



Sustainable Management of Natural Resources



Definitions

1. **Resources:** A resource is any means of supplying a material held in reserve which can be transformed into more valuable and useful item.
2. **Natural resources:** They are those substances or materials that exist in nature which are being exploited for supporting life and meeting the needs of human beings. These include air, water, forests, soil, minerals, fossil fuels etc.
3. **Pollution:** Any undesirable change in physical, chemical and

biological characteristics of the soil, air or water which harmfully affects human lives or lives of other species.

4. **Ganga Action Plan:** It is a multi-crore project launched in 1985 which has been undertaken to clean the Ganga river.
5. **Namami Gange Programme:** It is an Integrated Conservation Mission, approved as “Flagship Programme” by the Union Government in June 2014 with budget outlay of ` 20,000 Crore to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of the National River Ganga.
6. **Biodiversity:** The existence of a wide variety of species of plants, animals, microbes in a natural habitat within a particular environment is called biodiversity.
7. **Fossil fuels:** The fuels that are obtained from dead remains of plants and animals which got buried beneath the earth millions of years ago are called fossil fuels.
8. **Sustainable development:** The development which can be maintained for a long time that meets the need of present generation without compromising the ability and needs for future generations without any damage to the environment.
9. **Conservation of natural resources:** The controlled utilisation of natural resources for the benefit of life so that it may yield sustainable benefit to the present as well as future generations is called conservation of natural resources.
10. **Watershed management:** Scientific conservation of soil and water to increase biomass production is called watershed management.

- 11. Rain water harvesting:** The technique to capture and store rain water for future use by making special water harvesting structures is called rain water harvesting.

Multiple Choice Questions

- 12.** The major ill effect of monoculture practice in forests is on the: *
- (a) biodiversity which faces large destruction.
 - (b) local people whose basic needs can no longer be met from such forests.
 - (c) industries.
 - (d) forest department.

Ans. (a) biodiversity which faces large destruction.

Explanation :

Monoculture has a huge negative impact on forest biodiversity, which is rapidly diminishing. Growing a single type of flora or tree in the forest results in a loss of variety or variance among animal, plant, insect, and bird species.

- 13.** What is the name for the process of burning municipal solid waste in a properly designed furnace under suitable temperature and operating conditions ?
- (a) Landfill
 - (b) Recycling

(c) Vermi composting

(d) Incineration

Ans. (d) Incineration

Explanation :

Incineration is the process of burning municipal solid waste in a properly built furnace at a temperature and operating pressure that is appropriate for the trash.

14. Which of these statements are wrong?

(a) Fossil fuel is not a renewable source.

(b) Natural gas is not a renewable source.

(c) Sunlight is a renewable source.

(d) Coal is a renewable resource.

Ans. (d) Coal is a renewable resource.

Explanation :

Fossil fuels (petroleum, natural gas, coal) and nuclear power are examples of non-renewable resources of energy. Biomass energy and various kinds of inexhaustible energy, such as solar energy, hydropower, and wind power, are examples of renewable energy sources.

15. Floods can be prevented by:

(a) Afforestation

(b) Removing top soil

(c) Deforestation

(d) Agriculture

Ans. (a) Afforestation

Explanation :

Afforestation also prevents mass wasting which reduces the amount of soil entering the river and keeps the rivers capacity high. When combined with floodplain zoning, afforestation can be very effective at reducing the risk of flooding. Planting trees help prevent erosion because the roots bind the soil.

16. Which of the following is best method from environment point of view?

(a) Reduce

(b) Recycle

(c) Reuse

(d) All of these

Ans. (d) All of these

Explanation :

Reduce, reuse, and recycle are the three essential components of environmentally-responsible consumer behaviour. The 3 R's aims to educate individuals on how to avoid excessive and unneeded waste, as well as how to restrict non-renewable resource consumption.

17. Select the eco-friendly activity among the following.[NCERT

Exemplar]

- (a) Using car for transportation.
- (b) Using poly bags for shopping.
- (c) Using dyes for colouring clothes.
- (d) Using windmills to generate power for irrigation.

Ans. (d) Using windmills to generate power for irrigation.

Explanation :

Solar energy, wind energy, and geothermal energy are examples of non-polluting, non-exhaustible energy sources. These energy sources are not harmful to the environment. Wind energy, for example, can be harnessed using wind mills to irrigate crops and generate electricity.

18. The most appropriate definition of a natural resource is that it is a substance or commodity that is: [NCERT Exemplar]

- (a) Present only on land
- (b) A gift of nature which is very useful to mankind
- (c) A man-made substance placed in nature
- (d) Available only in the forest

Ans. (b) A gift of nature which is very useful to mankind

Explanation :

Natural resources are substances that occur naturally and are valued in their unaltered (natural) state. The amount of material

available and the demand for it determines the value of a natural resource.

19. _____ is a not a greenhouse gas.

- (a) Nitrous oxide
- (b) Methane
- (c) Carbon dioxide
- (d) Nitrogen

Ans. (d) Nitrogen

Explanation :

Carbon dioxide, methane, chlorofluorocarbons, ozone, nitrous oxide, and water vapour are examples of greenhouse gases.

20. Which of the following is not a natural resource? [NCERT Exemplar]

- (a) Mango tree
- (b) Wooden house
- (c) Snake
- (b) Wind

Ans. (b) Wooden house

Explanation :

Wooden houses are made by man. So, it is not a natural resource.

21. How does organic material in the buried solid waste decompose ?

- (a) By oxidation
- (b) By microorganisms
- (c) By flow of water
- (d) By soil particles

Ans. (b) By microorganisms

Explanation :

Due to the action of microorganisms, the organic material will decay in the buried solid waste. The trash decomposes aerobically at first, until the aerobic bacteria consumes all of the oxygen in the freshly added fill.

22. In our country vast tracts of forests are cleared and a single species of plant is cultivated. This practice promotes : [NCERT Exemplar]

- (a) biodiversity in the area.
- (b) monoculture in the area.
- (c) growth of natural forest.
- (d) preserves the natural ecosystem in the area.

Ans. (b) monoculture in the area.

Explanation :

The practice of removing enormous tracts of forest and planting

a single variety of plant promotes monoculture in the area. As the number of species in the area decreases, this has a negative impact on biodiversity. It also has an adverse effect on the natural environment in the area. It slows down the growth of natural forests.

23. The three R's that will help us to conserve natural resources for long term use are : [NCERT Exemplar]

- (a) recycle, regenerate, reuse.
- (b) reduce, regenerate, reuse.
- (c) reduce, reuse, redistribute.
- (d) reduce, reuse, recycle.

Ans. (d) reduce, reuse, recycle.

Explanation :

The three R's – reduce, reuse, and recycle – all contribute to reducing the amount of garbage we generate. They save energy, natural resources, and landfill space.

24. Which of the following is a greenhouse gas?

- (a) Nitrogen dioxide
- (b) Sulphur dioxide
- (c) Carbon dioxide
- (d) Carbon monoxide

Ans. (c) Carbon dioxide

Explanation :

Greenhouse gases generally trap the earth's radiations, resulting in an increase in the earth's temperature and are the primary cause of global warming. Water vapour, carbon dioxide, methane, nitrous oxide, and ozone are examples of greenhouse gases.

- 25.** The pH of water sample collected from a river was found to be acidic in the range of 3.5–4.5. On the banks of the river were several factories that were discharging effluents into the river. The effluents of which one of the following factories is the most likely cause for lowering the pH of river water ? [NCERT Exemplar]

- (a) Soap and detergent factory.
- (b) Lead battery manufacturing factory.
- (c) Plastic cup manufacturing factory.
- (d) Alcohol distillery.

Ans. (b) Lead battery manufacturing factory

Explanation :

Lead battery production plants use acids in their batteries, which have a lower pH and are more likely to lower the pH of water when discharged into neighbouring bodies of water.

- 26.** Select the incorrect statement. [NCERT Exemplar]

- (a) Economic development is linked to environmental conservation.

- (b) Sustainable development encourages development for current generation and conservation of resources for future generations.
- (c) Sustainable development does not consider the view points of stakeholders.
- (d) Sustainable development is a long planned and persistent development.

Ans. (c) Sustainable development does not consider the viewpoints of stakeholders

Explanation :

To prevent natural resource, development operations should be linked to environmental conservation efforts, all stakeholders, including local and indigenous people, should be considered partners in the development process, and development activities should be well planned.

27. Coliforms are _____.

- (a) bacteria present in the digestive tract of animals.
- (b) bacteria present in hot springs.
- (c) bacteria present in frigid cold environments.
- (d) All of the above.

Ans. (a) bacteria present in the digestive tract of animals.

Explanation :

Coliforms are bacteria that are always present in the digestive

tracts of animals, including intestine of humans, and are found in their wastes. Their presence in water makes the water contaminated and unfit for use.

28. The most rapidly dwindling resource in the world is _____.

- (a) air
- (b) water
- (c) sunlight
- (d) forests

Ans. (d) forests

Explanation :

Water, Wind, and Sunlight are natural resources that cannot be depleted, but forests are being cut down in vast quantities by humans for their own benefit, and as a result, they are rapidly depleting.

29. Read the following sentences and select the correct option from those given below.

Statement: Sustainable development has an impact on socio-economic and environmental conditions.

Reason: Environmental conditions helps in economic development.

- (a) Both the statement and reason are correct and the reason is the correct explanation of the statement.
- (b) Both the statement and reason are correct, but the reason is not the correct explanation of the statement.

(c) Both the statement and the reason are incorrect.

(d) The statement is incorrect.

Ans. (a) Both the statement and reason are correct and the reason is the correct explanation of the statement.

Explanation :

Sustainable development occurs by a change in all aspects of life. Change in the environmental conditions will affect the socio-economic conditions also.

30. Kulhs is to Himachal Pradesh as bandharas is to _____.

(a) Rajasthan

(b) Tamil Nadu

(c) Kerala

(d) Maharashtra

Ans. (d) Maharashtra

Explanation :

Kulhs and bandharas are the types of traditional rainwater harvesting systems in India.

31. Savitri learnt about the different R's of waste management but she is confused about how can she can repurpose the old newspapers. Which of the following options solves her problem?

(i) Dissolving, bleaching and then drying

(ii) Making paper bags

(iii) Using newspaper to cover her notebooks.

(a) (i) and (ii)

(b) (ii) and (iii)

(c) (i), (ii) and (iii)

(d) (i) and (iii)

Ans. (b) (ii) and (iii)

Explanation :

Dissolving, bleaching and drying are the steps for recycling paper, whereas, making paper bags or using the newspaper to cover her notebooks are some ways of repurposing the old newspapers.

32. Activities like cutting down trees not only reduce the forest cover but also adversely affect the

(a) government forest departments

(b) industrialists

(c) wildlife and nature enthusiasts

(d) local people

Ans. (d) local people

Explanation :

Local people are mostly dependent on forests and forest products. They are the ones who are most adversely affected by the reduced forest cover.

33. Which of the following sets has all the industries that depend on forests?

- (a) Rubber, plastic and glass
- (b) Textile, ceramic and marble
- (c) Rubber, textile and glass
- (d) Paper, lac and sports equipment

Ans. (d) Paper, lac and sports equipment

Explanation :

Paper, lac and sports equipment industries are dependent on forest products. We get paper from wood pulp. Sports equipment are generally made from oak or maple wood that is obtained from the forests.

34. Why do we need to manage our natural resources?

- (a) To meet the demand of the increasing population
- (b) To save it for the future generations
- (c) Because natural resources are not unlimited
- (d) All of the above

Ans. (d) All of the above

Explanation :

We need to manage our natural resources because these are not unlimited. With the increasing population, the demand for natural resources is also increasing. If we will not manage it

now, then they might get exhausted shortly and our future generations may suffer.

35. What is the relationship between the utility of coal and petroleum and the efficiency of machines?

- (a) More use of coal and petroleum increases the efficiency of machines.
- (b) More efficient machines use more coal and petroleum.
- (c) More efficient machines use less coal and petroleum.
- (d) More use of coal and petroleum decreases the efficiency of machines.

Ans. (c) More efficient machines use less coal and petroleum.

Explanation :

Machines with high efficiency use less fuel and give more work output.

36. Which of the following sets contains all the resources that we need to manage sustainably?

- (a) Forest, wildlife, water, coal and petroleum
- (b) Solar energy, water and coal
- (c) Tidal energy, coal and petroleum
- (d) Geothermal energy, coal and forests

Ans. (a) Forest, wildlife, water, coal and petroleum

Explanation :

Forests, wildlife, water, coal and petroleum are all exhaustible sources of energy. Therefore, we need to manage these resources sustainably.

37. Which of the following stakeholders owns the land and controls the resources from forests?

- (a) Tribal people
- (b) Forest department of the government
- (c) Nature enthusiasts
- (d) Industrialists

Ans. (b) Forest department of the government

Explanation :

forest department of the government owns the land and controls the resources from the forests. Industrialists depend on the forests products. They do not own the land. Wildlife enthusiasts want to conserve nature. Tribal people were living in forests for centuries. Britishers took over the control of the forests from these tribal people. In independent India, forest department finally took over the control of forests from britishers.

38. Which of the following statements is incorrect?

- (a) The five R's of resource management are for fossil fuels only.
- (b) Sustainable development also involves the safe disposal of wastes.
- (c) Equitable sharing is an important feature of sustainable

development.

(d) Earth has an unlimited supply of all-natural resources.

Ans. (a) The five R's of resource management are for fossil fuels only.

Explanation :

The five R's, that is Refuse, Reduce, Reuse, Recycle and Repurpose is the strategy used for the management of all the natural resources and not just the fossil fuels.

39. Which of the following sets contain all the materials that can be recycled as well as repurposed?

(a) Wood, paper, water, coal

(b) Plastic, glass and paper

(c) Coal, plastic and paper

(d) Natural gas, petroleum and paper

Ans. (b) Plastic, glass and paper

Explanation :

Plastic, glass and paper can be recycled and repurposed. For example, we can recycle paper or we can also use it for making paper bags.

40. Supriya listed some activities observed in the forest region. Which of the following given activities can be harmful to the region?

(i) Cutting down trees for paper

- (ii) Collecting latex from the rubber trees
- (iii) People collecting the fallen berries and nuts
- (iv) Cattle grazing
- (a) (ii) and (iii)
- (b) Only (i)
- (c) (i), (ii), (iii) and (iv)
- (d) Only (iii)

Ans. (b) Only (i)

Explanation :

Collecting latex from rubber trees does not harm trees. Moreover, cattle grazing is part of the ecosystem activity. Such activities help maintain the ecological balance. So, these are not harmful activities. Cutting down trees for any purpose is a harmful activity.

41. Fossil fuels such as coal and petroleum are categorised as non-renewable sources of energy because

- (a) they are unlimited
- (b) they take millions of years to form
- (c) they are never renewed or reformed in nature
- (d) they cannot be formed by humans

Ans. (b) they take millions of years to form

Explanation :

Fossil fuels are considered non-renewable resources because they take millions of years to form.

42. The important message conveyed by the “Chipko Movement” is : [NCERT Exemplar]

- (a) to involve the community in forest conservation efforts
- (b) to ignore the community in forest conservation efforts
- (c) to cut down forest trees for developmental activities
- (d) government agencies have the unquestionable right to order destruction of trees in forests.

Ans. (a) to involve the community in forest conservation efforts

Explanation :

The ‘Chipko Movement’ sends a strong message to the public about the importance of community participation in forest conservation activities. People’s involvement can aid in the expansion of forests as well as their conservation.

43. In our country there are attempts to increase the height of several existing dams like Tehri and Almati dams across Narmada. Choose the correct statements among the following that are a consequence of raising the height of dams. [NCERT Exemplar]

- (i) Terrestrial flora and fauna of the area is destroyed completely.
- (ii) Dislocation of people and domestic animals living in the area.

(iii) Valuable agricultural land may be permanently lost.

(iv) It will generate permanent employment for people.

(a) (i), (ii)

(b) (i), (ii), (iii)

(c) (ii), (iv)

(d) (i), (iii), (iv)

Ans. (b) (i), (ii), (iii)

Explanation :

Raising dam heights will permanently submerge enormous tracts of land, displacing indigenous people and causing permanent loss of indigenous flora and fauna as well as agricultural land.

44. Expand the abbreviation GAP. [NCERT Exemplar]

(a) Government Agency for Pollution control

(b) Gross Assimilation by Photosynthesis

(c) Ganga Action Plan

(d) Governmental Agency for animal Protection

Ans. (c) Ganga action plan

Explanation :

Ganga Action Plan is abbreviated as GAP. As the quality of water in the Ganga was deteriorating owing to pollution, this multi-crore project was conceived in 1985.

45. Narmada bachao andolan was to:

- (a) clean Narmada
- (b) expand Narmada
- (c) save Narmada
- (d) none of these

Ans. (c) save Narmada

Explanation :

The Narmada Bachao Andolan (NBA) is an Indian social movement led by adivasis (indigenous people), farmers, environmentalists, and human rights activists who protested a series of huge dam projects on the Narmada River.

46. Pick the right combination of terms which has no fossil fuel.
[NCERT Exemplar]

- (a) Wind, ocean and coal
- (b) Kerosene, wind and tide
- (c) Wind, wood, sun
- (d) Petroleum, wood, sun

Ans. (c) Wind, wood, sun

Explanation :

Fossil fuels are obtained from the decomposition of dead plants and animals. Wood is a source of energy as well, although it is not a fossil fuel. Unlike fossil fuels, which have a finite supply

and so are exhaustible sources of energy, wind and sun are inexhaustible sources of energy.

47. The practice of controlling the growth of trees and their quality to meet specific human needs is called _____.

- (a) sericulture
- (b) apiculture
- (c) silviculture
- (d) agriculture

Ans. (c) silviculture

Explanation :

Silviculture is the activity of managing the growth, composition/structure, and quality of forests in order to accomplish certain goals and objectives, such as timber output.

48. Which of the following statements refers to repurpose?

- (a) Using old plastic bottles for growing plants.
- (b) Melting old plastic bottles to make new bottles.
- (c) Replacing all plastic bottles with steel bottles.
- (d) Cleaning the plastic bottle to use it again.

Ans. (a) Using old plastic bottles for growing plants.

Explanation :

Repurpose means using the product for some other purpose. Therefore, using old plastic bottles for growing plants is an

example of repurposing.

49. Which of the following is not a direct stakeholder of the conservation of forests?

(a) Industrialists like those having paper mills

(b) Forest department

(c) Nature enthusiasts

(d) People living in urban areas

Ans. (d) People living in urban areas

Explanation :

People living in urban areas are not direct stakeholders in forest conservation. This is because they are not directly associated with the forests and their products.

50. How does the uncontrolled exploitation of forests by industries affect the local people?

(a) Reduction of natural resources

(b) Economic loss

(c) Reduction in food for cattle

(d) All of the above

Ans. (d) All of the above

Explanation :

The local people are highly affected in many different ways. Some of the effects include reduction of natural resources,

economic loss and reduction in grazing area for cattle.

51. Which of the following given sets has the sources of carbon that can also lead to global warming?

- (a) Coal and petroleum
- (b) Methane and sulphur dioxide
- (c) Natural gas and oxides of nitrogen
- (d) Acid rain and petroleum

Ans. (a) Coal and petroleum

Explanation :

Fossil fuels, including coal and petroleum, are the sources of carbon. Their combustion releases carbon dioxide that increases the global temperature.

52. Which of the following statements is true about fossil fuels?

- (i) The burning of fossil fuels releases oxides of nitrogen.
 - (ii) Fossil fuel is used for combustion in engines. It releases energy that is used for different purposes.
 - (iii) The burning of fossil fuels also releases carbon monoxide and carbon dioxide. Both these gases are taken up by the plants and hence are not harmful.
- (a) (i) and (ii)
 - (b) (ii) and (iii)
 - (c) Only (i)

(d) Only (iii)

Ans. (a) (i) and (ii)

Explanation :

Fossil fuels are used for combustion in engines. On combustion, fossil fuels releasedifferent gases like nitrogen oxide, carbon dioxide and carbon monoxide, etc. All these gases are harmful.

53. The Chipko Andolan movement first originated in

(a) Reni in Garhwal

(b) Rajasthan

(c) Madhya Pradesh

(d) Punjab

Ans. (a) Reni in Garhwal

Explanation :

The Chipko Andolan first originated in Reni in Garhwal which is located high up in the Himalayas.

54. Khejri trees in Khejrli village were saved by a group of

(a) men

(b) women

(c) children

(d) old

Ans. (b) women

Explanation :

Amrita Devi Bishnoi in 1731 sacrificed her life along with 363 others while saving khejri trees in Khejrali village near Jodhpur in Rajasthan.

55. It is important to make small check dams across the flooded gullies because they : [NCERT Exemplar]

- (i) hold water for irrigation.
 - (ii) hold water and prevent soil erosion.
 - (iii) recharge ground water.
 - (iv) hold water permanently.
- (a) (i), (iv)
 - (b) (ii), (iii)
 - (c) (iii), (iv)
 - (d) (ii), (iv)

Ans. (b) (ii), (iii)

Explanation :

Small check dams help recharge groundwater by retaining water and preventing soil erosion. Thus, it is important to construct small check dams cross flooded gullies.

56. Why do the construction of dams, despite their benefits, face a lot of criticism?

- (a) Because it displaces a large number of tribals without

adequate rehabilitation.

- (b) Because it involves a huge amount of public money.
- (c) Because it leads to loss of biological diversity.
- (d) All of the above

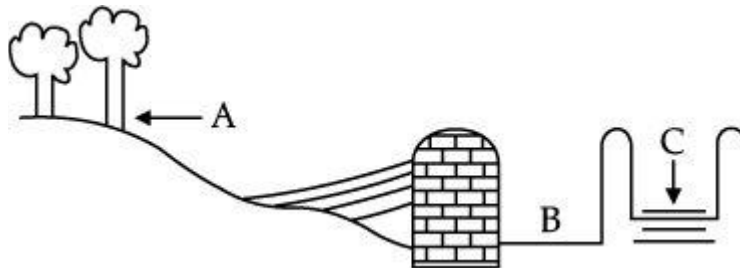
Ans. (d) All of the above

Explanation :

Construction of dams despite their benefits face a lot of criticism because it displaces a large number of people in the nearby areas. It requires a lot of money and it also involves deforestation that may lead to the loss of biological diversity.

57. A diagram of traditional water harvesting system is given below

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The statement which defines the system and its parts is:

- (a) This is an ideal setting of the Khadin system and A = Catchment area; B = Saline area and C = Shallow dugwell
- (b) This is an ideal setting of the Shallow dugwell system and A = Catchment area; B = Saline area and C = Khadin
- (c) This is an ideal setting of Catchment area and A = Khadin, B = Saline area and C = Shallow dugwell

(d) This is an ideal setting of Saline area and A = Catchment area; B = Khadin and C = Shallow dugwell

Ans. (a) This is an ideal setting of the Khadin system and A = Catchment area, B = Saline area and C = Shallow dugwell.

Explanation :

In India, the Khadin water collecting technique is a centuries-old concept that is mostly used in Rajasthan. The gathered water is primarily used in agriculture. It is divided into several sections: the catchment region, the Khadin or cropped area, the Khadin bund, the saline area, and the shallow dugwell.

58. The pH range most conducive for life of fresh water plants and animals is : [NCERT Exemplar]

(a) 6.5–7.5

(b) 2.0–3.5

(c) 3.5–5.0

(d) 9.0–10.5

Ans. (a) 6.5–7.5

Explanation :

In freshwater, a neutral pH is best for living things. This pH range, 6.5-7.5, is almost neutral.

59. Water harvesting is a method which?

(a) Increases ground water level.

- (b) Not practiced in modern days.
- (c) Has no relation with ground water.
- (d) Decreases ground water level.

Ans. (a) Increase ground water level.

Explanation :

Rainwater harvesting is the process of collecting and storing rainwater rather than letting it flow off. By increasing the level of the water table, rainwater collecting recharges the groundwater supply.

60. Khadins, Bundhis, Ahars and Kattas are ancient structures that are examples for : [NCERT Exemplar]

- (a) Grain storage
- (b) Wood storage
- (c) Water harvesting
- (d) Soil conservation

Ans. (c) Water harvesting

Explanation :

Water harvesting is a centuries-old Indian notion that has been performed for many years. For water harvesting, Khadin structures are used in Rajasthan, Bundhis in Madhya Pradesh and Uttar Pradesh, Ahars in Bihar, and Kattas in Karnataka. Water harvesting is still done with these types of antique buildings.

61. Which of the following was a local canal-based irrigation system and where was it found?

- (a) *Kulhs*, Rajasthan
- (b) *Kulhs*, Himachal Pradesh
- (c) *Khadin*, Uttar Pradesh
- (d) *Kattas*, Karnataka

Ans. (b) *Kulhs*, Himachal Pradesh

Explanation :

Kulhs were the local canal-based irrigation system found four hundred years ago in Himachal Pradesh. The stream of water flowing down the hills was diverted into man-made canals.

62. Groundwater is relatively purer than surface water.

Which of the following best justifies the above statement?

- I. Groundwater is collected after filtration through multiple layers of the soil.
- II. Mosquitoes do not breed in it.
- III. Human activities do not affect the groundwater.

- (a) Both II and III (b) Both I and III
- (c) I, II and III (d) Both I and II

Ans. (d) Both I and II

Explanation :

Groundwater is relatively purer than surface water because it is collected after filtration through multiple layers. Mosquitoes cannot breed in it. However, some human activities like overuse of the fertilisers can still pollute it.

63. Near a residential area, sewage is directly dumped into the nearby river. Which of the following would best indicate the biological contamination level of the river?

- (a) The total dissolved salts
- (b) The total coliform level
- (c) The total BOD
- (d) The total inorganic and organic matter

Ans. (b) The total coliform level

Explanation :

Contamination levels in a water body can be detected by determining the total coliform level in the water from that water body.

64. Which of the following does NOT reduce the groundwater level?

- (a) Irrigation activities
- (b) Diversion of water from water bodies for different purposes
- (c) Global warming
- (d) Acid rain

Ans. (d) Acid rain

Explanation :

Acid rain will not decrease the level of groundwater although, it may affect its quality.

65. How does the collection of water underground, rather than on the surface, also help in the prevention of diseases?

- (a) Groundwater is purer.
- (b) Groundwater does not allow the breeding of mosquitoes.
- (c) Groundwater has more dissolved minerals.
- (d) Groundwater boosts the immunity.

Ans. (b) Groundwater does not allow the breeding of mosquitoes.

Explanation :

Groundwater does not provide any breeding grounds to the disease-causing mosquitoes.

66. Match the following traditional water harvesting with their respective region.

Water harvesting system	Regions
1. <i>Khadins</i>	(a) Maharashtra
2. <i>Tals</i>	(b) Bihar
3. <i>Bundhis</i>	(c) Rajasthan
4. <i>Ahars</i>	(d) Madhya Pradesh

(a) 1. (a), 2. (c), 3. (d), 4. (b)

(b) 1. (c), 2. (a), 3. (d), 4. (b)

(c) 1. (d), 2. (a), 3. (b), 4. (c)

(d) 1. (c), 2. (b), 3. (a), 4. (b)

Ans. (b) 1. (c), 2. (a), 3. (d), 4. (b)

Explanation :

Khadins, tals, bundhis and ahars are different types of traditional water harvesting systems. They are named differently region wise. They may also differ in their structure and the method of use. For example, khadin consists of a large earthen embankment that is build across the slopes to collect the surface-run off water.

Region wise classification of these systems is as given below.

Water harvesting system	Regions
1. <i>Khadins</i>	Rajasthan
2. <i>Tals</i>	Maharashtra
3. <i>Bundhis</i>	Madhya Pradesh
4. <i>Ahars</i>	Bihar

67. The depletion of the groundwater can be prevented by

(a) increasing the number of wells and tubewells in an area

(b) increasing the dependence on groundwater for irrigation purposes

(c) preventing the deforestation

(d) planting more trees in dry regions

Ans. (c) preventing the deforestation

Explanation :

Planting more trees in dry regions can further deplete the groundwater. Trees in the forests help bring about more precipitation. Preventing deforestation in nearby areas can also prevent the depletion of groundwater.

68. In a largely levelled terrains, the water harvesting structures are mainly

- (a) straight concrete check dams
- (b) crescent-shaped
- (c) star-shaped
- (d) Both A and B

Ans. (d) Both A and B

Explanation :

The water harvesting structures in a levelled terrain can be crescent-shaped earthen embankments or straight concrete check dams.

69. The process of planting trees or sowing seeds in a barren patch of land to create a forest or a stand of trees is called:

- (a) Agriculture
- (b) Aestivation
- (c) Vegetation
- (d) Afforestation

Ans. (d) Afforestation

Explanation :

Afforestation involves the planting of trees in a drainage basin to increase interception and storage while reducing surface runoff. This reduces a rivers discharge and so makes it less likely to flood.

70. A successful forest conservation strategy should involve :
[NCERT Exemplar]

- (a) protection of animals at the highest trophic level
- (b) protection of only consumers
- (c) protection of only herbivores
- (d) comprehensive programme to protect all the physical and biological components

Ans. (d) comprehensive programme to protect all the physical and biological components

Explanation :

At one trophic level, a balance cannot be achieved. There is a need for a complete policy that protects both physical and biological components, rather than just animals, consumers, and herbivores.

Assertion and Reasoning Based Questions

71. Assertion : Reuse is better than recycling.

Reason : Recycling uses some energy.

- (a) If both assertion and reason are true and reason is the correct explanation of assertion.
- (b) If both assertion and reason are true, but reason is not the correct explanation of assertion.
- (c) If assertion is true, but reason is false.
- (d) If assertion is false, but reason is true.

Ans. (a) If both assertion and reason are true and reason is the correct explanation of assertion.

Explanation :

Reuse refers to the use of the same material again and again. In the reuse of materials, no energy is consumed and the resources are saved. For instance, plastic bottles in which we buy various food items like jam and pickle can be used for storing things. In recycling, certain used materials are converted into other useful materials. On the other hand, in recycling of materials, energy is consumed and the resources may be wasted. Thus, both assertion and reason are true and reason is the correct explanation of the assertion.

72. Assertion : There are abundant coliform bacteria in the river Ganga.

Reason : Coliform bacteria are found in human intestines and in unburnt corpses.

- (a) If both assertion and reason are true and reason is the correct explanation of assertion.
- (b) If both assertion and reason are true, but reason is not the correct explanation of assertion.

(c) If assertion is true, but reason is false.

(d) If assertion is false, but reason is true.

Ans. (a) If both assertion and reason are true and reason is the correct explanation of assertion.

Explanation :

There are abundant coliform bacteria in the river Ganga and the presence of coliform bacteria indicates that the water is contaminated and unfit for use. These bacteria are found in the human intestine and therefore the immersion of the unburnt corpses are the reason behind the presence of abundance of coliform bacteria in the river Ganga. Thus, both assertion and reason are true and reason is the correct explanation of assertion.

73. Assertion : Sustainable development encourages development for present generation and conservation of resources for future generations.

Reason : Sustainable development does not consider the viewpoints of stakeholders.

(a) If both assertion and reason are true and reason is the correct explanation of assertion.

(b) If both assertion and reason are true, but reason is not the correct explanation of assertion.

(c) If assertion is true, but reason is false.

(d) If assertion is false, but reason is true.

Ans. (c) If assertion is true, but reason is false.

Explanation :

Sustainable development takes into consideration both economic growth and ecological conservation simultaneously. Management of forest resources has to take into account the interests of various stakeholders. Thus, assertion is true but reason is false.

74. Assertion : Recycling of waste material can help in maintaining ecological balance.

Reason : Non-biodegradable waste poses serious disposal problems.

- (a) If both assertion and reason are true and reason is the correct explanation of assertion.
- (b) If both assertion and reason are true, but reason is not the correct explanation of assertion.
- (c) If assertion is true, but reason is false.
- (d) If assertion is false, but reason is true.

Ans. (a) If both assertion and reason are true and reason is the correct explanation of assertion.

Explanation :

Certain Non-biodegradable waste like rubber and plastic pose serious disposal problems. Such substances can be recycled to manufacture usable articles, example: recycling of used polythene and aluminium foils. Thus, both assertion and reason are true and reason is the correct explanation of the assertion.

75. Assertion : Mining causes pollution.

Reason : Large amount of slag is discarded for every tonne of metal extracted.

- (a) If both assertion and reason are true and reason is the correct explanation of assertion.
- (b) If both assertion and reason are true, but reason is not the correct explanation of assertion.
- (c) If assertion is true, but reason is false.
- (d) If assertion is false, but reason is true.

Ans. (a) If both assertion and reason are true and reason is the correct explanation of assertion.

Explanation :

Mining causes pollution because of the large amount of slag which is discarded for every tonne of metal extracted. Hence, sustainable natural resource management demands that we plan for the safe disposal of these wastes too. Thus, both assertion and reason are true and reason is the correct explanation of the assertion.

76. Assertion : One of the major objectives of conservation is to protect biodiversity.

Reason : Conservation will help in making the resources available for our future generations.

- (a) If both assertion and reason are true and reason is the correct explanation of assertion.
- (b) If both assertion and reason are true, but reason is not the correct explanation of assertion.

(c) If assertion is true, but reason is false.

(d) If assertion is false, but reason is true.

Ans. (b) If both assertion and reason are true, but reason is not the correct explanation of assertion.

Explanation :

One of the major objectives of conservation is to protect the biodiversity because the loss in biodiversity can also lead to ecological imbalance. Thus both assertion and reason are true, but reason is not the correct explanation of assertion.

77. Assertion : Forests are 'biodiversity hotspots'.

Reason : In forest we can find variety of species of both flora and fauna.

(a) If both assertion and reason are true and reason is the correct explanation of assertion.

(b) If both assertion and reason are true, but reason is not the correct explanation of assertion.

(c) If assertion is true, but reason is false.

(d) If assertion is false, but reason is true.

Ans. (a) If both assertion and reason are true and reason is the correct explanation of assertion.

Explanation :

Biodiversity hotspot means a place where large number of species are found. Forests satisfy this criteria. In forest we can find variety of species of both flora and fauna. The range of

different life forms *i.e.*, bacteria, fungi, ferns, flowering plants, variety of animals like insects, birds, reptiles, aves, mammals, etc., are all found in the forest. Thus, both assertion and reason are true and reason is the correct explanation of the assertion.

Case Based Questions

- 78.** Read the passage carefully and answer the following questions from Q 78 (i) to 78 (v).

Study the photograph of a forest given below carefully and then answer the questions.



- (i) Before Britishers came to our country, a lot of people lived in forests for centuries and still forests were alive. This is because:
- (a) they worshipped forests.
 - (b) they did not use resources from forests.
 - (c) they planted trees.
 - (d) they developed sustainable practices to use the resources.
- (ii) Which one of the following industries is not based on forest produce?

(a) sports equipment

(b) lac

(c) textile

(d) paper

(iii) Who are the important stakeholders those need to be considered when we discuss conservation of forests?

(a) industrialists using forest produces

(b) local people

(c) conservation activists

(d) all of the above

(iv) We conserve forests so that:

(a) we can preserve the biodiversity we have inherited.

(b) we can preserve animal.

(c) we can run forest-based industries.

(d) we can use more plants.

(v) Local people living in or around forests do not use forests for:

(a) fishing and hunting.

(b) getting firewood, timber and thatch.

(c) getting fruits, nuts and medicines.

(d) getting electricity.

Ans.

(i) (d) they developed sustainable practices to use the resources

(ii) (c) textile

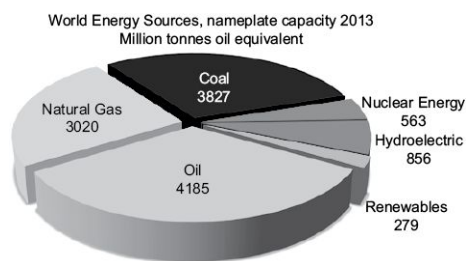
(iii) (d) All of the above

(iv) (a) we can preserve the biodiversity we have inherited.

(v) (d) getting electricity

78. Read the passage carefully and answer the following questions from Q 79 (i) to 79 (v).

In present world, most of the energy sources comes from non-renewable energy sources such as petroleum, hydrocarbons (gases and liquids), natural gas, coal, and nuclear energy. All these sources of energy are called non-renewable because their supplies are limited to the amounts that we can mine or extract from the earth.



(i) When combustion takes place in insufficient air (oxygen), then _____ is formed instead of carbon dioxide.

(a) carbonate

(b) oxygen

(c) carbon monoxide

(d) carbon tetraoxide

(ii) Coal and petroleum were formed from the _____ millions of years ago.

(a) accumulations of metallic ores

(b) decomposition of animals

(c) burning of forests

(d) degradation of biomass

(iii) Along with carbon, coal is a source of:

(a) chlorine, hydrogen, and nitrogen.

(b) hydrogen, nitrogen, and sulphur.

(c) oxygen, nitrogen, and sulphur.

(d) hydrogen, nitrogen, and oxygen.

(iv) Consumption of coal and oil can be reduced best by increasing the use of:

(a) nuclear energy

(b) hydro-electricity

(c) natural gas

(d) solar energy

(v) Which of the following forms of non-renewable energy is not classified under a fossil fuel?

(a) Nuclear

- (b) Petroleum
- (c) Oil
- (d) Natural gas

Ans.

- (i) (c) carbon monoxide
- (ii) (d) degradation of biomass
- (iii) (b) hydrogen, nitrogen, and sulphur.
- (iv) (d) solar energy
- (v) (a) Nuclear

80. Read the passage carefully and answer the following questions from Q 80 (i) to 80 (v).

India is one of the world's richest countries in terms of its vast array of biological diversity. For centuries, rural communities have relied on their local knowledge to conserve their environment. Through learning from experiences, imitating and observations, rural people have developed a body of knowledge on forest and wildlife conservation. The term conservation in this context refers to the processes of maintaining, protecting and managing forest and wildlife resources. Forests are indispensable for the provision of ecosystem goods and services, spiritual and cultural values, and nutrient cycles. The decline in biodiversity adversely affects rural livelihoods and threatens food, energy and health security of nearby communities.

(i) Endangered species are:

- (a)** those that are in danger of extinction.
- (b)** whose population has declined to levels from where it is likely to move into the endangered category.
- (c)** species with small population may move into the endangered or vulnerable category.
- (d)** none of the above

(ii) Amrita Devi Bishnoi National Award is given for:

- (a)** Water harvesting
- (b)** Wildlife conservation
- (c)** Excellence in Science
- (d)** Energy conservation

(iii) In which year Indian Wildlife Protection Act was implemented?

- (a)** 1972
- (b)** 1983
- (c)** 1999
- (d)** 2001

(iv) Which one of the following is a great achievement of the Chipko Movement?

- (a)** More trees are planted.

- (b) Development in Himalayan region.
- (c) Successfully resisted deforestation.
- (d) Soil erosion gets declined.
- (v) A local system of canal irrigation called kulhs is practised in which state?
 - (a) Himachal Pradesh
 - (b) Orissa
 - (c) Uttar Pradesh
 - (d) Madhya Pradesh

Ans.

- (i) (a) Those that are in danger of extinction.
 - (ii) (b) Wildlife conservation
 - (iii) (a) 1972
 - (iv) (c) Successfully resisted deforestation.
 - (v) (a) Himachal Pradesh
- 81.** Read the passage carefully and answer the following questions from Q 81 (i) to 81 (v).

Natural resource management is the taking care of natural resources such as land, water, marine and biological systems, with a particular focus on how the management affects the quality of life for both present and future generations. It is about the long-term implications of thinking and actions about the

future, and not just about present. Resource management is all about balancing of natural resources such as materials or substances occurring in nature, which can be exploited for economic gain such as mining, farming, utilising forest, fishing to name a few. Failed approaches to resource management are a big cause of pollution.

(i) Mining causes pollution because of the large amount of which is discarded for every tonne of metal extracted:

- (a)** coal
- (b)** dust
- (c)** slush
- (d)** slag

(ii) Despite nature's monsoon bounty, failure to sustain water availability underground has resulted largely due to:

- (a)** loss of vegetation cover.
- (b)** diversion for high water demanding crops.
- (c)** pollution from industrial effluents and urban wastes.
- (d)** All of the above

(iii) Which one of the following water resources ensures availability of water for irrigation, generating electricity and enough water for canal systems?

- (a)** Ponds
- (b)** Dams

- (c) Lakes
- (d) Rainwater harvesting
- (iv) Which one of the given below is not an advantage of water stored in the ground:
 - (a) Ground-water does not evaporate.
 - (b) Ground-water spreads out to recharge wells.
 - (c) Ground-water provides moisture for vegetation over a wide area.
 - (d) Ground-water is not protected from contamination by human and animal waste.
- (v) Best way to preserve forests is:
 - (a) to enforce human non-intervention totally.
 - (b) to stop building dams and roads.
 - (c) to manage protected areas by keeping local people out.
 - (d) to use the forest resources in a manner that is both environmentally and developmentally sound.

Ans.

- (i) (d) Slag
- (ii) (d) All of the above
- (iii) (b) Dams
- (iv) (d) Ground-water is not protected from contamination by human and animal waste.

- (v) (d) to use the forest resources in a manner that is both environmentally and developmentally sound.

82. Read the passage carefully and answer the following questions from Q 82 (i) to 82 (v).

Waste has become a big challenge for the environment and humans in modern times. Our water bodies, our grasslands, our fields, our public spaces; all of them are being affected by the waste we discard. The concept of 5R's is to decrease the amount of things we use and simultaneously also decrease the amount of things we throw away. Since we have limited space on earth to dispose all the waste, it is important to use the resources efficiently and create less waste. The 5Rs play an important role in solving the problems which can arise out of wrong waste management habits.

(i) Which of the following solid wastes describes the term 'Municipal Solid Waste'?

- (a) Toxic
- (b) Hazardous
- (c) Non-toxic
- (d) Non-hazardous

(ii) Why is it difficult to recycle plastics?

- (a) It is very hard.
- (b) It comes in different sizes.
- (c) It is adhesive.

(d) It contains different types of polymer resins.

(iii) Which of the following is done on an individual level?

(a) Burning

(b) Disposal

(c) Recycling

(d) Source reduction

(iv) Why is recycled paper banned for use in food containers?

(a) Because it creates a lot of spaces.

(b) Because it creates contamination.

(c) Because paper can be used only one time.

(d) Because paper is very thick and can not cover the food containers.

(v) The burning of solid waste is not recommended because:

(a) it is very costly.

(b) it requires a lot of space.

(c) it requires modern technologies.

(d) it causes several environmental issues.

Ans.

(i) (d) Non-hazardous

(ii) (d) It contains different types of polymer resins.

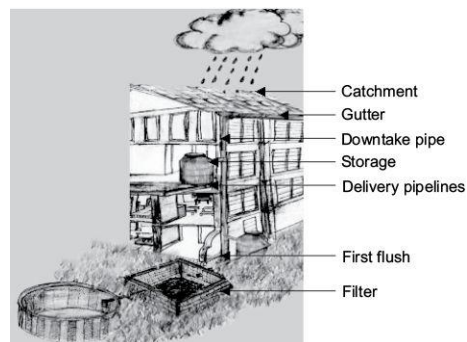
(iii) (d) Source reduction.

(iv) (b) Because it creates contamination.

(v) (d) it causes several environmental issues.

83. Read the passage carefully and answer the following questions from Q 83 (i) to 83 (v).

Observe the picture given below carefully before you answer the questions.



(i) Which process is described in the picture?

(a) Rain water harvesting

(b) Water cycle

(c) Water purification

(d) Desalting water

(ii) Bandhara, nadi, tals, bundhis, kattas are all names of:

(a) water harvesting systems around the world

(b) water harvesting systems in ancient India

(c) weapons used in ancient India

(d) forests around the world

(iii) Which of the following statements about water harvesting is not true?

- (a)** Water harvesting techniques are highly locale specific and the benefits are also localised.
- (b)** Water harvesting is an age-old concept in India.
- (c)** Water harvesting processes mitigates droughts and floods.
- (d)** Water harvesting cannot be considered as an alternative to the mega-projects like dams.

(iv) Watershed management cannot be used for which one of the following?

- (a)** Scientific soil and water conservation.
 - (b)** Develop primary resources of land and water.
 - (c)** To run water transport.
 - (d)** To produce secondary resources of plants and animals.
- (v)** Various organisations are involved in digging small pits and lakes, building small earthen dams, constructing dykes, building sand and limestone reservoirs as a part of:
- (a)** rooftop water collection.
 - (b)** watershed management.
 - (c)** community building project.
 - (d)** rearing fishes.

Ans.

- (i) (a) rain water harvesting.
- (ii) (b) water harvesting systems in ancient India
- (iii) (d) Water harvesting cannot be considered as an alternative to the mega-projects like dams.
- (iv) (c) To run water transport.
- (v) (b) watershed management.

84. Read the passage carefully and answer the following questions from Q 84 (i) to 84 (v).

Forest conservation is the practice of planting and maintaining forest areas for the benefit and sustainability of coming generations. The conservation of forest aims at a change in the composition of trees species and age distribution, and involves the upkeep of the natural resources within a forest that are beneficial to both humans and the environment. Forests are vital for human life because they provide a diverse range of resources; they act as carbon sink and produce oxygen which is vital for existence of life on the earth. Forests are rightly called as lungs of the earth. Not only this, forests help in regulating hydrological cycle, planetary climate, purify water, provide wildlife habitat (50% of the earth's biodiversity occurs in forests), reduce global warming, absorb toxic gases and noise, reduce pollution, conserve soil, and mitigate natural hazards such as floods and landslides.

- (i) A dispute, between the local villagers and a logging contractor who had been allowed to fell trees in a forest close to the village, gave rise to a famous movement called:

- (a)** Green Revolution
- (b)** Sal Forest Movement
- (c)** Chipko Andolan
- (d)** Arabari Forest Movement

(ii) With increase in human population across the world, energy demand is increasing:

- (a)** exponentially
- (b)** linearly
- (c)** quadratically
- (d)** minimally

(iii) _____ are also called biodiversity hot spots.

- (a)** Sea
- (b)** Forests
- (c)** National parks
- (d)** Water reservoirs

(iv) Loss of forest diversity will definitely lead to loss of:

- (a)** food and medicine options.
- (b)** plants.
- (c)** ecological stability.
- (d)** resources.

(v) One of the easiest tests to check water quality is to check its:

- (a) pH
- (b) colour
- (c) particulate matter concentration
- (d) odour

Ans.

- (i) (c) Chipko Andolan
- (ii) (a) exponentially
- (iii) (b) Forests
- (iv) (c) ecological stability.
- (v) (a) pH

85. Read the passage carefully and answer the following questions from Q 85 (i) to 85 (v). [Question Bank]

Waste management is essential in today's society. Due to an increase in population, the generation of waste is getting doubled day-by-day. Moreover, the increase in waste is affecting the lives of many people.

Waste management is the managing of waste by disposal and recycling of it. Moreover, waste management needs proper techniques keeping in mind the environmental situations. For instance, there are various methods and techniques by which the waste is disposed of. You must have come across 5 R's to

save the environment: refuse, reduce, reuse, repurpose and recycle.

- (i) Choose the waste management strategy that is matched with correct example.

(a)	Refuse	Choose products that use less packaging.
(b)	Reduce	Give unwanted toys and books to hospitals or schools.
(c)	Reuse	Not using single use plastic.
(d)	Repurpose	Making flower pot from used plastic bottle.

- (ii) Recycling of paper is a good practice but recycled paper should not be used as food packaging because:

- (a) recycled papers may release color /dyes on food items.
- (b) recycled papers are not absorbent.
- (c) recycled papers can cause infection due to release of methane.
- (d) recycled papers are costly.

- (iii) According to the 'Solid Waste Management Rule 2016', the waste should be segregated into three categories. Observe the table below and select the row that has correct information:

	Wet waste	Dry waste	Hazardous waste
(a)	Cooked food, vegetable peels	Used bulbs, fluorescent lamps	Plastic carry bags, bottles, newspaper, cardboard
(b)	Coffee and tea powder, garden waste	Plastic carry bags, bottles, newspaper, cardboard	Expired medicines, razors, paint cans

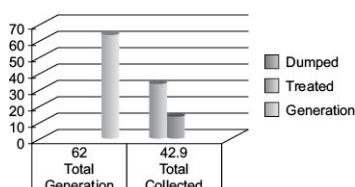
(c)	Leftover food, vegetable peels	Coffee and tea powder, garden waste	Insect repellents, cleaning solutions
(d)	Uncooked food, tea leaves	Old crockery, frying pans	Coffee and tea powder, garden waste

(iv) Effective segregation of wastes at the point of generation is very important. Select the appropriate statements giving the importance of waste segregation.

- (i)** Less waste goes to the landfills.
- (ii)** Better for public health and the environment.
- (iii)** Help in reducing the waste.
- (iv)** Resulting in deterioration of a waste picker's health.

- (a)** Both (i) and (ii)
- (b)** Both (i) and (iii)
- (c)** Both (ii) and (iii)
- (d)** Both (i) and (iv)

(v) The given graph shows the amount of waste generated, dumped and treated in percentage. Identify the reason of low success rate of waste management process.



- (a)** Only 15% of urban India's waste is processed.
- (b)** Less than 60% of waste is collected from households.

(c) More than 60% of waste is collected from households.

(d) Both (a) and (b).

Ans.

(i) (d) Repurpose making flower pot from used plastic bottle

(ii) (c) Recycled papers can cause infection due to release of methane.

(iii) (b)	Coffee and tea powder, garden waste	Plastic carry bags, bottles, newspaper, cardboard	Expired medicines, razors, paint cans
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(iv) (a) Both (i) and (ii)

(v) (d) Both (a) and (b)

Reasoning Based Questions

86. Why do you think that there should be equitable distribution of resources? What forces would be working against an equitable distribution of our resources?*** [NCERT]

Ans. There should be equitable distribution of resources because everyone whether rich or poor has equal rights to use natural resources and get benefits from them. Geographical factors and economic factors are the forces working against an equitable distribution of our resources. The rich and powerful people take advantage and get more benefits by using resources as compared to poor people. Over exploitation and mismanagement of resources also work against equitable distribution of our resources.

87. Why do we need to manage our resources carefully? Why management of natural resources requires a long term perspective?*

Ans. We need to manage our resources carefully as resources are limited hence over-exploitation of resources would lead to its depletion and it may not be available for our future generations. Equitable distribution of resources is also important so that everyone can be benefitted equally without any discrimination between rich and poor. We should also see that it may not cause damage to our environment. Management of natural resources requires a long term perspective so that it helps in sustainable development and it should be available for our future generations also.

88. What are the two main objectives of sustainable development? Why is reuse considered better than recycling?*

Ans. The two main objectives of sustainable development are:

(a) The main objective is to provide economic well-being to the present as well as future generations as well as to maintain a healthy environment and life support system.

(b) Implement a massive ecological construction project to slow down ecological degradation.

Reuse is considered better than recycling as recycling consume some energy to generate new things which is not seen in case of reuse. Reuse prevents environment pollution by not creating any waste. Reuse also saves money as material is used again without any process.

89. Why is forest considered as natural ecosystem?*

Ans. Forests are considered as natural ecosystem as they have plants and animal species that grow without human intervention and these are naturally sustainable. All these species interact with each other and are interdependent.

90. Why should we conserve forests and wildlife? [NCERT]

Ans. Forests and wildlife are rich source of biodiversity. They maintain an ecological balance in nature. Forests provide us various valuable products like honey, medicines, lac, gums, resins, wood, prevent soil erosion and flood, brings rainfall, release oxygen to atmosphere which is a life supporter. Forests are habitat of variety of living organisms. Loss of biodiversity would lead to ecological imbalance so we need to conserve forests and wildlife.

91. Although coal and petroleum are produced by the degradation of biomass even then we need to conserve them. Why?*

Ans. Coal and petroleum are formed from degradation of dead remains of plant and animals and it is a very slow process. It takes millions of years for the formation of coal and petroleum from the dead remains of plants and animals. But with increasing demand and consumption of these fossil fuels, they are depleting at a faster rate as compared to the rate of their replenishment. So, we need to conserve them.

92. Why are the Arabari forests of Bengal known to be a good example of conserved forest?

Ans. In 1972, West Bengal forest Department found that there is great degradation of Sal forests. So forest officer A.K.

Banerjee involved the local villagers in protection of these forests. They were given employment in both silviculture and harvesting operations. By 1983, the sal forests of Arabari became thick and green. So, it is a good example of conserved forest.

Very Short Answer Type Questions

93. How would these short term aims advantages differ from the advantages of using a long term perspective in managing our resources? * [NCERT]

Ans. Exploiting resources for short term aim provides benefit to meet the needs of present generation only but exploiting resources for long term prospective to meet the needs of future generation also. The management of natural resources for future use is a sustainable practice. The judicious use of natural resources in present generation enables the future generation also to use them for their benefits.

94. What is “repurpose”?

Ans. Repurpose is the recovery of waste without any pre-processing. For example, waste oils that cannot be refined for reuse in vehicles can be burnt for energy recovery. Recovering the energy from waste oil reduces our dependence on coal and imported oil.

95. Define sustainable development.

Ans. Sustainable development refers to the process of

economic development where resources are used judiciously to satisfy needs of not only present generation but also to conserve them for the use of future generations.

96. Write two advantages associated with water harvesting at the community level.*

Ans.

(a) Exploitation of water resources will be reduced.

(b) It helps to recharge natural wells.

97. If you could use any source of energy for heating your food which one would you prefer? State one reason for your choice.

—

Ans. I would prefer a solar cooker for heating food because solar cooker is environmental friendly and causes does not any pollution.

98. Name few industries based on forest produce.

Ans. Rubber, paper, timber, sports goods manufacturing industries are based on forest produce.

99. Which fossil fuel is conserved:

(i) When we save on electricity.

(ii) When we use bicycle for covering short distances instead of a motor bike.

Ans.

(i) Coal is conserved when we save on electricity.

- (ii) Petroleum is conserved when we use bicycle for covering short distances instead of a motor bike.

100

- . Name two industries based on forest produce.*

Ans. Timber industries and paper manufacturing industries are based on forest produce.

101

- . What is major cause of Ganga river pollution?

Ans. The main cause of water pollution in the Ganga river are the increase in the population density, various human activities such as bathing, washing clothes, the bathing of animals, and dumping of various harmful industrial waste into the rivers.

102

- . How does increasing demand for energy adversely affect the environment ?

Ans. To meet the increasing demand for energy we are exploiting the natural resources and mainly using fossil fuels like coal and petroleum which also emits pollutants that cause air pollution and this in turn adversely affects the environment.

103

- . Find out the traditional systems of water harvesting or management in your region? [NCERT]

Ans. Ponds, pits, lakes etc., are the traditional systems of water harvesting or management in the regions where rain water

is stored.

104

- . Find out the source of water in your region or locality. Is water from this source available to all people living in that area?

Ans. The source of water in our region is through borewell and municipal water supply. Municipal water is obtained from dams or rivers and it is available to all people living in the area. Some people in some areas have their own borewell.

105

- . List two advantages associated with water harvesting at the community level?*

Ans. The two advantages are:

- (a) Recharging of wells increases the level of ground water.
- (b) The water can be stored in rainy season and we can use it when there are no rain or when there is water scarcity.

106

- . Write the energy conversion that takes place in a hydropower plant.*

Ans. In a hydropower plant, the turbine converts the kinetic energy of falling water into mechanical energy and after that generator converts mechanical energy into electrical energy.

107

- . Find out the traditional systems of water harvesting or management in your region ? [NCERT]

Ans. Ponds, pits, lakes etc., are the traditional systems of water harvesting or management in the regions where rain water is stored.

108

- . Name two factors which can be used to find whether river water has been contaminated.

Ans. The presence of coliform bacteria in water and BOD value can be used to find whether river water has been contaminated.

109

- . Name the group of bacteria that confirms the contamination of water ?

Ans. Coliform group of bacteria confirms the contamination of water.

110

- . Which canal has brought greenery to considerable areas of Rajasthan ?

Ans. Indira Gandhi canal has brought greenery to considerable areas of Rajasthan.

111

- . Name the dam on the river Narmada whose height government want to raise.

Ans. Government want to raise the height of Sardar Sarovar dam on Narmada river.

112

- . Write the energy conversion that takes place in a hydropower

plant.

Ans. In a hydropower plant, the turbine converts the kinetic energy of falling water into mechanical energy and after that generator converts mechanical energy into electrical energy.

113

- . What would be the advantage of exploiting resources with short term aims? [NCERT]

Ans. The advantage of exploiting resources with short term aims is to provide benefits to meet the requirements of present generations.

114

- . What are the main uses of coal and petroleum products?

Ans. Coal is used as fuel in homes and in thermal power plants to generate electricity. Petroleum products like petrol, diesel etc., are used as fuel in transports like buses, cars, trucks, scooters etc.

Short Answer Type Questions

115

- . We saw in chapter (Management of natural resources) that there are four main stake-holders when it comes to forests and wildlife. Which among these should have the authority to decide the management of forest produce? Why do you think so? [NCERT]

Ans. The local people who live in or around Forest and Forest Department of Government should have the authority to decide the management of forest produce because local people know the practices to use these resources in a sustainable manner without causing any harm or damage to environment. Since we have seen in our past how local people protect the Sal forests of Arabari and tribal women of Tehri-Garhwal district of UP protest against the felling of trees by hugging them. There should also be a governing body which should take steps and create awareness among people for conserving and managing forests and wildlife resources. *****

116

- . In the context of conservation of natural resources, explain the terms reduce, reuse, recycle, refuse and repurpose? From among the materials we use in daily life, identify two materials for each category?

Ans. Reduce means less use of commodities or natural resources. Examples—Electricity, water.

Reuse means use of things again and again instead of throwing it away. Examples— Plastic bags, bottles, paper, envelopes etc.

Recycle means by using specific recycling technique new things can be produced from old ones. Examples – Metals, glass apparatus, plastic materials, papers etc.

Refuse to buy products that can harm you and the

environment. Examples - Refuse single use plastics, like disposable coffee cups, utensils, and straws. These materials are often made of plastic and thrown away after one use.

Repurpose means converting waste into resources. Examples - Waste plastic bottle can be used to make boat, waste oils that cannot be refined for reuse in vehicles can be burnt for energy recovery.

117

- . On the basis of the issue raised in this chapter, (Management of natural resources) what changes would you incorporate in your life style in a move towards a sustainable use of our resources? [NCERT]

Ans. Changes that I would incorporate in my life for sustainable use of our resources are:

- (a) Use of energy efficient bulbs instead of conventional bulbs.
- (b) Planting more trees.
- (c) Switching off lights, fans, TV, computer when not in use.
- (d) Closing off water taps while shaving, brushing.
- (e) Repairing leaky taps and pipes on time.
- (f) Separating biodegradable and non-biodegradable wastes before disposing them in dustbins.
- (g) Walking to nearby places and using of public transport to conserve fuels.

(h) Use of renewable sources of energy like solar energy.

118

- . Write the negative effect on the environment of affluent life style of few persons of a society.*

Ans. Use of air-conditioners, personal transport etc., releases very harmful gases like CFCs, oxides of sulphur, nitrogen into our environment. This may be responsible for ozone layer depletion and acid rain. Excessive use of non-biodegradable material may cause hazardous problem and excessive exploitation of resources may cause depletion of the environment.

119

- . What changes can you make in your habits to become more environment friendly? [NCERT]

Ans. We can make the following changes in our habits:

- (a) We can segregate biodegradable and non-biodegradable wastes and dispose them in separate dustbins.
- (b) We can collect paper, plastics, metals, glass apparatus and recycle them to make new products.
- (c) By closing the water taps and repairing leaky pipes and taps on time to save water.
- (d) By switching off lights, fans, computer, television etc., when not in use.
- (e) By using solar energy for cooking, heating water etc., instead of using fossil fuels.

(f) By planting more trees.

(g) By reusing things instead of throwing away. Example – old clothes, toys etc., can be given to needy people, plastic bottles of jam, pickles can be used to store other things etc.

120

- . What changes would you suggest in your home in order to be environment friendly? ***** [NCERT]

Ans. The following measures can be taken in our home in order to be environment friendly:

(a) We can segregate biodegradable and non-biodegradable wastes and dispose them in separate dustbins.

(b) By closing the water taps and repairing leaky pipes and taps to save water.

(c) By switching off lights, fans, computer, television etc., when not needed.

(d) By using solar energy for cooking, heating water etc., instead of using fossil fuels.

(e) By reusing things instead of throwing away. Example – old clothes, toys etc., can be given to needy people, plastic bottles of jam, pickles can be used to store other things etc.

(f) Use of energy saver lights like CFLs bulbs.

121

- . Three advantages of exploiting resources with short term aims:*

(i) Immediate benefit to few people.

(ii) Progress in science and technology for development in a country.

(iii) Urbanisation and Industrialisation of an area.

Ans. Three advantages of using a long time perspective:

(i) Resources will be made available for sustainable development.

(ii) Provides valuable contribution to the socio-economic development.

(iii) Quality of environment will be conserved.

122

. What can you as an individual do to reduce your consumption of the various natural resources? [NCERT]

Ans. I would follow 5 R's techniques *i.e.*, Reduce, Reuse, Refuse, Repurpose and Recycle.

(a) Use of lights, fans, televisions, music players etc., when required.

(b) Using CFLs bulbs, fluorescent tubes which consume less energy instead of conventional bulbs or tubes.

(c) Repairing of pipes and taps that cause leakage of water.

(d) Using solar energy for cooking and solar heater to heat water during winters.

(e) We can use waste water that is produced from water purifier in watering plants, moping floor, cleaning vehicles etc.

- (f) We can write on both sides of a paper, we can give our unused and old things to needy and poor people, bottles of jams, jellies, pickles when finished can be used to store other things etc.
- (g) We can recycle things like paper, plastics, metals, glass etc.

123

- . Explain 5 R's in the conservation of environment.

Ans.

Refuse : The word 'refuse' refers to ' to deny or to say no'. Refusing will help to eliminate a lot of waste from the very beginning. It is simply about saying no to the things that you do not need and looking into reusable alternatives. It includes the activities:

- (a) To say no to buy products that can harm you and the environment.
- (b) Looking into reusable alternatives.
- (c) Refuse single use plastics, like disposable coffee cups, utensils and straws. These materials are often made of plastic and thrown away after one use.

Reduce: The word 'reduce' refers to ' use less'. It includes the activities:

- (a) Do not waste food.
- (b) Save electricity by switching off electrical appliances when not required.

(c) Saving the fuel such as petrol, diesel etc. by walking or cycling to go for shorter distances.

(d) Repairing the leaking taps.

Recycle: The word 'recycle' refers to 'processing of waste articles to form new products'. A number of materials such as tins, cans, glass, plastics, polythenes etc. The following articles can be recycled are:

(a) Broken glass to form new glass.

(b) Waste polythene sheet to form a new sheet.

(c) Plastic articles can be recycled to produce inferior quality of plastics.

Reuse: The word 'reuse' refers to 'using of articles till it gets broken'. It is more advantageous than recycling as it does not require energy. It includes the activities:

(a) Writing on both sides of paper.

(b) Using cloth carrying bags.

(c) Use of metals, ceramics, glass containers.

Repurpose: The word 'repurpose' refers 'to recover'. Repurpose means converting waste into resources. This requires a bit of thinking and craftiness, but does not have to be beautiful. It includes the activities:

(a) Waste plastic bottle can be used to make boat.

(b) Waste oils that cannot be refined for reuse in vehicles can be burnt for energy recovery.

- (c) Recovering the energy from waste oil reduces our dependence on coal and imported oil.

124

- . Why should there be equitable distribution of resources? List three forces that would be working against an equitable distribution of our resources. *****

Ans. There should be equitable distribution of the resources so that all the people irrespective of being rich and poor have access and makes use of the resources. Equitable resource distribution also leads to sustainable development.

Three factors that work against equitable distribution of resources are:

- (a) Over exploitation of resources by industrialists for short-term gains.
- (b) Improper management which has led to access of natural raw material to certain group of people which are either influential.
- (c) Wastage by the people who have indifferent attitude towards environment, use the resources with short-term aim hence leading to depletion of resources.

125

- . List three advantages each of:*
- (i) Exploiting resources with short-term aims.
 - (ii) Using a long-term perspective in managing our natural resources.

Ans.

(i)

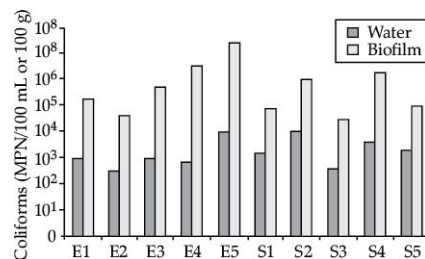
- (a)** Short-term exploitation will meet the demand of present generation.
- (b)** There will be no shortage of resources.
- (c)** Larger aspect regarding the details of a reserve can be studied also.

(ii)

- (a)** Long-term management of natural resources would meet the demand of present and future generation.
- (b)** No harmful impact on the environment.
- (c)** Equitable distribution of resources amongst the rich and poor.

126

- Major rivers in India have high bacterial contamination, Yamuna and Ganga top the list of most polluted rivers.



The graph above shows the Distribution of total coliform bacteria in river water and biofilms. E1 to E5.

(i) Which among the following is the most polluted?

(ii) State the reason for bacterial contamination in water body.

Ans.

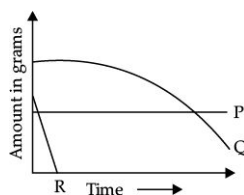
(i) E5 is most polluted river body.

(ii) Bacterial contamination in water is indicated by the presence of coliform bacteria. Bacterial contamination in water is mostly through untreated sewage and cause waterborne diseases.

127

- Advancement of the technology has resulted in improvement of our lifestyle and has also changed our attitude. When the human population was low and technology was in its infancy, the various kinds of solid wastes generated due to human activities were easily degraded by decomposers present in nature and it did not create any Significant harmful effect on the environment. In the recent times, however human population has increased tremendously and the technology has become greatly advanced. These two factors have contributed Significantly in the deterioration of our environment due to addition of number of wastes.

(i) Samaira took three different types of solid wastes P,Q, R and buried them under the soil in a pot, as she wanted to study their rate of decomposition. Her findings are shown in the given graph



Select the option that correctly identifies P, Q and R

P	Q	R
(a) Polythene bag	Leather bag	Fruit peel
(b) Used syringes	Broken glass	Leather purse
(c) Cardboard	Cow dung	Rubber mat
(d) Human excreta	Paper cup	Cow dung

(i) Which of the following statements regarding solid wastes is correct?

- (a) Change in the packaging technology has resulted in generation of lot of solid wastes.
- (b) Dumping of solid wastes could reduce the fertility of the soil leading to reduction in crop yield.
- (c) Accumulation of solid waste could cause increased incidents of disease in a locality.
- (d) All of these

Ans.

- (i) (a) According to the given graph, P is a waste that is not decomposed with the time. Hence, it can be a non-biodegradable waste such as glass and plastic wastes, synthetic polymers, pesticides, etc. Q took sometime for decomposing; hence it can be a waste made up of biodegradable material such as leather bag. As R starts decomposing in a very short span of time, this means it is a biodegradable waste such as fruit peel, cow dung, human excreta, etc.

- (ii) (d) Increased use of plastic material in packaging has resulted in generation of lot of solid wastes. Dumping industrial chemical waste affects the soil fertility and subsequently reduces crop yield. Solid waste can block drains creating pools of water which can become breeding ground for mosquitoes and therefore, could increase the incidents of disease in the locality.

128

- . How industry is affecting the forest?*****

- (ii) State the main aim of the management of forests and wild life.

Ans.

- (i) Industries depend on forests as a resource provider and exploit all the resources to the maximum without any scope of conservation. The various industries which are based on forest produce are; timber industry, paper manufacturing industry, 'lac' industry and sports equipment industry. Forests are also treated as hunting and fishing sites and a source of raw materials for many industries. The deforestation caused due to the development projects and industrialisation is a serious issue.
- (ii) The main aim of the management of forests and wild life is to conserve the biodiversity which we have inherited.

129

- . State the significance of Chipko movement.

Ans. Chipko movement awakened people to the importance of maintaining trees as it allows a nation's ecosystem to

function properly and also helps people live healthily and have a prosperous lifestyle. The Chipko movement quickly spread across communities and media, and forced the government, to whom the forest belongs, to rethink their priorities in the name of forest produce. Due to the participation of local people, it led to the efficient management of forests.

One of the movement's major successes was that the Uttar Pradesh government ensured zero tolerance for commercial forest felling and saved thousands of trees from being felled, which resulted in the conservation of abundant forest resources for local benefits.

The Chipko movement was a movement in India to protect forests. Thus, individuals took up this campaign and organised a number of demonstrations to raise people's consciousness. They protested against logging operations for trade. And deforestation has finally been stopped.

130

- . Water is an elixir of life, a very important natural resource. Your science teacher wants you to prepare a plan for a formative assessment activity– “How to save water, the vital natural resource.”
 - (i) Write any two ways that you will suggest to bring awareness in your neighborhood on how to save water.
 - (ii) Name and explain any one way by which the underground water table does not go down further.*

Ans.

- (i) Water is a very precious natural resource which can be

saved by the following ways:

- (a) Turning off taps while brushing, shaving.
 - (b) Use of buckets instead of shower while bathing.
 - (c) The waste water from purifier can be used for moping, watering plants, etc.
- (ii) Underground water can be recharged by rain water harvesting. The technique to capture and store rain water for future use by making special water harvesting structures is called rain water harvesting. There are two ways of rain water harvesting:
- (a) Surface run off where rain water that flows away from the surface can be collected and used.
 - (b) Rooftop rain water harvesting is the technique where rain water from roof tops of the buildings is collected through canals and drains the water to ground reservoir. This stored water can be used in future.

131

- . How did Chipko Movement ultimately benefits the local people? Explain briefly.*

Ans. Chipko movement was originated from a small village Reni in 1974 where a group of women under the leadership of *Gaura Devi* protested against indiscriminate felling of trees by hugging them. The Chipko movement spread slowly to other parts under the leadership of *Shri Sunderlal Bahuguna* of Silyara in Tehri region. Chipko movement is the movement where people form a circle around the tree

and hug them to prevent falling of trees. The local people of Tehri-Garhwal district of Uttarakhand, then a part of UP realise the importance of forests and protest against felling of trees as well as giving forest products to other regions. This prevention of cutting down of trees help in conservation of soil, bringing rainfall, maintenance of ecological balance in nature. The local people can use the products of forests for their benefits.

132

- . Suggest some approaches towards the conservation of forests?
[NCERT]

Ans. Some approaches towards the conservation of forests are:

- (a) Large scale afforestation programmes.
- (b) Avoid cutting of trees (deforestation).
- (c) To educate people about the importance of forests by organising programs and campaigns.
- (d) Forest fires should be checked.
- (e) By implementing law for severe punishment to anyone who is involved in illegal cutting down of trees.
- (f) Local people should be included in conservation of forests and they should be given proper employment.

133

- . How can you as an individual contribute or make a difference to the management of: [NCERT]
 - (i) Forests and wildlife

- (i) Water resources
- (i) Coal and petroleum

Ans.

(i) Forests and wild life:

- (a) Large scale afforestation programmes.
- (b) Avoid cutting down of trees.
- (c) To educate people about the importance of forests by organising events, programs and campaigns.

(ii) Water resources:

- (a) By closing the water taps and repairing leaky pipes and taps to save water.
- (b) Harvesting and conserving water.
- (c) Avoid polluting water and create awareness among people to save water.

(iii) Coal and petroleum:

- (a) Minimum utilisation of fossil fuels and using more alternative sources of energy like solar energy.
- (b) We can use public transport instead of our personal vehicles.
- (c) We can walk to nearby places instead of using vehicles.
- (d) Proper maintenance of vehicles and use of efficient internal combustion engines.

(e) Use of CNG instead of petrol or diesel.

134

. State two advantages of conserving:*

(i) Forests

(ii) Wildlife

Ans.

(i) Advantages of conserving forests:

(a) It supports life and purifies air by releasing oxygen by photosynthesis process.

(b) It holds the soil and prevents soil erosion.

(ii) Advantages of conserving wildlife:

(a) It balances ecology and biodiversity.

(b) It provides important things to sustain life like life saving drugs, ivory, musk, leather etc.

135

. List three environmental consequences of using fossil fuels. Suggest three steps to minimise the pollution caused by various energy sources.*

Ans. The combustion of fossil fuels releases different harmful products. Three environmental consequences of using fossil fuels are:

(a) It release CO_2 which is a greenhouse gas which traps the solar energy falling on earth and it leads to global warming.

- (b) Carbon monoxide is poisonous gas which when enters in the blood stream stops the functioning of red blood cells to carry oxygen from lungs to other parts of the body. It also causes death.
- (c) Sulphur dioxide released during the burning of fossil fuels is harmful for lungs and causes bronchitis and other diseases.

Steps to minimise the pollution caused by various energy sources are:

- (a) Solar cookers should be used to cook food wherever possible.
- (b) Use of biogas as domestic fuel should be encouraged in rural areas.
- (c) Five R's strategy—Refuse, Reduce, Reuse, Repurpose and Recycle should be practiced.

136

- . Compare the traditional system with the probable systems in hilly or mountainous areas or plains or plateau regions.
[NCERT]

Ans. Water harvesting system in hilly or mountainous areas is different from plains or plateau regions because in hilly regions like in Himachal Pradesh local systems of canal irrigation which are man-made channels through which water flows from streams and were carried to various villages. These were called Kulhs. This method was practiced nearly 400 years ago. But in plains or plateaus water is stored in dams, tanks etc.

137

- . What is water harvesting? List two main advantages associated with water harvesting at the community level. Write two causes for the failure of sustained availability of groundwater.*

Ans. Water harvesting means capturing rain where it falls or capturing the run off in village or town. It can be done by capturing run off from rooftops and local catchments.

Advantages:

- (a) Harvesting water allows capturing better utilisation of an energy resource or when there is an immediate need.
- (b) This water is suitable for irrigation.

Causes for failure of sustained ground water availability are:

- (a) Increase in agricultural activities leads to depletion of ground water.
- (b) Increase in population and industries are also responsible for the same.

138

- . Discuss the advantages of storing water in ground.

Ans. The advantages of water stored in the ground are:

- (a) It does not evaporate, but spreads out to recharge wells and provides moisture for vegetation over a wide area.
- (b) It does not provide breeding grounds for mosquitoes like stagnant water collected in ponds or artificial lakes.

- (c) The ground-water is also protected from contamination by human and animal waste.

Long Answer Type Questions

139

- What do you understand by sustainable development? Explain.

Ans. Sustainable development, is a kind of development that takes into account the needs of the economy, and the environment without compromising either of the aspects. If the economic development is sustainable then the present use of natural resources will not limit us from their use in the future. Thus, sustainable development tells us that development must be of a kind which can take care of our needs as well as the needs of future generations. In other words, “sustainable development refers to the process of economic development where resources are used judiciously to satisfy needs of not only present generation but also to conserve them for the use of future generations”. Sustainable development takes places without depleting the present natural resources.

140

- Discuss the objectives of Namami Gange Programme.

Ans. The Ganga is the most important river of India both from the point of view of its basin and cultural significance. But water in the Ganga river is polluting day-by-day due to increase in the population density, various human activities such as bathing, washing clothes, the bathing of animals,

and dumping of various harmful industrial waste into the rivers.

Much of the effort to clean the Ganga over the last 30 years has been centred around creating sewage treatment capacities in major urban centres along the river. 'Namami Gange Programme', is an Integrated Conservation Mission, approved as "Flagship Programme" by the Union Government in June 2014 with budget outlay of Rs.20,000 Crore to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of the National River Ganga. Namami Gange is being implemented by the National Mission for Clean Ganga (NMCG), and its state counterparts—State Programme Management Groups. NMCG would establish field offices wherever necessary. The National Mission for Clean Ganga is the implementation wing set up in October, 2016.

Main pillars of the Namami Gange Programme are:

- (a)** Sewerage Treatment Infrastructure
- (b)** River-Front Development
- (c)** River-Surface Cleaning
- (d)** Bio-Diversity
- (e)** Afforestation
- (f)** Public Awareness
- (g)** Industrial Effluent Monitoring
- (h)** Ganga Gram

The government's Namami Gange programme seeks to tackle the problem at several levels at the same time. "Rejuvenation" of the Ganga includes reviving 'Aviral Dhara', or continuous flow in stretches that have gone dry due to natural or man-made reasons, regenerating the river ecology, making the river an important inland waterway, reviving it as a habitat for dolphins and gharials, and spreading awareness about the need to keep the Ganga clean.

141

- . What is the importance of forest as a resource? What are the causes of deforestation?

Ans. Forests are an important natural resource due to following reasons:

- (a) Forests provide us wood, dry fruits, spices, gums, resins, dyes, tannins and various products like honey, camphour, rubber etc.
- (b) The roots of trees hold the soil firmly preventing soil erosion.
- (c) It absorbs carbon dioxide from atmosphere and release oxygen which is life supporter.
- (d) It absorbs carbon dioxide which is a greenhouse gas thus plays an important role in reducing global warming.
- (e) It increases frequency of rainfall and regulates water cycle.
- (f) It serves as a shelter for wildlife.

Causes of deforestation are:

- (a) Large scale deforestation for demand of wood, timber as raw materials for industries, domestic purposes etc.
- (b) Construction of dams, reservoirs, roads, railways.
- (c) Setting up of factories and industries.
- (d) Construction of big apartments to provide space to the growing population.
- (e) Shifting cultivation for agriculture.
- (f) Overgrazing by livestock.

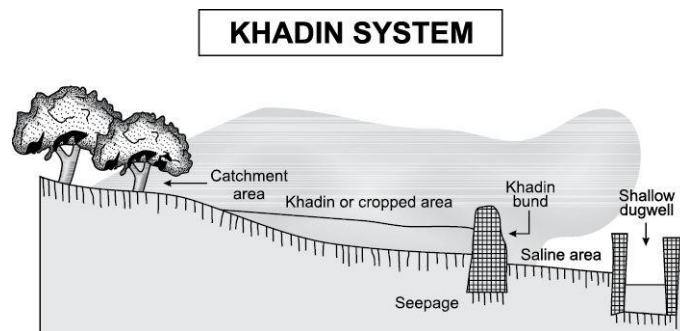


Fig. Traditional water harvesting system an ideal setting of the Khadin System

142

. Answer the following questions:

- (i) What are fossil fuels and why are they called so?
- (ii) How are they important for us?
- (iii) Name two fossil fuels?
- (iv) Give some methods to conserve fossil fuels?

Ans.

- (i) Fossil fuels are obtained by degradation of dead remains of plants and animals which are buried under the surface of earth over a million years ago. They are called so as they are produced by degradation of biomass over a million years ago.
- (ii) They are an important source of fuels. Petroleum products like petrol, diesel etc., are used as fuel in automobiles. Coal is used in thermal power plants to generate electricity and also used as a fuel for domestic purposes. Natural gas is also used as a fuel in automobiles in the form of Compressed Natural Gas (CNG).
- (iii) The two fossil fuels are coal and petroleum.
- (iv) Methods of conserving fossil fuels are:
 - (a) Use of CNG in place of petrol and diesel as a fuel in automobiles.
 - (b) Switching to renewable sources of energy like solar energy, wind energy, hydroelectric energy instead of using non-renewable energy sources like fossil fuels.
 - (c) Wastage during extraction and transportation of fossil fuels should be minimised.
 - (d) Protecting them from accidental fires.
 - (e) Over consumption and wastage of petrol or diesel should be checked in automobiles by proper servicing and efficient internal combustion engines.

143

- . What are dams? Give some examples of major dams in our

country? State some benefits of constructing dams?

Ans. Dams are large water storage bodies built by government agencies to regulate the flow of water and utilise it for benefit of human beings. There are many dams constructed across major rivers in different parts of our country. For examples:

- (a) Bhakra dam across river Sutlej in Punjab.
- (b) Tehri dam on river Ganga in Uttaranchal.
- (c) Mettur dam on river Cauvery in Tamil Nadu.
- (d) Sardar Sarovar dam on river Narmada in Gujarat.
- (e) Hirakud dam on river Mahanadi in Odisha .

Some benefits of constructing dams are:

- (a) It stores adequate amount of water which can be used for irrigation.
- (b) Water can be supplied to villages and towns when there is shortage of water through pipelines.
- (c) It can be used to generate hydroelectricity.
- (d) It can be used for flood control.

144

. Answer the following questions:

- (i) What is meant by rain water harvesting? Name some of the ancient structures used for rain water harvesting by the rural people.

- (ii) What are the various advantages of water stored in ground?

Ans.

- (i) Rain water harvesting is a process of collecting and storing rain water by using special techniques for future use when there is shortage of water or during non-rainy days. There were various traditional methods by the rural people for rain water harvesting. These include Khadins, Nadis, Bandharas, Kulhs, Kattas, Tals etc.
- (ii) The various advantages of water stored in ground are:
- (a) Water is not polluted.
 - (b) Water does not get evaporated but it spreads out to recharge wells.
 - (c) It does not serve as breeding places for mosquitoes, flies.
 - (d) It does not get contaminated due to human activities.
 - (e) It provides moisture for vegetation.
 - (f) Mitigates flood and droughts.

145

- . What do you mean by watershed management? What is its main aim? What are the advantages of watershed management?

Ans. Watershed management is concerned with scientific soil and water conservation to increase the production of biomass.

Its main aim is to:

- (a) To develop land and water resources, to produce secondary resources of plants and animals without causing any ecological imbalance.
- (b) To implant the sustainable management of natural resources to improve the quality of living.
- (c) Improvement of quality of soil for better productivity.
- (d) Supplying clean and safe drinking water to all.

Advantages of watershed management are:

- (a) It enhances the life of downstream dam and reservoirs.
- (b) It minimises the risk of droughts, landslides and floods.
- (c) It increases ground water level.
- (d) It increases crop production.
- (e) Various developmental activities like hydroelectric power generation, supply water for irrigation and other domestic uses.

146

- . Explain Khadin system of water harvesting with diagram?

Ans. Khadins are a traditional way of harvesting rain water and it is mainly followed by people of Rajasthan. These are very long earthen embankments which are built across the lower edge of the sloping farmlands which are called bund. Rain water flows down the slopes and fills the bunds to form a reservoir. Pathways are made from bund to nearby well

which are mainly dug behind the bund where water seeps and fills the wells.

Differentiate Between

147

- . Differentiate between watershed management and Water Harvesting.

Ans.

Watershed Management	Water Harvesting
Watershed management means to conserve soil and water in a watershed so as to increase the bio-mass production.	Water Harvesting means storing rain water and reusing it, rather than allowing it to run off.
Watershed management includes both the land and water area that runs off to a common point.	In Water Harvesting, we store the water and use them for irrigation, drinking and other purposes.
Watershed management systems are natural systems.	Water Harvesting Systems are artificial.

Analysis and Evaluation Based Questions

148

- . The environmentalists are insisting upon “sustainable natural resource management”. State its advantages ?

Ans. The advantages of sustainable natural resource management are :

- (a) It provides resources for the benefit of both present and

future generations.

- (b) It would reduce pollution and helps in conservation of natural resources.
- (c) It enables equal distribution of resources to everyone whether rich or poor.
- (d) It provides steady economic growth and misuse of natural resources.

149

- . If you find coliform bacteria in a sample of potable water, what does it mean ? Explain.

Ans. The presence of coliform bacteria in water indicates that water is contaminated by sewage as sewage contains human excreta. Human excreta contains a lot of disease causing microbes and when this sewage is dumped into rivers or lakes or ponds they get contaminated as coliforms from sewage will come into water.

150

- . Give four characteristics of a good fuel?

Ans. Four characteristics of a good fuel are:

- (a) It causes little to no pollution.
- (b) It should have high calorific value.
- (c) It should be economical, easily available and easily transported.
- (d) It should have moderate ignition temperature.

151

- . Suggest ways to strike a balance between environment and development?

Ans.

- (a) Use of renewable sources of energy instead of non-renewable sources.
- (b) Large scale afforestation programmes should be carried out and use of forest resources effectively.
- (c) Segregation of biodegradable and non-biodegradable wastes and use of recycling technology for efficient use of resources.

152

- . List few problems that may arise by planting trees of single variety over vast tracts of forest?

Ans. The problems which arise by planting trees of single variety over vast tracts of forest are:

- (a) Loss of biodiversity.
- (b) Various needs of the local people cannot be met by monoculture.
- (c) If a disease occurs to that particular plant it would affect large areas.
- (d) Different organisms require different types of food from different plants but if one variety of plants is planted many organisms will not get food.

153

- What is the slogan of Chipko Movement?

Ans. Slogan of Chipko Movement is “five Fs” – Food, Fuel, Fibre, Fodder, Fertilizer.

154

- Answer the following:

- (i) Locate and name the water reservoirs in figure A and B.
- (ii) Which has an advantage over the other and why?

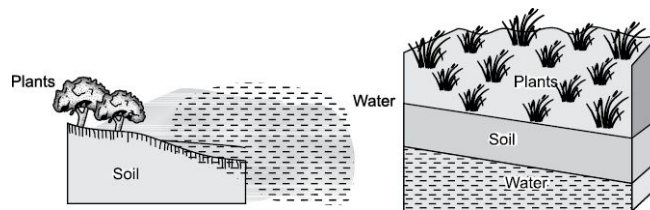


Figure (A) Figure (B)

Ans.

- (i) A is pond and B is underground water body.
- (ii) Underground water body has an advantage over pond as:
 - (a) Water is lost by evaporation.
 - (b) Water does not get contaminated due to human activities.
 - (c) It does not serve as a breeding place for mosquitoes, flies which are carriers of several diseases.
 - (d) It provides moisture for vegetation over a large area.
 - (e) It spreads out to recharge wells.

155

. Which of the two is better option :

- (i) To collect rain water in ponds or artificial lakes
- (ii) To let it recharge ground water by water harvesting.

List two causes for the failure of sustained availability of ground water.

Ans. To let it recharge ground water by water harvesting is better option than to collect rain water in ponds or artificial lakes because there is no loss of water by evaporation, water does not get contaminated due to human activities, it does not provide a breeding place for mosquitoes, flies etc.

The causes for the failure of sustained availability of ground water are :

- (a) Rising population demands more water which leads to depletion of ground water level.
- (b) Growing industries and dumping of effluents and wastes from them causes pollution of ground water.

Application Based Questions

156

. Chipko movement was started in 1970s in a small village of Garhwal high up in Himalayas. Villagers stood against greedy contractors.

Women folk hugged the trees. The Chipko – movement spread

slowly to all nearby areas under the leadership of Shri Sunder Lal Bahuguna.

- (i) Do you feel inspired by this movement which prevented felling of trees?
- (ii) Who do you think are real stakeholders?
- (iii) Which old belief has been challenged by Chipko movement?

Ans.

- (i) Yes, we feel inspired by this movement which prevented felling of trees because it is one of the suitable methods to conserve the forests and protect the environment from getting damaged.
- (ii) Local people are real stakeholders.
- (iii) Chipko movement has challenged the old belief that forests only give us timber but they help in sustaining our lives, they serve as a rich source of biodiversity, they are a habitat of wildlife. They give us oxygen which is life supporter. So, we should conserve our forests.

157

- . In a village in Karnataka, people started cultivating crops all around a lake which was always filled with water. They add fertilizers to their field in order to enhance their yield. Soon they discovered that the water body was completely covered with green floating plants and fishes start dying in large numbers. Analyse the situation and give reasons for excessive growth of plants and death of fishes in the lake?

Ans. The fertilizers that were added by farmers washed away to the lakes by rain water. Fertilizers contain many chemicals like nitrates and phosphates which provide nutrients for excessive growth of algal blooms and the entire water body gets covered by them. This process is called eutrophication. Since the entire water body gets covered by these green algal blooms sunlight and air cannot enter to the lake. So fishes found in lakes due to insufficient availability of dissolved oxygen died.

158

- . Water finds a very important role in our day to day life but a large portion of our population has no access to pure drinking water. Many of them are also suffering from waterborne diseases.

- (i) What makes water unsafe for drinking?
- (ii) What steps should an individual take to prevent pollution of water?

Ans.

- (i) Release of untreated effluents of industries to water bodies, dumping of garbage in water, throwing domestic waste, sewage etc., into the water bodies make the water unfit for drinking. These wastes contain heavy metals, coliform bacteria, various disease causing microbes, salts etc. The high TDS and BOD value also makes the water unfit for drinking.
- (ii) Following measures should be taken to prevent water pollution:

- (a) We should treat waste water in treatment plants before letting them into water bodies.
- (b) We should not dump garbage, domestic waste in water bodies.
- (c) We should test the water for BOD, TDS value and coliform count from time to time.

Creating Based Questions

159

- . Ramesh is concerned about the quality of water in the river flowing in his village. On the banks of the river several factories were discharging effluents into the river. There were soap and detergent factory, lead battery manufacturing unit, plastic cup manufacturing unit and alcohol distillery in the nearby area.

He collected the water samples and sent them for testing in a laboratory, the pH of water sample collected from a river was found to be acidic in the range of 3.5-4.5. The effluents of which one of the following factories is the most likely cause for lowering the pH of river water? Suggest what should Ramesh do?

Ans. Acid spillage from lead battery manufacturing factory can lower down the pH. Ramesh should talk to management authorities of lead battery manufacturing unit to make alternative arrangements for disposal of their effluents.

160

- . In our country, there are attempts to increase the height of

several existing dams like Tehri and Almati, dams across Narmada. People living in nearby area are afraid of the consequence of raising the height of dams. Can you suggest some such consequences that might affect these people.

Ans. People might face social problems because such projects displace large number of peasants and tribals without adequate compensation or rehabilitation, economic problems because these projects swallow up huge amounts of public money without the generation of proportionate benefits, environmental problems because they contribute enormously to deforestation and the loss of biological diversity.

The people who have been displaced by various development projects are largely poor tribal who do not get any benefits from these projects and are alienated from their lands and forests without adequate compensation. The oustees of the Tawa Dam built in the 1970s are still fighting for the benefits they were promised.

173

- . Using the following information form a pathway showing the meaning of three R's with example. And also include information that is not mentioned

below to complete it. Reduce, Recycle, Reuse, save electricity, plastic, use again.

Ans. Reduce → use less → example → save electricity by switching off unnecessary lights and fans.

Recycle → recycle materials to make required things → example → recycle the products like plastic, paper, glass and metal.

Reuse → use things again and again → example → Like the plastic bottles in which you buy various food-items like jam or pickle can be used for storing things in the kitchen.

A light gray rectangular box with rounded corners. On the left side, there are three concentric curved lines. The text "Self-Assessment" is centered in a bold, dark gray font.

Self-Assessment

162

- . Give two examples of wastes that can be recycled and reused.

163

- . Everyone of us can do something to reduce our personal consumption of various natural resources. List four such activities based on 5-R approach.

164

- . How does refusing helps to eliminate waste?

165

- . What is meant by 5-R's strategy?

166

- . Name the raw material used in the formation of coal and petroleum.

167

- . What are non-renewable resources? Give examples.

168

- . Explain the term sustainable development.

169

- . What is the objective of 'Namami Gange Programme'?

170

- . List four stakeholders which may be helpful in the conservation of forests.

171

- . Name the tree for which Amrita Devi Bishnoi and others sacrificed their lives.

172

- . Mention the role of forests in conserving the environment. How do the forests get depleted?

173

- . There is a garbage bin installed near your school gate where children and other staff of the school throw waste food, tetra pack, plastic, waste paper, empty mineral water bottle etc. The bin is cleared by municipality everyday which they dump in a landfill area.
 - (i) Can you suggest any improvement in this waste disposal system of your school?
 - (ii) What action will you take in your school to conserve energy?
 - (iii) Give an idea which can discourage travelling of students by personal car.

174

- . How local people can be used for successful forest management ?

175

- . List the products of combustion of fossil fuels and what are their adverse effects on environment?

176

- . Write in detail about coal and petroleum conservation?