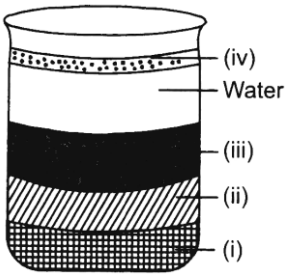
Natural Resources and Their Conservation

1. Dig up a handful of garden soil and put it in a beaker. Add about 500 mL of water and shake the beaker for a little while. Now, allow the soil to settle down. In which order, the soil components will get arranged from (i) to (iv) as shown in the figure?

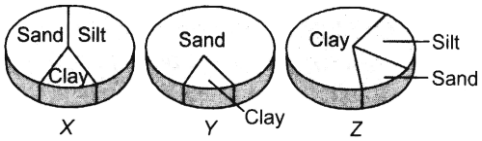


(i)	(ii)	(iii)	(iv)
(a) Sand	Silt	Clay	Clay
(b) Gravel	Sand	Humus	Humus
(c) Clay	Gravel	Sand	Humus
(d) Humus	Grave	Sand	Clay

2. Which of the following statements are correct?
(i) Some animals help us in keeping our environment clean. They consume dead animals and dispose them off. They are called scavengers,
(ii) Quinine, a forest product obtained from the bark of Cinchona tree, is widely used to treat typhoid.
(iii) Van Mahotsava is a festival of cutting down trees.
(iv) World Forest Day is celebrated on 21st March every year.

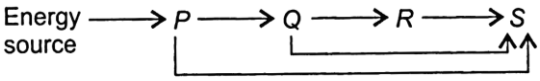
(a) (i) and (iv) only (b) (ii) and (iii) only
(c) (i) and (ii) only (d) (iii) and (iv) only

3. The given pie charts show the composition of three types of soil samples X, Y and Z. Which of the following is correct regarding these?



(a) X is unable to hold water or nutrients.
(b) Y is used for pot making.
(c) Z provides good amount of oxygen to roots for breathing.
(d) X is best suited for cultivation.

4. Refer to the given flow chart showing flow of energy in a food chain.



Select the correct statement regarding P, Q, R and S.
(i) S helps in cleaning of environment as well as recycling of nutrients.
(ii) The role of Q comes when plants and animals die.
(iii) P operate at all levels of food chain.
(iv) R eats other animals and get its food indirectly from P.

(a) (i) and (iv) only (b) (i), (iii) and (iv) only
(c) (iii) and (iv) only (d) (i), (ii), (iii) and (iv)

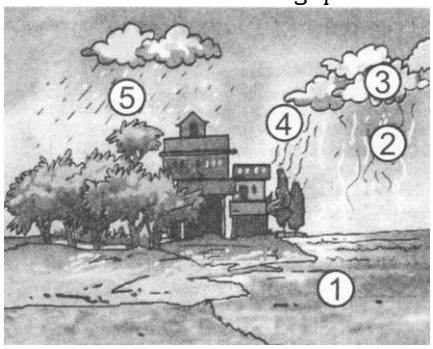
5. Read the given statements and select the correct option,
Statement 1: Forests prevent soil erosion.
Statement 2: Canopy formed by crown of leaves of forest trees reduces the force and speed of raindrops.

(a) Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
(b) Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
(c) Statement 1 is true but statement 2 is false.
(d) Both statements 1 and 2 are false.

6. Consider the following statements. Select the option which correctly identifies true (T) and false (F) ones.
(i) Microorganisms act upon the dead plants to produce humus,
(ii) Autotrophs lie at the base of a food chain.
(iii) Large scale cutting of trees is called afforestation.
(iv) Branched part of a tree above the stem is called crown.

	(i)	(ii)	(iii)	(iv)
(a)	T	F	T	F
(b)	T	T	F	T
(c)	T	F	F	T
(d)	T	F	T	T

Direction (Q. No. 7 and 8): Refer to the given figure of water cycle and answer the following questions.



7. In the given figure if (1) represents the river water, then what does (4) represent?
(a) Condensation (b) Respiration
(c) Transpiration (d) Precipitation

8. Which of the following represents the process involved in the formation of dew?
(a) ② (b) ③
(c) ④ (d) ⑥

9. Read the following statements.
(P) The branchy part of a tree above the trunk is known as the ____ of the tree.
(Q) The branches of tall trees look like a roof over the other plants. This is known as ___.
(R) The ____ is covered with a layer of dead and decaying leaves, fruits, seeds, twigs and herbs.
(S) In rainforests, the vegetation that grows under the shade of the canopy is known as the ____.

Select the option that correctly fills up the blanks in any two statements.
(a) (Q) - Crown; (S) - Forest floor
(b) (P) - Crown; (S) - Understorey
(c) (Q) - Canopy; (R) - Understorey
(d) (P) - Canopy; (R) - Forest floor

10. Water is an inexhaustible, renewable resource, still there is shortage of water at many places of the world. It is because
(a) much water available to us is not in the usable form
(b) 97.4% of all available water is frozen in glaciers and polar ice caps
(c) we cannot make use of water that is present in rivers and lakes
(d) we cannot make use of rainwater.

11. If the percolation rate of water of a particular soil sample is 20 mL/min, then how much time will 200 mL of water take to percolate completely into the soil?
(a) 800 s (b) 600 s
(c) 200 s (d) 400 s

12. Saurashtra, a land with history of severe water scarcity, hostile climate, and rocky land is now self-sufficient in water availability due to the efforts of ___ who taught the local people the importance of rainwater harvesting.
(a) Rajendra Singh
(b) Shamjibhai J. Antala
(c) Amia Ruia
(d) Aabid Surti

13. The steps of wastewater treatment plant are given below randomly.
(i) Wastewater is passed into sedimentation tank.
(ii) Sludge is decomposed by anaerobic bacteria.
(iii) Wastewater is passed through bar screens.
(iv) Wastewater is passed to grit and sand removal tank.
(v) Solids settle at the bottom and floatable materials are removed by skimmer.
(vi) Aeration of water takes place.
(vii) Disinfection of water by adding chlorine.

Which of the following represents correct sequence of steps?
(a) (iii) → (iv) → (i) → (v) → (ii) → (vi) → (vii)
(b) (iv) → (iii) → (i) → (v) → (ii) → (vi) → (vii)
(c) (iii) → (iv) → (v) → (i) → (ii) → (vi) → (vii)
(d) (iii) → (iv) → (i) → (ii) → (v) → (vi) → (vii)

14. A large area of forest was cleared by burning. Which of the following statements is/are correct regarding the consequences of this activity?
(i) Increase in soil erosion as soil is directly exposed to wind and rain.
(ii) The land will have more fresh air as there are lesser trees to take in oxygen.
(iii) Wildlife will easily thrive in the cleared area because more space is available now.
(iv) New trees will grow faster and replace the burnt forest soon as the ash of the burnt trees will make the soil more fertile.

(a) (i) only (b) (i) and (iv) only
(c) (i), (ii) and (iv) only (d) (i), (ii), (iii) and (iv)

15. Mr Khanna had a pond in his garden, filled with all kinds of aquatic plants. He wanted to prevent mosquitoes from breeding in the pond without harming the plants in any way. He could _____.
(i) Add salt into the water

(ii) Add some goldfish into the pond
(iii) Spray a film of oil on the surface of the pond

(a) (i)only (b) (ii) only
(c) (iii) only (d) (i), (ii) and (iii)

Achievers Section (HOTS)

Direction (Q. No. 16 and 17): Read the given data and select the correct option for the following questions.
Raman carried out an experiment to find out how fast water can pass through four different types of soil. He put each type of soil in four pots with equal sized holes at the base and placed separate dishes at their bottom to collect water. He poured water in them one by one, and used a stopwatch to record the time taken for water to reach the level he had marked same in each dish. His recording is given in the table as shown below.

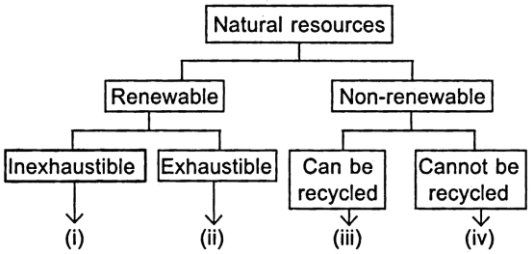
Type of soil	W	X	Y	Z
Time (in seconds)	40	35	62	120

16. Which soil is the most suitable for a plant that thrives in wet and clayey soil?
(a) W (b) X
(c) Y (d) Z

17. What factors should Raman keep the same to ensure a fair test?
(i) The amount of soil
(ii) The size of the pot
(iii) The shape of the dish
(iv) The amount of water

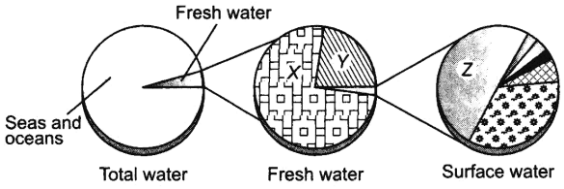
(a) (iii) and (iv) only
(b) (i) and (ii) only
(c) (ii), (iii) and (iv) only
(d) (i), (ii), (iii) and (iv)

18. Refer to the given flow chart and identify (i), (ii), (iii) and (iv).



(i)	(ii)	(iii)	(iv)
(a) Ground water	Forest	Metal	Fossil fuel
(b) Water	Forest	Metal	Fossil fuel
(c) Water	Fossil fuel	Plastic	Forest
(d) Ground water	Fossil fuel	Metal	Forest

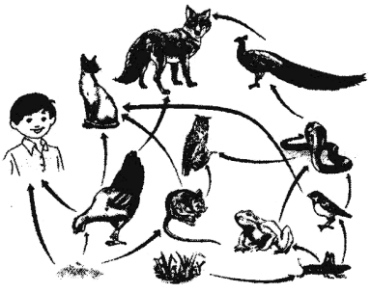
19. Refer to the given diagrammatic representation of distribution of water on Earth and select the correct statements for X. Y and Z.



(i) X is a persistent body of dense ice that is constantly moving under its own weight.
(ii) Y is found below the water table and rainwater is its main source.
(iii) Z is an important source of water to the perennial rivers.

(a) (i) and (ii) only (b) (ii) and (iii) only
(c) (i) and (iii) only (d) (i), (ii) and (iii)

20. Which of the following will happen if the population of snakes is increased in the given food web?



(a) The population of frog will increase.
(b) The population of peacock will decrease.
(c) There will be no effect on the population of hen.
(d) The population of grasshopper will increase.

Answer key

1. B	**2.** A	**3.** D	**4.** A	**5.** A
6. B	**7.** C	**8.** B	**9.** B	**10.** A
11. B	**12.** B	**13.** A	**14.** A	**15.** B
16. D	**17.** B	**18.** B	**19.** A	**20.** D

HINTS & EXPLANATIONS

1. (b) Not Available

2. (a): Quinine is used to treat malaria. Van Mahotsava is a festival of planting trees. It is celebrated during the first week of July.

3. (d): 'X' is best suited for cultivation as it contains all the types of soil (sand, silt and clay) in right proportion. Silt is the most fertile soil and clayey soil can hold enough water, whereas sandy soil is well aerated.

4. (a) Not Available

5. (a): Canopy is the highest level of branches and foliage in a forest, formed by the crowns of the trees. Canopy reduces the force and speed of falling raindrops thus, preventing soil erosion.

6. (b): Large scale cutting of trees is called deforestation.

7. (c): In the given figure of water cycle, (2)-evaporation; (3)-condensation; (4)-transpiration and (5)-precipitation.

8. (b): Water from the river evaporates due to heat of the Sun to form water vapours. These vapours on coming in contact with the cool air form water by the process of condensation. Dew is also formed by the process of condensation.

9. (b): P-Crown, Q-Canopy, R-Forest floor, S-Understory

10. (a): Water is constantly circulating between the Earth and the air through water cycle, still, there is shortage of water at many places of the world because 97.4% of the total available water is in seas and oceans, which cannot be directly used by us due to its high salt content and about 2% water is frozen in glaciers and polar ice caps that is also not available to us. Thus, the remaining 0.6% is only available to us as freshwater in the liquid form.

11. (b): Time taken by 20 mL of water to percolate = 1 min = 60 seconds Time taken by 200 mL of water to percolate = 600 seconds.

12. (b) Not Available

13. (a) Not Available

14. (a): Forests help in preventing soil erosion. Roots of trees bind the soil particles together, thus preventing the soil erosion. If forests are cleared by burning, then soil will erode rapidly.

15. (b) Not Available

16. (d) : Soil 'Z' is most suitable for a plant that thrives in wet and clayey soil as it holds water for a longer period than other types of soils as shown in the table.

17. (b) Not Available

18. (b) Not Available

19. (a): In the given figure, X, Y and Z could be glaciers and ice caps, groundwater and lakes respectively. Glaciers are important water resources for majority of rivers.

20. (d): If there is increase in the population of snake, then the population of bird and frog will decrease resulting in increase in the population of grasshopper.