

Coal And Petroleum

Improve your learning

Q. 1. Complete the given analogy

- i. coal : exhaustible : : _____ : inexhaustible
- ii. coal tar : _____ : : coke : manufacture of steel
- iii. petrochemical : plastic : : CNG : _____
- iv. carbon dioxide : global warming : : _____ : nausea

Answer : i. Solar energy or wind energy or tidal energy or any other source of renewable energy.

Explanation: Inexhaustible resources of energy are those which are abundantly available in nature and can be used for an infinite interval of time. Recall petroleum is also exhaustible resource because it is limited and takes a very long time to get formed again.

ii. Synthetic dyes, drugs, explosives, perfumes, plastic, paints and roofing materials.

Explanation: informative question. Information as given in the textbook. Use of coke is in the manufacture of steel. Similarly, the use of coal tar is in making above listed materials

iii. Manufacturing of fertilizers.

Explanation: CNG used in making fertilizers like Petrochemicals used in making Plastics.

iv. Toxic products of paints made from petroleum and heavy metals.

Explanation: carbon di oxide is the reason for global warming. By similar logics, toxic products that are released from the paints made from petroleum are the reason for nausea and many other diseases.

Q. 2. Match the following

- | | | |
|----------------------------|-----|----------------------------|
| i. natural resource | [] | a. Carbonization |
| ii. coal | [] | b. plastic chair |
| iii. petrochemical product | [] | c. Krishna, Godavari delta |
| iv. natural gas | [] | d. Plankton |
| v. petroleum | [] | e. water. |

Answer : (i) natural resource — (e) water

Reason: water is found in nature in abundance and is not synthesized synthetically by humans hence it is a natural product.

(ii) Coal — (a) carbonization

Reason: the process of conversion of dead vegetation into coal is called carbonization. In this way it is most appropriately related to coal

(iii) Petrochemical product — (b) plastic chair

Reason: petrochemicals are used in making plastics. So it is related closely to chair made of plastics

(iv) Natural gas — (c) Krishna, Godavari delta

Reason: Natural gas is found in India in this delta.

(v) Petroleum — (d) plankton

Reason : petroleum was formed by remnants of tiny organisms called plankton. Hence this is the answer that is most closely related with petroleum.

Q. 3. Tick (✓) the only correct choice among the following.

i. Which one of the following is less polluting fuel?

a. Natural gas b. coal

c. kerosene d. petrol

ii. The main constituent of coal is

a. Carbon. b. oxygen

c. air d. water

iii. Which one of the following material is used for making shoe polish?

a. Paraffin wax b. petrol.

c. diesel d. lubricating oil

Answer : (i) – (a) natural gas.

Reason: Natural gas combustion in efficient ways and enough supply of oxygen release very less harmful material as compared to petrol, coal or kerosene. The Sulphur, nitrogen and carbon oxides are released around 50 to 60 percent lesser than petrol and other sources.

(ii) - (a) carbon

Reason: Coal is formed from the dead vegetation which lived many years ago. Since most of the nitrogen and water get decomposed or fixed in their cycles, coal contains mainly organic matter containing carbon.

(iii) - (a) paraffin wax.

Reason: Paraffin wax mixed with turpentine is used in shoe polish. It cleans the shoes and also strengthens the leather of shoes.

Q. 4. Fill in the blanks.

- i. _____ was used in manufacture of steel.
- ii. The biproduct of coal used in synthetic dyes and paints is _____.
- iii. Coal was formed in areas where large amounts of _____ was buried under the earth.
- iv. _____ gas which causes climate change and global warming.

Answer : i. Coke was used in manufacture of steel.

Reason: used to strengthen the pure iron used in steel

ii. The bi product of coal used in synthetic dyes and paints is coal tar.

Reason: informative question. Information in book.

iii. Coal was formed in areas where large amounts of Vegetation was buried under the earth.

Reason: vegetation buried for very long time (millions of years) face extremely high temperature and pressure and gives coal.

iv. Carbon di oxide gas which causes climate change and global warming.

Reason: carbon di oxide traps sun's heat and increases the temperature of the earth. This is what global warming is.

Q. 5. Name the petroleum products used for roads surfacing.

Answer : Coal tar is mainly used for road surfacing.

The black thick liquid which one might have seen where roads are being laid is the coal tar. It is a mixture of about 200 different petroleum substances and increases life span of roads.

Q. 6. Explain the process of formation of petroleum on Earth?

Answer : Certain organisms named plankton were found in seas and forests. Their remnants and dead bodies were buried deep into the earth for a very long time (million

of years). Under very high temperature and pressure for such a long time, these fossils were transformed into petroleum.

Q. 7. Project Work

Compare a CNG run vehicle with that of a diesel run vehicle. What difference do you notice in both cases with respect to pollutants released, level of pollution and cost of fuel? Prepare a report on your findings. You can take the help of a driver to make a report on your observation.

Name of the fuel	Cost of the fuel as on today	Pollutants liberated
Diesel/Petrol.		
CNG		

Answer :

Name of the fuel	Cost of the fuel as on today	Pollutants liberated
Diesel/Petrol.	Around 70 rs per litre	carbon monoxide, nitrogen oxides, particulate matter, and unburned hydrocarbons
CNG	Around 40 rs per kg	carbon dioxide (CO ₂), unburned hydrocarbons (UHC), carbon monoxide (CO), nitrogen oxides (NO _x), sulfur oxides (SO _x) and PM (particulate matter)

Although pollutants in both the fuels are almost similar to a kind, but in CNG the pollutants are released in a lesser amount and hence it is less polluting than Petrol or diesel.

Q. 8. Project Work

Choose five families of your neighborhood, collect the information about the measures that they adopt to conserve energy resources in transport and cooking.

Name of the Head of the family	Number of members in the family	No of vehicles using	Amount spent for Fuel in one month	Amount spent for the Cooking purpose

Make a report on your observation

Answer :

Name of the Head of the family	Number of members of the family	No of vehicles using	Amount spent for Fuel in one month	Amount spent for the Cooking purpose
Ram	4	0	700rs	700rs
shyam	4	1 bike	1000rs	700rs
Ramesh	4	1 car	1500rs	700rs
suresh	4	1 car	1000rs	700rs
Pritam	4	2 cars	2500	700rs

From the data collected, we can see that there is a huge difference between various families in the rates of consuming fuel even though they might be facing similar conditions or having some lifestyles.

Let's consider first person Ram, he doesn't have any vehicle of his own and hence he only spends on fuel for cooking purposes.

In case of Shyam, he uses a smaller vehicle which causes him to pay 300 on fuel other than cooking.

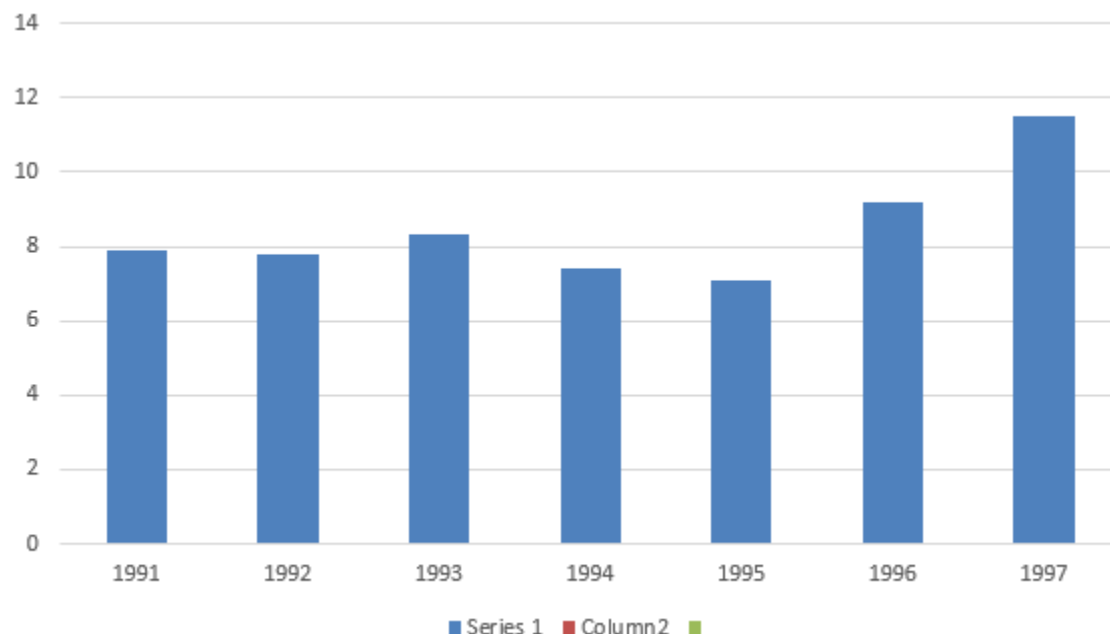
Where comes the important point of discussion is a case of Ramesh and Suresh. Both have same lifestyles and resources but still, there is a huge difference in their expenses towards fuel. The reason is that Suresh though having a car himself does use carpooling which not only saves his money but also helping in reducing pollution along with saving of fuel.

Q. 9. The following Table shows the total power shortage percentage in India from 1991- 1997. Show the data in the form of a Bar graph taking shortage percentage for the years on the Y-axis and the years on the X-axis.

S. No.	Year	Shortage (%)
1	1991	7.9
2	1992	7.8
3	1993	8.3
4	1994	7.4
5	1995	7.1
6	1996	9.2
7	1997	11.5

- a) Is the shortage percentage of power increasing or decreasing?
b) If shortage percentage of power increases year by year, how will it effect on human life? Explain.

Answer :



a) There is no continuous increment or decrement of shortage percentage of power. The shortage percentage of power in India decreased from 1991 to 1992. It was increased from 1992 to 1993. Again decreased from 1993 to 1995. Then the shortage percentage increased from 1995 to 1997.

b) If shortage percentage of power increases year by year, then

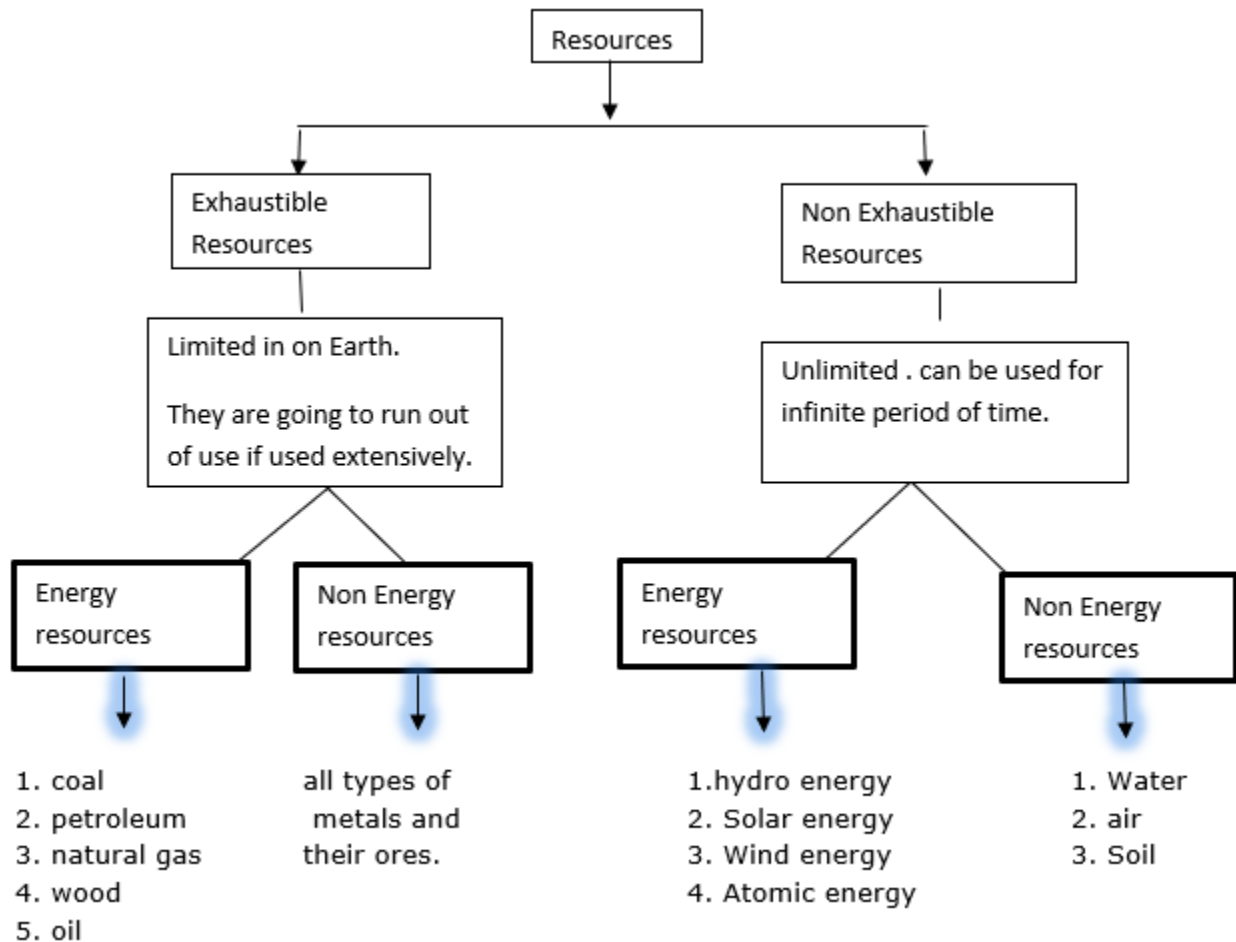
(i) This results in fuel crisis

(ii) This results in economical crisis. (As the fuel cost increased with raising demands.)

(iii) The increase of shortage percentage of power indicates over consumption of power or energy sources. This leads to pollution.

Q. 10. Draw a flow chart showing Exhaustible and Inexhaustible resources and their use.

Answer :



Q. 11. Collect information about places where we get coal, petroleum and natural gas in Andhra Pradesh and mark the places on outline map of Andhra Pradesh.

Answer : Kakinada Krishna Godavari Basin → gas reserves



Q. 12. How do you appreciate the efforts of human beings to discover an alternate energy sources to Coal and Petroleum for their daily use?

Answer : Coal and petroleum are exhaustible resources. Moreover, we have also seen that using them leads to various environmental problems like global warming, pollution and etc. These two prime reasons motivate humans to look for some alternative energy sources like solar energy and wind energy which are inexhaustible and also nonpolluting. Such type of resources is very important for the sustainable development of the country. Hence efforts for the search of such resources is highly appreciated by me.

Q. 13. Harshith said to his father, "Daddy we can save more fuel by using a bicycle instead of a bike for going to nearby places?" How do you appreciate Harshit's comment?

Answer : Using a bicycle for the nearby places is one of the steps that we all should see to check overuse of petrol energy and environmental pollution. Yes. Harshit's

opinion is very good. We can save more fuel by using cycle instead of a bike for going to nearby places. Petrol and Diesel are nonrenewable energy resources. If the usage of such fuels continues in the present ratio, there will occur an energy crisis in the coming future. Also causes environmental pollution. So we have to save fuels. So I appreciate Harshith and I too follow his advice

Q. 14. Why should people look for alternative sources of fossil fuel?

Answer : Coal and petroleum are exhaustible resources. Moreover, we have also seen that using them leads to various environmental problems like global warming, pollution and etc. Hence people need to look for the new resources so that we do not run out off energy and also can save our environment.

Q. 15. Assume that you are a driver, what measures do you take to save petrol and diesel?

Answer : I will take following measures:-

1. I will use my vehicle only when it is really important to do so.
2. I will always keep my vehicle maintained by regular servicing. Unmaintained vehicles consume more fuels and give more smoke.
3. I will keep my vehicle engine off while red signals
4. I will use natural gas instead of petrol as a fuel.

Q. 16. “Crude oil and refined fuel when spills into the sea from a tanker of ships by accident”. Discuss the consequences of this on the environment.

Answer : Crude oil and refined fuel are non-solvable in water i. e. the float on the surface of the water. This leads to most of the aquatic life difficulty in breathing and surviving, which in many ways lead to bad consequences in the whole ecosystem in long run. Moreover, water gets polluted and these fuels may also circulate in rain cycle to cause acid rains. Hence such accidents are really harmful to the environment.

Q. 17. “The use of CNG and LPG as fuels for automobiles helps us to minimize air pollution and maintains ecological balance”. Do you agree with this statement? If yes, explain.

Answer : Yes, the fact is very true. As we have seen in this chapter, CNG and LPG release harmful materials like carbon di oxide, carbon mono oxide, Sulphur and nitrogen oxides in lesser amounts than petrol and diesel or oils. They give almost same energy comparing to petrol causing less pollution. But fact remains that it also leads to some pollution whether less or more and also it is exhaustible. So such fuels are better than

that of petrol and diesel for automobiles but are not something perfect to be used for maintaining ecological balance.