Keep a chart of Do's and Don'ts in case of chemical disaster.

Multiple Choice Questions

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

Value-based question

- A positive attitude
- Courage
- Being resourceful

Answer key for the worksheet

- I. 1. Human-made disaster 2. Natural disaster
3. Natural disaster 4. Human-made disaster
- II. 1. b and c 2. c 3. c 4. b
- III. 1. Earthquakes are sudden mild or violent tremors on the surface of the Earth. Earthquakes originate from the interior of the Earth. This point of origin is called seismic focus. The point directly above this is called the epicentre. The shockwaves, or the seismic waves, travel outwards from the epicentre in concentric circles, causing immense damage to places lying enroute. Earthquakes can cause death, avalanches,

tidal waves, fire, rivers to change course and structural damage to the things that are on the path of the seismic waves.

2. We can prevent road accidents by strictly following traffic rules such as, using the zebra crossing while crossing roads, using the footpaths while walking, following traffic signals and standing in a queue while boarding buses. We can also prevent accidents by increasing the awareness of people by organising Traffic Safety Weeks. We should inform police stations and fire stations about accidents we have witnessed.