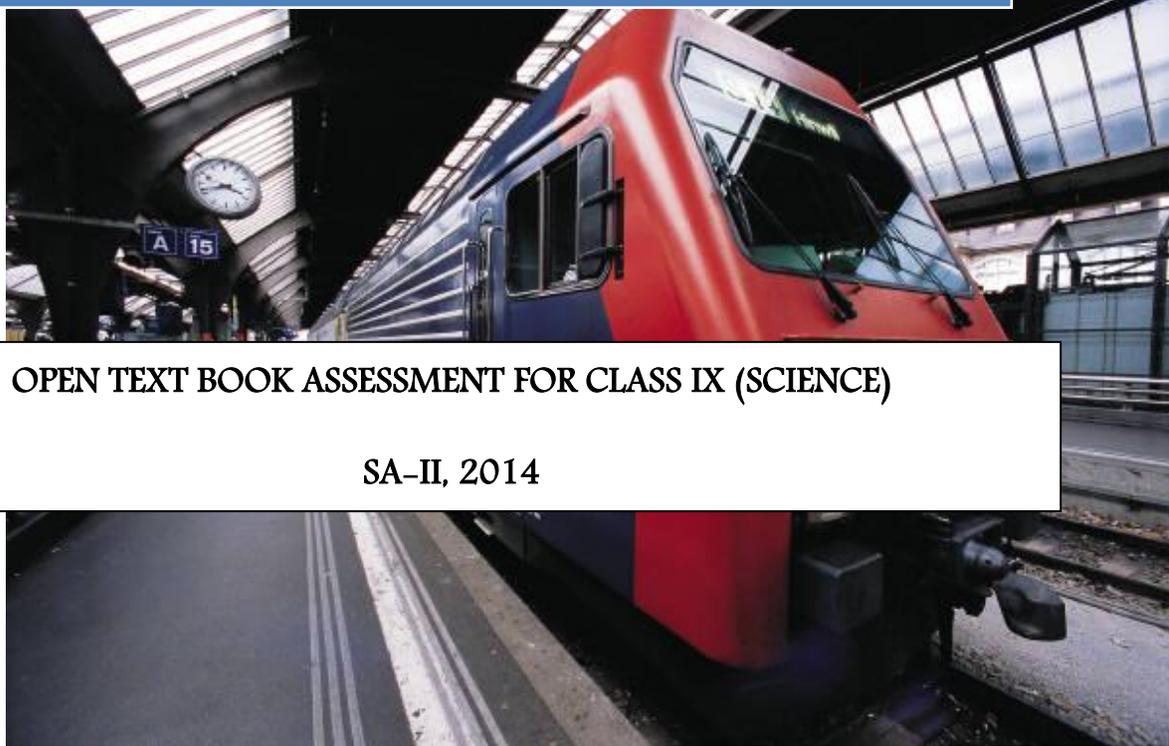


KENDRIYA VIDYALAYA SANGATHAN- New Delhi

केन्द्रीय विद्यालया संगठन- नई दिल्ली

2014

Zonal Institute of Education & Training
Bhubaneswar



OPEN TEXT BOOK ASSESSMENT FOR CLASS IX (SCIENCE)

SA-II, 2014

Prepared under the Guidance of Ms. Usha Aswath Iyer, DC/Director of ZIET, BBSR

Prepared by

1. Mrs. Hajra Sheikh PGT(Chemistry)
2. Mrs. T. Samrajya Lakshmi PGT(Physics)

CONTEXT

This Material is prepared to help the students to understand and analyse the passage given. Also the teacher is requested to make students sit in a group and come out with answers after a discussion. The paragraph wise questions and questions that involve thinking, analyzing and reflecting are also included. In Group work, will lead to development of maximum potential of the student.

A mind map has been made at the end of each theme to aid the students understanding. The students could be made to make such mind maps after reading the open text passage. Mind maps can be made still simpler.

The given Open text material is for use in Summative Assessment II of Class IX (2014)

OPEN TEXT BASED ASSESSMENT SA II MARCH 2014

SCIENCE (086): CLASS IX

THEME—I CLEAN AIR- A SHARED CONCERN

Answer the following		Each question carries one mark
1	Name the conditions of the atmosphere that provides excellent conditions to support and sustain life.	
A	The atmosphere comprising of mainly Nitrogen, Oxygen, Carbon dioxide and water vapour provides excellent conditions to support and sustain life.	
2	What are pollutants?	
A	The undesired components which contaminate air are called pollutants.	
3	Name the gas that is necessary for the survival of life on earth.	
A	Carbon dioxide is necessary for the survival of life on earth.	
4	Name the phenomenon that is essential to maintain and keep the earth's atmosphere warm.	
A	Photosynthesis	
5	What is the cause for the depletion of ozone layer?	
A	The use of refrigerators and air conditioners, fire extinguishers, aerosol sprays like deodorants etc. results in release of CFCs and N ₂ O in the atmosphere which is responsible for depletion of ozone layer	
6	Give the consequences of depletion of ozone layer	
A	UV radiations enter into the atmosphere causing damage to all kinds of life on earth.	
7	What is NAMP?	
A	NAMP stands for National Air Quality Monitoring Programme.	
8	What is the significance of PM ₁₀ ?	
A	PM ₁₀ is the term used to describe tiny particles in the air, made up of a complex mixture of soot, organic and inorganic materials having particle size less than or equal to 10 microns diameter(10 microns is equal to one hundredth part of a millimeter)	
9	What do PTI and IST stand for?	
A	Press Trust of India, and Indian Standard Time	
10	What is the place of Air pollution in taking lives of people in India?	
A	Air pollution is the fifth largest killer in India taking 6.2 lakh lives per year.	

Answer the following		Each question carries 2 marks
1	Name the five most critically polluted regions in the country.	
A	Delhi, Ghaziabad, Gwalior, West Singbhum district in Jharkhand and Raipur are the five most critically polluted regions in the country.	
2	How acid rain is is formed?	
A	The oxides of sulphur, carbon, and nitrogen released into the atmosphere from chimneys of Industries and exhaust of vehicles react with water of the rains and oxygen from air to form acids. Dissolved acids make the rain acidic in nature.	
3	What is the affect of acid rains on the environment?	
A	Acid rains are very harmful for both, living and nonliving things. Acid rains damage crops, pollute soil and water, ruin the harvest, damage aquatic life and erode buildings.	
4	Name the undesirable components which contaminate and cause air pollution	
A	The harmful Ozone in the lower atmosphere, Carbon monoxide, Nitrogen dioxide, Solid or liquid matter that is suspended in the air, Sulfur dioxide, Lead, Arsenic, asbestos, benzene and dioxin, Green House gasses Carbon dioxide methane and nitrous oxide are the components which cause air pollution.	
5	What is the effect of carbon monoxide on the life on earth?	
A	<ul style="list-style-type: none"> ● It makes the body parts hard to get the necessary oxygen ● More exposure makes people feel dizzy and tired ● High concentrations is fatal People suffering from heart disease are hospitalized more often.	

6	What is the importance of Earth Day? When is it celebrated
A	To give awareness to the people towards keeping the planet Earth non polluted, Earth Day is celebrated on April 22 every year.
7	What is Global warming?
A	Increase in the levels of CO ₂ due to excessive burning of fossil fuels and other carbon containing fuels which results in excessive heating of the earth's surface is called Global Warming.
8	What are the greenhouse gases present in the earth's atmosphere in their order of abundance in the atmosphere
A	Water vapour, Carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons.
9	What made the Governments of different nations take up the problem of air pollution to a central stage?
A	Smog which surrounded the city of London in the year 1952 resulted in the loss of about 4000 human lives and many others suffering from serious breathing problems . This made Governments of different nations to take-up the problem of air pollution to a central stage.
10	Visibility is very low during winters. Why?
A	Smog is a mixture of smoke dust particles and fog. The smoke emitted from the exhaust of the vehicles settles over fog in winter and reduces the visibility
11	What is the effect of Air toxics on the Human beings?
A	Air toxics can impair lung function and neurodevelopment, or aggravate existing conditions, such as asthma. Infants who were born premature or growth-retarded may be particularly vulnerable to additional environmental affects..
12	From picture no. 5 name the diseases affecting children of 0 to 5 years.
A	Diseases affecting children in the age from 0 to 5 years are High respiratory rate, Respiratory death cough bronchitis wheeze and ear infections
13	From picture no 5 name the diseases affecting children of 6 to 12 years.
A	Chronic cough and bronchitis, Reduced lung function, wheezing and asthma attacks,.

14	From the bar graph find out in which city there are more number of ill health children and less number of ill health children and give your conclusions.
A	In Nagpur there are more number of unhealthy children because Nagpur is more polluted and in, Hyderabad there are less number of unhealthy children because Hyderabad is comparatively less polluted. There are more number of unhealthy children in Nagpur than the other cities. The city does not have large industries and hence the high SPM levels are mainly due to demolition of buildings, construction activity, and excavation of roads
15	What is PM10? Give the unit of measurement of PM10?
A	PM10 is particulate matter. The unit of measurement of PM10 is microgram per cubic metre or $\mu\text{gm}/\text{m}^3$
16	From the table showing the Ambient Air quality factor of different cities, find the cities which are high in pollution and why?
A	From the table Gwalior and Raipur are the cities which are more polluted because in those places PM 10 311 and 310 which is 1.5 times more than the National standards.
17	What are the national standards of Ambient Air Quality for Residential, Industrial, and other areas?
	National Ambient Air Quality standard for Residential Rural and other areas(Annual average) for $\text{SO}_2 = 50$ microgram per cubic metre , $\text{NO}_2 = \mu\text{gm}/\text{m}^3$ PM 10= $60 \mu\text{gm}/\text{m}^3$
18	State two uses of Carbon dioxide.
	Carbon dioxide is an essential raw material for <ul style="list-style-type: none"> i. Photosynthesis ii. Green house effect

Answer the following Each question carries 3 marks	
1	Give the effect of Ozone on life on earth
A	Ozone can lead to more frequent asthma attacks in people who have asthma and can cause sore throats, coughs, and breathing difficulty. It may even lead to premature death. It can also hurt plants and crops.
2	What is the effect of Air Pollution on Taj Mahal? Give reasons for the same.
A	Taj Mahal is turning yellow because of air pollution. Glass factories, rubber industries, Mathura Oil refinery and other industries of the neighbouring towns which burn fossil fuels are responsible for this. These industries release soot particles and gases into the atmosphere. The soot particles turn the colour of the marble to yellow and gases react with water to form acid rain which corrodes the marble of the monument
3	What are the steps taken by the Govt to protect the Taj Mahal?
A	Steps taken by the Government in protecting the monument are <ul style="list-style-type: none"> ○ Government has put a ban on driving near the Taj Mahal. ○ All cars and buses are parked roughly 1km away. ○ Battery run buses or horse-drawn carriages have been set up for visitors to reach the monument. ○ Industries in neighbouring towns are being persuaded to use cleaner fuels like CNG and LPG instead of coke in their furnaces.
4	What is marble cancer?
A	Taj Mahal is turning yellow because of air pollution. Glass factories, rubber industries, Mathura Oil refinery and other industries of the neighbouring towns which burn fossil fuels are responsible for this. These industries release soot particles and gases into the atmosphere. The soot particles turn the colour of the marble to yellow and gases react with water to form acid rain which corrodes the marble of the monument.

	This phenomenon is called ‘Marble Cancer’.
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5	Match the following																
A	<table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; width: 50%;">GROUP-A</th> <th style="text-align: left; width: 50%;">GROUP-B</th> </tr> </thead> <tbody> <tr> <td>a. April 22</td> <td>1. Tiny particles in the atmosphere</td> </tr> <tr> <td>b. Greenhouse gas</td> <td>2. Chlorofluorocarbons</td> </tr> <tr> <td>c. Refrigeration</td> <td>3. pollution free place</td> </tr> <tr> <td>d. Malappuram</td> <td>4. Highly polluted city</td> </tr> <tr> <td>e. Gwalior</td> <td>5. Continuous Development</td> </tr> <tr> <td>f. PM 10</td> <td>6. carbon dioxide</td> </tr> <tr> <td></td> <td>7. Earth Day</td> </tr> </tbody> </table>	GROUP-A	GROUP-B	a. April 22	1. Tiny particles in the atmosphere	b. Greenhouse gas	2. Chlorofluorocarbons	c. Refrigeration	3. pollution free place	d. Malappuram	4. Highly polluted city	e. Gwalior	5. Continuous Development	f. PM 10	6. carbon dioxide		7. Earth Day
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6	State whether the following statements re TRUE or FALSE.																
	<ul style="list-style-type: none"> a. TajMahal is suffering from Marble Cancer. b. Air Toxics can affect lung function and neuro development. c. Greenhouse gases Keep the room cool d. Refrigeration causes the release of Chlorofluoro carbons e. Taj Mahal is polluted by its surrounding Industries . 																
7	What is PM10?																
	<p>Particulate matter (PM10) pollution consists of very small liquid and solid particles floating in the air. Of greatest concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. These particles are less than 10 microns in diameter – about 1/7th the thickness of the human hair – and are known as PM10. This includes fine particulate matter known as PM2.5.</p> <p style="text-align: center;">(Or)</p> <p>PM10 is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Particulate matter also forms when gases emitted from motor vehicles and industry undergoes chemical reactions in the atmosphere.</p>																
8	What are the sources of PM10?																
	<p>There are sources of PM10 in both urban and rural areas, major sources include:</p> <ul style="list-style-type: none"> a. Motor vehicles. 																

	<ul style="list-style-type: none"> b. Wood burning stoves and fireplaces. c. Dust from construction, landfills, and agriculture. d. Wildfires and brush/waste burning. e. Industrial sources. f. Windblown dust from open lands.
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9	What is NAMP? What are the objectives of NAMP?
A	<p>NAMP is National Air quality Monitoring Programme.</p> <p>The objectives of NAMP are</p> <p>To determine status and trends of ambient air quality;</p> <ul style="list-style-type: none"> ○ To ascertain whether the prescribed ambient air quality standards are violated, to identify Non-attainment cities. ○ To obtain the knowledge and understanding necessary for developing preventive and corrective measures; <p>To understand the natural cleaning process undergoing in the environment through pollution, dilution, dispersion, wind based movement, dry deposition, precipitation and chemical transformation of pollutants generated.</p>
10	How does Air pollution affects you?
	<p>PM10 is among the most harmful of all air pollutants. When inhaled these particles evade the respiratory system's natural defenses and lodge deep in the lungs.</p> <p>Health problems begin as the body reacts to these foreign particles. PM10 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections.</p> <p>Although particulate matter can cause health problems for everyone, certain people are especially vulnerable to PM10's adverse health effects. These "sensitive populations" include children, the elderly, exercising adults, and those suffering from asthma or bronchitis.</p> <p>Of greatest concern are recent studies that link PM10 exposure to the premature death</p>

	of people who already have heart and lung disease, especially the elderly
11	What steps do you take to control Air Pollution at your level?
	<p>OZONE (O₃): Ozone can lead to more frequent asthma attacks in people who have asthma and can cause sore throats, coughs, and breathing difficulty. It may even lead to premature death..</p> <p>Carbon Monoxide (CO): Carbon monoxide makes it hard for body parts to get the oxygen they need to run correctly. Exposure to carbon monoxide makes people feel dizzy and tired and gives them headaches. In high concentrations it is fatal. Elderly people with heart disease are hospitalized more often when they are exposed to higher amounts of carbon monoxide.</p> <p>Particulate Matter (PM): Particulate matter that is small enough can enter the lungs and cause health problems. Some of these problems include more frequent asthma attacks, respiratory problems, and premature death.</p>
12	Malappuram in Kerala state is considered to be pollution free. Justify your answer
	The status of Ambient Air Quality in Malappuram is below the actual standards of National Ambient Air quality i. e., SO ₂ = 2µgm/m ³ . NO ₂ = 52µgm/m ³ . PM 10 = 30µgm/m ³ . Since these values are very much below the national standards the city is considered to be pollution free
13	What steps do you take to control Air Pollution at your level?
	<ul style="list-style-type: none"> * Hang dry some-or all-of the laundry. Walk, ride your bike or take a bus to work. * Share a ride with a friend or co-worker. * Turn out the lights in empty rooms and when away from home. * Avoid burning trash or leaves * Hang dry some-or all-of the laundry. * Reduce the number of trips you make in your car. * Avoid the use of air conditioners altogether. * Take the train or bus on long trips.
14	As a student what all actions can you take to make your environment clean
A	<ol style="list-style-type: none"> a. Conserve energy in your home, office and automobile. b. Purchase clean electric power. c. Manage your heating and cooling. (Turn your thermostat down in the winter and up in the summer whenever you are at work,

	<p>sleeping or on vacation.)</p> <p>d. Cut back on the amount of packaging you purchase and the amount of household waste you produce (by composting).</p> <p>e. Reduce the amount of time you spend in the car. (Carpool or use public transportation whenever you can)</p> <p>f. Improve your fuel economy. Avoid accelerating quickly, braking hard and driving at high speeds, particularly when in heavy traffic. Remove excess weight from your car and remove unused roof racks or bike carriers, which cause drag.</p>
16	Study picture 5 and answer the following question. How do the pollutants affect the children?
A	Early childhood is a critical period for the continued development and maturation of several biological systems such as the brain, lungs, and immune system. Air toxins can impair lung function and neurodevelopment, or aggravate existing conditions, such as chronic cough, bronchitis, reduced lung function, wheezing and asthma. Infants who were born premature or growth-retarded may be particularly vulnerable to additional environmental insults.

Answer the following	Each question carries 5marks
1	<p>‘Carbon dioxide is necessary for the survival of life on Earth as it is an essential raw material for the process of photosynthesis and greenhouse effect. This effect is essential to maintain and keep the earth’s atmosphere warm to sustain life. But due to excessive burning of fossil fuels and other carbon containing fuels, there has been an excessive release of CO₂ in the atmosphere. The increasing CO₂ levels in the atmosphere lead to excessive heating in the earth’s surface. The heating results into a new phenomenon called Global Warming.’</p> <p><i>Answer the following questions:</i></p> <p>a. What is the function of greenhouse gas?</p> <p>b. Give any two uses of the gas that is released in the process of photosynthesis.</p> <p>c. What are the greenhouse gases?</p>
A	a. The functions of greenhouse gases are to absorb heat from sunlight and

	<p>trap it in the atmosphere to warm the Earth and melt the ice caps.</p> <p>b. Carbon dioxide gas is involved in the production of refrigeration systems, welding systems, water treatment processes (to stabilize the pH of water) and carbonated beverages.</p> <p>c. Water vapour, Carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons</p>
2	<p>What are the effects of Acid rain on Environment?</p> <p>Effects on vegetation. Acid rain corrodes the protective covering of leaves of the plants, which affect the photosynthesis of the plants. Due to lack of nutrition, plants become vulnerable to disease. Another cause of lack of nutrition for trees may be due to acid rain getting absorbed by the soil. The harmful acids can have hazardous effects on the roots of the trees</p> <p>Effects on soil. the soil has abundant various metals and minerals. When these metals come in contact with acid rain there can be some harmful chemical reactions. These reactions can lead to soil erosion. Acid rains are known to reduce the fertility of the soil, leaving the land barren. Harmful acids can also reduce the amount of soil microorganisms which perform important job of breaking down the dead and decayed plants and other beings.</p> <p>Effects on Aquatic Flora and Fauna. Acid rain can directly affect the aquatic life, as the high amount of sulphuric acid and nitric acid levels in acid rains are directly consumed by aquatic plants and animals. The harmful acids affects the ability of fish to take in nutrients, salt, and oxygen. Aquatic animal's intake oxygen from the water through their gills, but harmful acids leads to mucus formation in the gills, which hinders their ability to respire. Acid rains affect the pH level of water which reduce the absorption capacity of essential nutrients of the aquatic life.</p> <p>Effects on Human Health: As acid rain affects the soil making it poisonous, the food which is grown on this soil is also contaminated. This food can seriously hamper our entire body system and may cause death. The release of various gases in the atmosphere leads to lung problems</p>
3	<p>Identify from the pictures and data given in the text, the diseases which occur in children of age group 6 to 12 and 0 to 5 due to air pollution. Analyse the given data and draw conclusion about health of children and pollution levels of various cities in India. What are the steps taken by the authorities and communities to check the same?</p>
	<p>Diseases which occur in children of age group 6 to 12: due to air pollution</p> <ul style="list-style-type: none"> ➤ Increase in lung volume

	<ul style="list-style-type: none"> ➤ Chronic cough and bronchitis ➤ Reduced lung function ➤ Wheezing and asthma attacks ➤ Respiratory problems <p>Diseases which occur in children of age group 0 to 5 due to air pollution</p> <ul style="list-style-type: none"> ✓ Alveolar development ✓ Respiratory death ✓ Cough , bronchitis wheezing, ear infections and illness <p>There are more number of unhealthy children in Nagpur than the other cities. The city does not have large industries and hence the high SPM levels are mainly due to demolition of buildings, construction activity, and excavation of roads.</p> <p>STEPS TAKEN BY THE Govt TO CHECK AIR POLLUTION :</p> <ol style="list-style-type: none"> 1. Proper care needs to be taken during demolition and excavation to ensure that dust does not settle in air 2. Planting more trees 3. Proper disposal of bio- medical waste.
4	<p>Air pollution-fifth largest killer in India</p>  <ol style="list-style-type: none"> i. What are the effects of burning agricultural waste? ii. What are the health effects of Carbon Monoxide? iii. How can pollution prevention be achieved?
A	<ol style="list-style-type: none"> i. Burning agricultural waste is a source of particulate matter and other pollutants. It can greatly affect the regional air quality, visibility and ground level zero potential.

	<p>ii. When we breathe air containing CO it is absorbed through the bloodstream where it displaces oxygen and bonds with the hemoglobin in your blood. Carbon monoxide has a greater affinity to hemoglobin than oxygen; CO bonds to hemoglobin about 250 times better than oxygen. Without oxygen, vital organs, your heart and brain become deprived and will begin to deteriorate. To compensate, your heart rate increases, breathing may become difficult and in the most serious circumstances cardiac trauma, brain damage, coma and even death will result.</p> <p>iii. Pollution may be prevented by many types of approaches.</p> <ol style="list-style-type: none"> a. Reduction of pollutants can be achieved by using raw materials, energy, and water more efficiently. b. Conserving and protecting natural resources can also reduce the amount of waste produced. c. Actions which may prevent and reduce pollution include: product redesign substitution of raw materials process or equipment modifications improvements in maintenance, training, inventory control and housekeeping.
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Answer the following		Higher Order thinking questions.
1	A farmer plants the crop in the field. After some days he finds the plants to be dead. He plants the crop once again and finds the same result. What may be the cause for this . Give your answer.	
A	The Plants die due to the effect of acid rain. Acid rain does not affect the trees directly, Instead it weakens them by damaging their leaves and roots or poisoning them with toxic substances. Nutrients present in the soil are destroyed by the acidity. Useful microorganisms which release nutrients from decaying organic matter, into the soil are killed off, resulting in less nutrients being available for the plants	
2	<p>In an accident in a chemicals and fertilizers industry there was release of CO₂ gas into the atmosphere. During the next rain Sudha got wet. Red rashes followed by itching were formed on her body.</p> <ol style="list-style-type: none"> i. What could be the cause of this? ii. Suggest some methods to reduce this effect. 	
A	<ol style="list-style-type: none"> i. This could be caused due to acid rains. The first shower of rainfall contains acid H₂CO₃. When water containing acid comes in contact 	

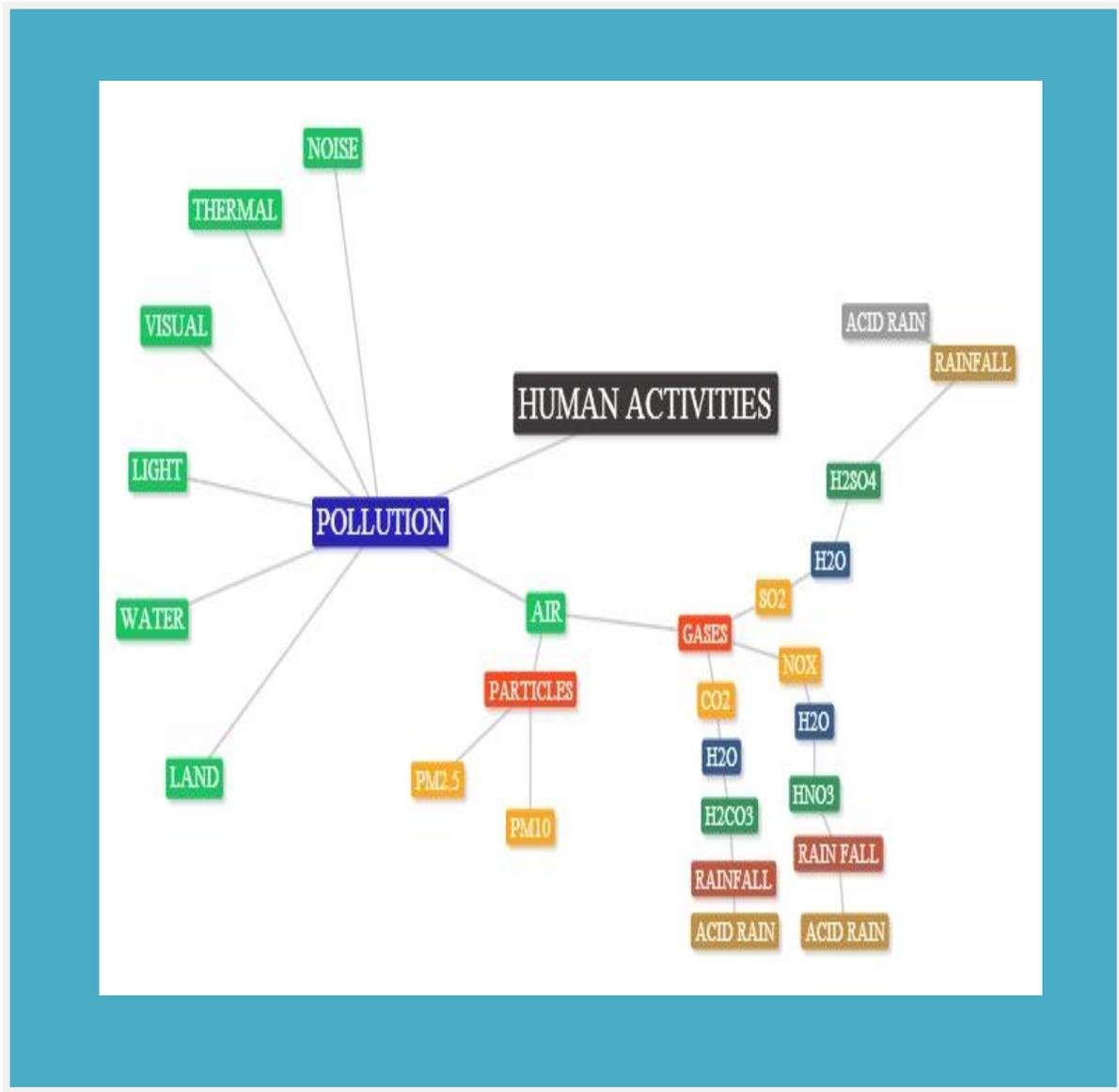
	<p>with the skin, denaturation of proteins occurs.</p> <p>ii. Many precautions can be taken to minimize such pollutions by spreading awareness and educating people.</p> <p>a. Factories can be closed down if they do not adhere to the standards prescribed by the pollution control board.</p> <p>b. Monitoring of the gases such as Carbon dioxide, sulphur dioxide and other gases that are released from the factories</p> <p>c. Using efficient fuels where ever fuel is required</p> <p>d. By planting trees in the surroundings</p>	
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Answer the following questions . Teachers are requested to make the children answer these questions by the way of group work

1	Think of a Model which can give signals when the pollution coming out of the factory or appliance exceeds beyond the prescribed levels	
2.	Suppose that a place is highly polluted and filled with gases of CO ₂ , SO ₂ , PM etc. Think of the ways that gases will not mix or minimise the amount that they mix with rain water to form acids and fall on the ground.	
3	How to protect the the monuments from the pollution.	

1. Theme–Clean Air–A shared Concern

CONCEPT MAP - 1



CONCEPT MAP -2



2. THEME- ENVIRONMENT AND DEVELOPMENT – LESSONS FROM THE HILLS

Answer th following .		Each question carries 1 mark
1	Give the reason for the enhancement of quality of man's living	
A	Enhancement of quality of living in man's life is due to his ability and power to transform his environment through technological developments	
2	What was the highest rainfall that was recorded in Uttarakhand till 2012.What was the rainfall recorded on 16 th and 17 th June 2013 within a period of 24 hours	
A	The highest rainfall recorded till 2012 was 350.5mm in 1970.The rainfall recorded on 16 th and 17 th within a span of 24 hours was 370 mm.	
3	What is the average monthly rainfall during the months of June , July and August	
A	In the month of June average monthly rainfall is 210mm while in July and August it is more than 600mm.	
4	What is the highest ever single day rainfall in June for the state of Uttarakhand	
A	It is 370mm.	
5	Name a disaster caused by natural reasons?	
A	Tsunami , Earth quake etc.	
6	Name a disaster caused by manmade reasons?	
A	Bomb blast, Terrorism	
7	Name a device used for collecting and measuring the amount of rain which falls.	
A	Rain gauge	
8	What do you mean by eco-friendly tourism?	
A	Tourism without upsetting the existing balance in nature at a place is called eco – friendly tourism.	
9	Who is an Ecologist?	
A	A biologist who studies the relation between organisms and their environment is an ecologist.	
10	What is meant by Disaster Management ?	
A	‘Disaster management can be defined as the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters. ¹⁷	
12	What is the place of Uttarakhand on the Tourism map among all states.	
A	Uttarakhand ranks eighth on the Tourism Map.	
13	What is meant by cloudburst?	

A	The cloudburst is a localized weather phenomena representing highly concentrated rainfall over a small area lasting for few hours.
14	What is meant by landslide?
A	A large mass of rocks and earth that suddenly and quickly moves down the side of a mountain or hill
15	To what percentage the tourists are increased from 2001 to 2012 in KEDARNATH
A	378%
18	Name the place in Uttarakhand where you can find more number of Hydel power Projects
A	PITHORAGARH where 62 number of hydel projects are constructed.
19	What is meant by Quarrying?
A	The extraction of building stone or slate or rock from the ground
20	What is the unit of rainfall?
	mm ie millimeters of rain because the rainwater is collected in a container kept in an open place for 24 hours and the height of the rainwater is noted in mm
21	How is the record of rainfall maintained?
	The record of rainfall is maintained on a daily basis by the meteorological department in the place. Generally the rainfall received over a year is reported to-- classify the place as one which receives torrential rains or average or scanty rainfall.
22	When is a place said to have torrential rains?
	A place which receives above 3000mm of rain per year is said to have torrential rains. Eg Cherapunji, western coast of India—particularly Karnataka and Kerala
23	Do landslides occur in all hills?
	The Mountains of the Himalayas and the Western Ghats are young mountains and hence the soil has not hardened enough. Hence the chances of occurrence of landslides are more.
24	Why do landslides occur?
	One of the reasons could be--The anthropogenic activities (Man Made activities) like cutting the hills to make roads and houses have lead to keeping the cut edges of the hill without support. Hence the landslide when there is a heavy rain. Such landslides can be reduced by constructing a retaining wall along the walls of the roads etc.

	Secondly deforestations also
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Answer th following .	Each question carries 2 mark
1	Give the factors which increased the amount of disaster in Uttarakhand
A	<p>The factors which increased the affect of Uttarakhand disaster are</p> <ol style="list-style-type: none"> a. Huge expansion of hydro–power projects to meet the growing demands of the expanding state b. Construction of roads to cope with the lakhs of tourists Poor disaster management
2	Give the name of the forces which helped in the rescue operations of Uttarakhand disaster (or) Give the details of Human help provided in the rescue operations of the Uttarakhand disaster.
A	The Army, Air Force, Navy, Indo–Tibetan Border Police(ITBP), Border Security Force(BSF), National Disaster Response Force(NDRF), Public Works Department and local administration worked together for quick rescue operations. Several thousand soldiers were deployed for the rescue missions. Acivists of political and social organizations were also involved in the rescue and management of relief centres.
3	How many numbers of Hydel Power Projects were constructed in Uttarakhand? How much area of forests have been cleared.
A	244 Hydel Projects were constructed and an area of 15,072 ha of forests have been cleared.
4	List the human activities that cause disaster such as land slide.
A	<ol style="list-style-type: none"> a. Cutting down of forests b. Building roads for promoting tourism, c. Unplanned structures d. Setting up industries and <p>Erroneous agricultural practices o barren hill slopes</p>
5	A report commissioned by theUnion Environment and Forests Ministry in May 2012 had warned the centre against going ahead with 24 hydropower projects planned on the Alaknanda and Bhagirathi river systems in Uttarakand.Why?
	<p>: Because It stated that</p> <ol style="list-style-type: none"> i. The projects would destroy 22 percent of the state’s forestland ii. Affect the unique Himalayan ecology along one–third of lengths of the two main tributaries of Ganga.
6	16. Uttarakhand is one of the most fragile regions suffering from poor soil stability. What is the meaning of poor soil stability?

	<ul style="list-style-type: none"> i. The soil is not hard enough to support the structures that are being built on it. ii. The soil is so loose that it can get washed away with water unlike the rocky mountains of the Aravali Mountain range.
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7	<p>17. What facilities were lacking in this area?</p> <ul style="list-style-type: none"> iii.
	<ul style="list-style-type: none"> a. There were no warning systems in place, b. no weathering monitoring systems near the major pilgrimage centres which saw a large number of tourists year after year. <p>There do not seem to be any rain-gauges at Kedarnath and Badrinath and hence one may never know how much rainfall fell at those sites and we will</p>
8	<p>List a few of the damages caused by the natural calamity in Utterakhund :</p>
	<p>The floods washed away entire villages and small towns and destroyed entire roads, cutting off large areas, as well as homes, hotels and pilgrimage sites. Much of the infrastructure in the affected areas—roads, bridges, dams and civic facilities — have been completely destroyed or damaged.</p>
\9	

Answer th following .		Each question carries 3 mark
1	What are the reasons for the irreversible damage that took place during the Uttarakhand disaster that took place on 16 th and 17 th June, 2013?	
A	<p>Causes for the damage that took place during the disaster are due to</p> <ul style="list-style-type: none"> a. Cloudburst and landslides 	

	<p>b. Cutting down of forests</p> <p>c. Building roads for promoting tourism,</p> <p>d. Unplanned structures</p> <p>e. Setting up industries and</p> <p>f. Erroneous agricultural practices o barren hill slopes</p> <p>g. Unscientific road building</p> <p>h. Constructing hydroelectric power plants</p>
2	A large number of Hydel projects are constructed in the state of Uttarakhand. Why?
A	The principle of Hydel project is that Potential energy of water falling from a height can be utilized to produce electric energy. The Uttarakhand region’s key resource is the water that flows from high glaciers and mountains to the plains. This resource was utilized to build hydropower projects that generate revenue mountains to the plains for the state.
3	What causes landslide in Uttarakhand?
A	<p>Many factors contribute to the instability of slopes, but the main controlling factors are the nature of the underlying bedrock and soil, the configuration of the slope, the geometry of the slope, and ground–water conditions.</p> <ul style="list-style-type: none"> • Improper cutting of a slope by stream erosion, wave action, glaciers, or human activities such as road building, • Continuous and Heavy rainfall, rapid snowmelt, fluctuations in ground–water levels, • Shocks or vibrations caused by earthquakes or construction activities, • Movement of heavy loads on upper slopes, or <p>One of these or a combination of these factors is a cause for the landslides in Uttarakhand.</p>
4	Fillin the blanks
	<p>a. A tributary of Ganga</p> <p>b. An instrument used to measure the rain fall _____</p> <p>c. Number of villages affected in Tehri is _____</p> <p>d. One of the causes of disaster in Uttarakhand is _____</p> <p>e. Uttarakhand ranks _____ among all states on the Tourism map</p>

Answer th following .

Each question carries 5 mark

1	<p>When the flood struck in Uttarakhand about 28 million tourists were visiting the state, while the local people are close to that number.</p> <ol style="list-style-type: none"> a. Does it really affect the ecological conditions of that region? If yes how? b. Do you think will it be a wise decision to ban tourism to this state? <p>Justify your answer.</p>
A	<ol style="list-style-type: none"> a. Yes, by cutting down the forest and dynamiting the mountains for building roads and hotels for promoting tourism will disturb the bio diversity because of the following reasons When a large population is concentrated over a small area it will have the effect of <ol style="list-style-type: none"> I. decrease of clean water II. decrease of the number of forest/deforestation to make a new house or had been converted into farmlands III. Increase of waste on the environment. It's condition make a unhealthy sanitation IV. Increase of infectious disease. So the people get sick easily V. Due to increase in population, greezone becomes smaller and smaller because of the construction of various facilities such as buildings, roads etc . Thereby only small amount of water can be absorbed into the soil. b. The decision to ban tourism completely from this state is not correct. It will affect the lively hood of local people who earn their bread and butter. State's revenue also gets affected due to this , Instead the following measures can be taken up <ol style="list-style-type: none"> 1. Instead of allowing a big group, people in small chunks can be allowed to visit. 2. Strict rules are to be enforced on the pilgrims and tourists in the disposing the Waste materials for promoting the healthy environment 3. The tourists as well as local people should be properly trained to face any natural disaster without disturbing the nature. 4. All hilly roads must have adequate drainage systems to fight with natural calamities 5. There has to be a mandatory environmental impact assessment for the construction of all state and national high ways and broadening of roads

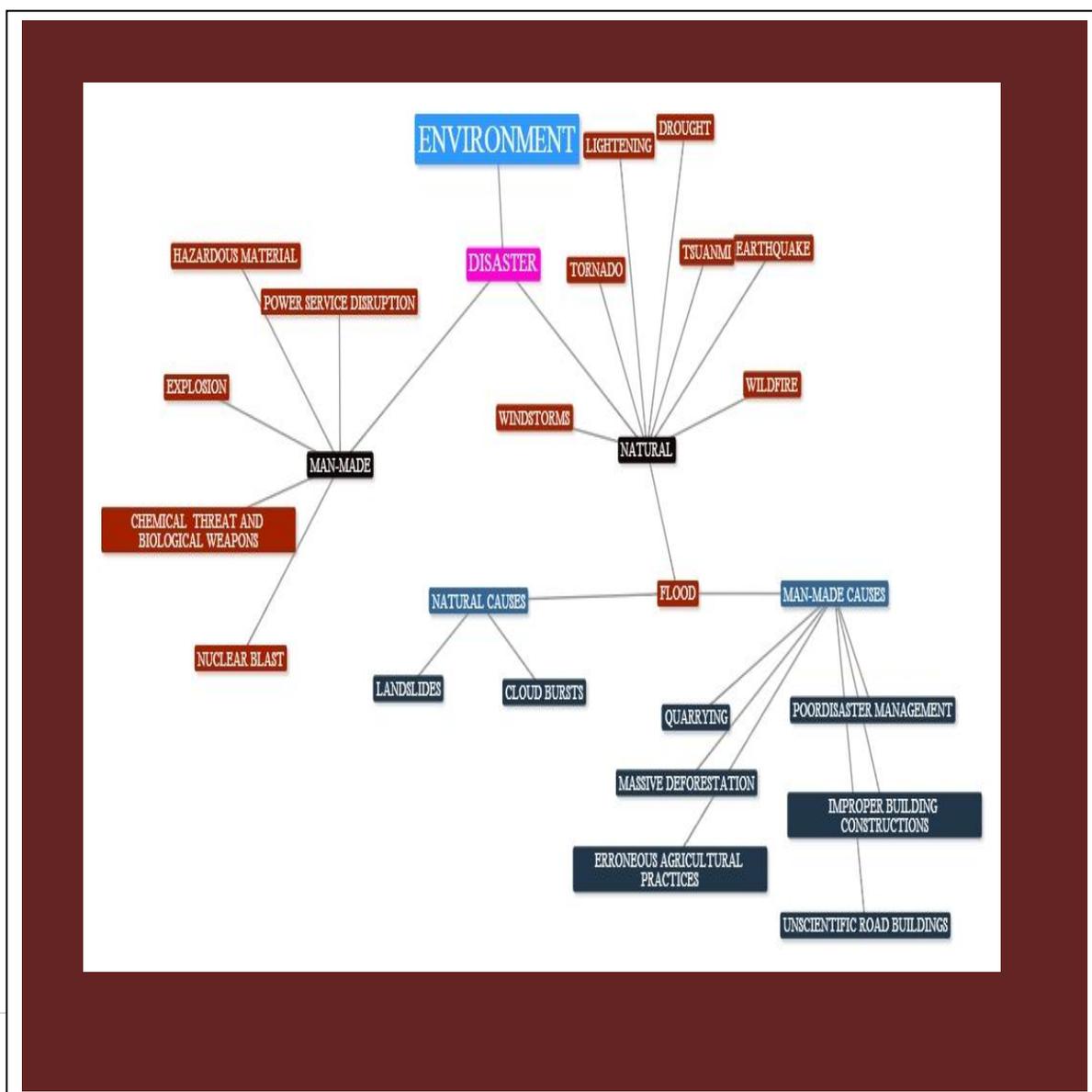
2	What are the tourism related activities that affect the environment at a place?
	<ul style="list-style-type: none"> a. Construction of new roads and bridges and broadening of the ones that already exist. b. Building many hotels and guest houses to accommodate tourists c. Building huge power projects to meet the growing demands of energy of the expanding state d. Dumping of huge quantities of organic and in-organic waste. e. Deforestation for growing demands of space <p>Heavy traffic that pollute air and water, on fragile regions</p>
3	‘The horrific disaster that struck Uttarakhand has been assessed as a mix of natural and manmade reasons.’ Justify the statement
	<p>A heavy rainfall, cloudbursts and landslides were the natural causes of Uttarakhand disaster. In addition to the nature man also is equally responsible for this disaster.</p> <ol style="list-style-type: none"> 1. Riverbed Mining is done in an area of 1.608 hac. 2. .About 15,072 ha of forests have been cleared.. The region is prone to landslides. 3. There are 244 Hydel projects constructed to satisfy the energy needs. This resulted in evacuation of many people. Also People lost their livelihood. There are reports to say that large part of power generated is lost during transmission . 4. There are no readiness programmes to face the calamities. 5. Improper building constructions. 6. Improper agricultural practices on barren hill slopes, 7. Unscientific road building and 8. The extraction of building stones from open ground. . A report commissioned by the Union Environment warned the centre against going ahead with 24 hydel projects planned on the Alakananda and Bhagirathi river systems which will destroy the 22 percent of the state’s forest land and eco system. 9. There is a1000 per cent increase in vehicular traffic in the last eight years which resulted in the higher increase of landslides. More number of people allowed for tourism during the monsoon season. There are no rain fall measuring devices set up at Kedarnath and Badrinath to know how much rain fell and find out the causes.

4	What are the advantages of constructing Dams
	<ol style="list-style-type: none"> 1. Clean, efficient, and reliable form of energy. 2. Does not emit any direct pollutants or greenhouse gases. 3. While the initial cost is high, they are very inexpensive to operate. 4. Electricity generated by hydro–electric power plants is the cheapest electricity generated. 5. Dams prevent floods. 6. Dams store water for irrigation in summer seasons and dry months. Many desert areas can now farm due to dams and canals that supply water. 7. Dams supply water for local drinking needs. 8. Allows for fish farming.
5	What is the negative impact of constructing HYDEL POWER PROJECTS?
	<ol style="list-style-type: none"> 1. In flat basins large dams cause flooding of large tracts of land, destroying local animals and habitats. 2. People have to be displaced causing change in life style and customs, even causing emotional scarring. About 40 to 80 million people have been displaced physically by dams worldwide. 3. Large amounts of plant life are submerged and decay anaerobically (in the absence of oxygen) generating greenhouse gases like methane. It is estimated that a hydroelectric power plant produces 3.5 times the amount of greenhouse gases as a thermal power plant burning fossil fuels. 4. The migratory pattern of river animals like salmon and trout are affected. 5. Dams restrict sediments that are responsible for the fertile lands downstream. Farmers use chemical fertilizers and pesticides to compensate for the loss in productivity. 6. Salt water intrusion into the deltas means that the saline water cannot be used for irrigation. 7. Large dams are breeding grounds for mosquitoes and cause the spread of disease. 8. Farmers downstream who used to wait for the flooding of the fields to plant their seeds are affected. 9. Dams serve as a heat sink, and the water is hotter than the normal river water. This warm water when released into the river downstream can affect animal life. 10. Peak power operations can change the water level thirty to forty feet in one day and can kill the animals staying at the shorelines. <p>Around 400,000 km² of land worldwide has been submerged due to the construction of dams.</p>

1	State whether the following statements are True or False.
	a. Every community must get to know its own features and surroundings: the natural environment as well as environment built by human beings.
	b. The number of Hydel Projects constructed in Uttarakhand is 244 and 1500 ha of forest was diverted.
	c. The highest rainfall in June for the state of Uttarakhand being 350.5 mm.
	d. The river Sabri is the Tributary of Ganga.
2	Fill in the blanks :
	a. Number of Hydel projects that were constructed in Uttarakhand till 2012 are _____.
	b. _____ and _____ rivers are the tributaries of Ganga.
	c. The average monthly rainfall in Uttarakhand in the months of July and August is more than _____ mm.
	d. Uttarakhand disaster occurred on ____ and _____ of June, 2013.
	e. "What else does one expect from the mountain if there is heavy tourist rush at vulnerable areas. The Himalaya is a young mountain and you dynamite it to build roads. Landslides are bound to happen," says a senior officer of _____ Meteorological Centre.

2. Theme- Environment and Development- Lessons from the Hills

CONCEPT MAP-1



CONCEPT MAP-2

