

Coal and Petroleum

1. Which of the following statements are correct?
 (I) Coal, petroleum and natural gas are called fossil fuels.
 (II) Coal and natural gas are exhaustible substances.
 (III) CNG is more polluting than petrol.
 (IV) Coke is used in the manufacture of steel.

(a) I and II only (b) II and IV only
 (c) I, III and IV only (d) I, II and IV only

2. When air is passed through red hot coke, a gaseous fuel is produced. The name of this gaseous fuel and its composition are respectively
 (a) Natural gas, $\text{CO} + \text{H}_2$
 (b) Producer gas, $\text{N}_2 + \text{CO}$
 (c) Water gas, $\text{H}_2 + \text{CO}$
 (d) None of these.

3. Destructive distillation of coal is carried out by heating coal strongly to 1000°C in the absence of air. The various useful products obtained are
 (a) Crude oil, kerosene, naphtha and heavy oil
 (b) Coke, coal gas, coal tar and ammonium compounds
 (c) Coal gas, petroleum gas and lignite
 (d) None of these.

4. Few statements are given below. Identify the incorrect statements and mark the appropriate option.
 (i) In fractional distillation of petroleum, hydrocarbon with lowest boiling point condenses first.
 (ii) Useful substances obtained from petroleum and natural gas are termed as 'Petrochemicals'.
 (iii) Coke is used in the extraction of many metals.
 (iv) Paraffin wax used in candles, vaseline, grease, polish is obtained by destructive distillation of coal.

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

5. In the oil wells, X forms the topmost layer, followed by Y and finally Z. X, Y and Z are respectively
 (a) Natural gas, oil and water
 (b) Petroleum gas, oil and natural gas
 (c) Natural gas, water and oil
 (d) Petroleum gas, oil and water.

6. Read the given passage and fill in the blanks by choosing an appropriate option.
 The process of conversion of wood into coal is called i. There are three main varieties of coal which vary in their carbon content. ii has upto 96 per cent of carbon, iii has about 65 per cent carbon while iv has about 38 per cent carbon.

	(i)	(ii)	(iii)	(iv)
(a)	Destructive distillation	Lignite	Anthracite	Bituminous coal
(b)	Carbonisation	Anthracite	Lignite	Bituminous coal
(c)	Carbonisation	Anthracite	Bituminous coal	Lignite
(d)	Destructive distillation	Bituminous coal	Anthracite	Lignite

7. In fractionating column, various fractions are obtained at various heights of the column. As the vapours reach at a height where temperature is equal to or just below the boiling point of that fraction, it will
 (a) Condense to form a liquid
 (b) Remain in gaseous state
 (c) Condense to form a solid
 (d) Escape from the column.
8. Select the incorrect statements among the following:
 (i) Bitumen is used for metalling the roads.
 (ii) Some inexhaustible natural resources like coal, petroleum and natural gas formed from the dead

remains of living organisms are known as fossil fuels.

(iii) Many useful substances are obtained from coal (commercial importance), so it is also called as 'Black gold'.

(iv) Natural gas is used as a starting material for the manufacture of a number of chemicals and fertilisers.

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

9. Which of the following represents the correct decreasing order of boiling points of the given liquids.

- (a) Paraffin wax > Diesel > Kerosene > Petrol
(b) Diesel > Kerosene > Petrol > Paraffin wax
(c) Kerosene > Petrol > Paraffin wax > Diesel
(d) Petrol > Paraffin wax > Diesel > Kerosene

10. Different components of petroleum are separated by fractional distillation. What is the correct sequence of fractions obtained in the fractionating column from top to bottom?

- (a) Petroleum gas, lubricating oil, kerosene, gasoline.
(b) Kerosene, petroleum gas, lubricating oil, gasoline.
(c) Petroleum gas, gasoline, kerosene, lubricating oil.
(d) Gasoline, kerosene, petroleum gas, lubricating oil.

11. Coal tar can be used as a starting material for manufacturing

- (i) Drugs
(ii) Photographic materials
(iii) Cookwares
(iv) Explosives

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

12. Read the following statements carefully.

X : It is a fossil fuel used in thermal power plants to produce electricity.

Y : It is a porous, black and almost pure form of carbon.

Z : It is a mixture of about 200 substances.

X, Y and Z are respectively

- (a) Petroleum, coal gas, coke
(b) Coal, coke, coal tar
(c) CNG, bitumen, diesel
(d) Coal gas, petrol, paraffin wax.

13. One word answers are given for a few statements. Mark the answer which is not correct.

- (a) Resources which will either never run out or are replaced within a reasonable period of time – Renewable resources.
(b) Wise and careful use of resources by not wasting them - Conservation.
(c) Conversion of wood into coal over million of years due to high temperature and pressure under the earth - Carbonisation.
(d) A black, viscous liquid extracted from the rocks which is a source of hydrocarbons - Coal tar.

14. Which of the following represents an incorrect match?

- (a) Coal gas - Methane + Hydrogen
(b) LPG - Propane + Butane
(c) Producer gas - Carbon + Nitrogen
(d) CNG - Compressed methane

15. Read the given statements and select the correct option.

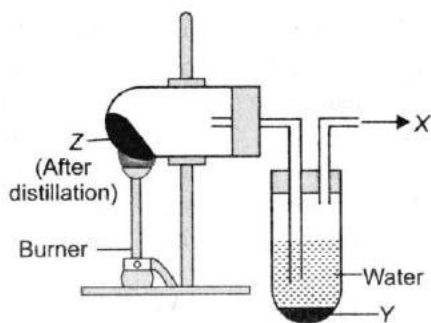
Statement 1: Petrol condenses near the top of the fractionating column while diesel oil near the middle of the column.

Statement 2: Petrol is more volatile than diesel oil.

- (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 and statement 2 is false.
(d) Both statements 1 and 2 are false.

Achievers Section (HOTS)

16. Observe the figure of destructive distillation of coal. What are the three fractions X, Y and Z?



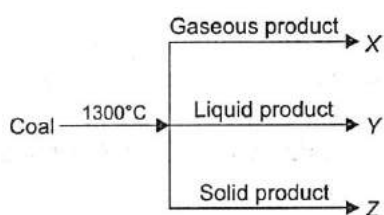
	X	Y	Z
(a)	Coal gas	Coal tar	Coke
(b)	Coal gas	Coke	Coal
(c)	Coal gas	Coal tar	Impure coal
(d)	Carbon dioxide	Coal tar	Coal

17. Match column I with column II and choose the correct option from the codes given below.

Column I (Amorphous forms of carbon)	Column II (Uses)
(P) Lamp black	(i) For making electrodes for dry cell.
(Q) Bone Charcoal	(ii) In gas masks
(R) Wood charcoal	(iii) In extraction of metals
(S) gas carbon	(iv) To remove colour from sugarcane juice
(T) Coke	(v) For making black shoe polish

	P	Q	R	S	T
(a)	(i)	(v)	(iii)	(ii)	(iv)
(b)	(v)	(iv)	(ii)	(iii)	(i)
(c)	(ii)	(iii)	(iv)	(i)	(v)
(d)	(v)	(iv)	(ii)	(i)	(iii)

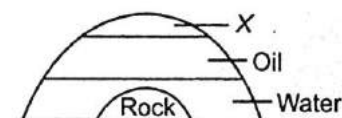
18. Study the given flowchart carefully.



Which of the following statements is correct?

- (a) X can be condensed back to coal.
- (b) Y and Z are useless products.
- (c) Z starts burning when exposed to air.
- (d) None of these

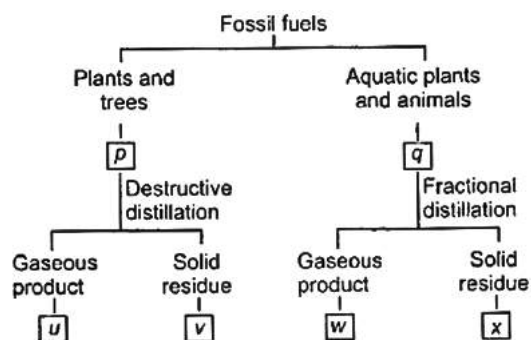
19. The given figure shows the petroleum deposit inside the earth's crust. Which of the following is correct with respect to substance X?



- I. X is chiefly made up of methane.
- II. X is stored under low pressure.
- III. X is a clean, non-polluting fuel.

- (a) I and III
- (b) II and III
- (c) I and II
- (d) None of these

20. Fill in the blanks left in the classification of the fossil fuels.



p	q	u	v	w	x
(a) Petroleum	Coal	Petroleum gas	Bitumen	Coal gas	Coke
(b) Coal	Petroleum	Coal gas	Coke	Petroleum gas	Bitumen
(c) Coal	Petroleum gas	Coal	Charcoal	Gasoline	Coal tar
(d) Petroleum	Coal	Gasoline	Bitumen	Natural gas	Coke

Answer key

1. D

2. B

3. B

4. B

5. A

6. C

7. A

8. B

9. A

10. C

11. C

12. B

13. D

14. C

15. A

16. A

17. D

18. D

19. A

20. B

HINTS & EXPLANATIONS

1. (d) Not Available
2. (b) Not Available
3. (b) Not Available
4. (b) : In fractional distillation of petroleum, hydrocarbon with highest boiling point condenses first. Paraffin wax is obtained by fractional distillation of crude oil or petroleum.
5. (a) : In oil wells, the layers containing petroleum oil and gas are above that of water, because oil and gas are lighter than water and do not mix with it,
6. (c) Not Available
7. (a) Not Available
8. (b) : Coal, petroleum and natural gas are exhaustible natural resources as they are limited in nature and can be exhausted by human activities. Petroleum is called 'Black gold' because of its great commercial importance.
9. (a) Not Available
10. (c) : Order of boiling points of different components of petroleum are as follows :
Petroleum gas < Gasoline < Kerosene < Lubricating oil
The component having lowest boiling point i.e., highly volatile (difficult to condense) will be obtained at the top of the fractionating column and the component having higher boiling point i.e., less volatile (tends to condense more easily) will be obtained at the bottom of the column.
11. (c) : Coal tar is used as a starting material for manufacturing various substances like synthetic dyes, drugs, explosives, perfumes, plastics, paints, photographic materials, roofing materials, etc.
12. (b) Not Available
13. (d) : A black, viscous liquid extracted from the rocks which is a source of hydrocarbons is bitumen.
14. (c): Producer gas - Carbon monoxide + Nitrogen
15. (a) Not Available
16. (a) : In destructive distillation of coal, finely powdered coal taken in a test tube is heated. Coal tar (Y) gets collected at the bottom of the second test tube and coal gas (X) escapes out through the side tube. The black residue left in the first tube is called coke (Z).
17. (d) Not Available
18. (d) : X is coal gas which cannot be condensed back to coal. Y and Z are coal tar and coke respectively which are quite useful products.
19. (a) Not Available
20. (b) Not Available