Talent & Olympiad

General Science - 8th



Coal and Petroleum

- **1.** Which of the following is a fossil fuel?
 - (a) Petroleum (b) Wood
 - (c) Cow dung (d) Dry leaves
- **2.** Where does natural gas occur?
 - (a) Above petroleum oil
 - (b) Below petroleum oil
 - (c) Along with petroleum oil
 - (d) Inside volcanic mountains
- **3.** What is the common name of petroleum?
 - (a) Black gold (b) Yellow gold
 - (c) Green gold (d) Blue gold
- 4. What are the most common sources of energy used in automobiles?
 - (a) Wood and coal
 - (b) Petroleum and diesel
 - (c) LPG and cow dung
 - (d) Natural gas and coal
- 5. When an oil well is drilled through rocks, which of the following comes out first?
 - (a) Coal gas (b) Marsh gas
 - (c) Natural gas (d) Carbon dioxide
- **6.** By what process is petroleum refined?
 - (a) Fractional distillation
 - (b) Destructive distillation
 - (c) Distillation
 - (d) All of the above
- 7. During fractional distillation, the crude petroleum is heated to
 - (a) $600^{\circ}C$. (b) $400-500^{\circ}C$
 - (c) 200°C (d) 100°C
- **8.** Identify the fuel that leaves more smoke and ash on burning.
 - (a) Solid fuels
 - (b) Liquid fuels
 - (c) Gaseous fuels
 - (d) Any one of the above
- **9.** What is the underlying principle based on which fractional distillation is carried out?
 - (a) Different densities of each fraction
 - (b) Different molecular weights of each fraction
 - (c) Different boiling points of each fraction
 - (d) Different melting points of each fraction
- **10.** Which of the following is used as a fuel?
 - (a) Gasoline
 - (b) Ether
 - (c) Tar
 - (d) Grease

11.	By which of the given (a) Carbonisation (c) Vapourisation	processes is coal formed? (b) Distillation (d) Evaporation	
12.	Which of the following (a) Lignite (c) Anthracite	g has the lowest percentage of carbon? (b) Bituminous (d) Peat	
13.	Which of the forms of (a) Anthracite (c) Peat	coal has the highest percentage of carbon? (b) Bituminous (d) Lignite	
14.	What do fuels combin (a) CO_2 (c) H_2	e with to produce heat and light? (b) CO (d) O ₂	
15.	What does natural gas (a) C_2H_6 (b) CH_4 (c) C_3H_8 (d) C_4H_{10}	s mainly consist of?	
16.	What does gobar gas produced from animal and plant waste contain? (a) Ethane (b) Methane		
	(c) Propane	(d) Acetylene	

- **17.** In LPG cylinder, how is the gas liquified?
 - (a) By increasing volume
 - (b) By applying high pressure
 - (c) By increasing temperature
 - (d) By reducing pressure
- **18.** In fractional distillation of petroleum, where do the vapours with highest boiling point condense?
 - (a) In the upper-most portion
 - (b) In the lower-most portion
 - (c) In the middle portion
 - (d) Cannot be said
- **19.** Why is kerosene oil regarded more suitable than petrol in oil lamps?
 - (a) Kerosene is heavier.
 - (b) Kerosene is expensive.
 - (c) Kerosene is less volatile.
 - (d) Kerosene is more volatile.
- **20.** Where is kerosene mainly used?
 - (a) In laying down roads.
 - (b) As fuel in jet engines.
 - (c) In making water proof materials.
 - (d) In furnaces of industries.

21. Match the entries in Column I with those in Column II.

	Column-I		Column-II
(a)	Carbonisation	(i)	Coke
(b)	Destructive distillation	(ii)	Coal
(c)	Cracking	(iii)	Petroleum
(d)	Refining	(iv)	Hydrocarbons

 $\begin{array}{l} (a) \ a - 1, \ b - 2, \ c - 3, \ d - 4 \\ (b) \ a - 2, \ b - 1, \ c - 4, \ d - 3 \\ (c) \ a - 3, \ b - 2, \ c - 4, \ d - 1 \\ (d) \ a - 4, \ b - 3, \ c - 2, \ d - 1 \end{array}$

- Which of these is the main constituent of petroleum gas?
 (a) Butane
 (b) Propane
 (c) Methane
 (d) Ethane
- 23.What is the source of fly ash?
(a) Petroleum
(c) Coal(b) Natural gas
(d) All of the above
- Which one of the following is NOT a fossil fuel?
 (a) Coal
 (b) Biogas
 (c) Petroleum
 (d) Natural gas
- **25.** Study the characteristics given below:

It is a tough, porous and black substance. It is a pure form of carbon.

Based on the above characteristics, identify it from the following.

- (a) Kerosene
- (b) Petrol
- (c) Coke
- (d) Lubricating oil
- **26.** Which of the following statements is true about petroleum?
 - (a) Lighter than water and soluble in it.
 - (b) Heavier than water and insoluble in it.
 - (c) Lighter than water and insoluble in it.
 - (d) Heavier than water and soluble in it.
- **27.** Which of the following properties is NOT a characteristic of a good fuel? (a) High ignition temperature
 - (b) Low cost
 - (c) Causes minimum pollution
 - (d) Readily available
- **28.** Why is producer gas not a good fuel?
 - (a) It contains CO which is poisonous.
 - (b) It contains CO_2 which is abundant.
 - (c) It contains CO_2 which does not burn.
 - (d) It contains N_2 which does not burn.

- **29.** Which of the following is most harmful for the human body?
 - (a) CO (b) CO_2
 - (c) Oxides of nitrogen (d) Lead compounds
- **30.** What are the characteristics of a rocket fuel?
 - (a) Light and compact
 - (b) High calorific value
 - (c) Burns rapidly
 - (d) All of the above

31. Which of the following is formed during the process of anaerobic fermentation? (a) Biogas (b) Natural gas (c) Water gas (d) Petroleum

- **32.** Which of the following has the highest boiling point?
 - (a) Kerosene (b) Petrol
 - (c) Diesel (d) Water
- **33.** A How is coke superior than coal as a fuel?
 - (a) Coal is a mineral and burns releasing smoke while coke is a residue.
 - (b) Coal is an impure form of carbon, while coke is a pure form of carbon.
 - (c) Only coal consists of atoms of carbon, hydrogen, oxygen and sulphur while coke mainly consists of carbon.
 - (d) All of the above $% \left({{{\mathbf{d}}_{\mathbf{r}}}^{\mathbf{r}}} \right)$
- **34.** Which of the following is in descending order of the quality of coal?
 - (a) Peat > bituminous > lignite > anthracite
 - (b) Bituminous > peat > lignite > anthracite
 - (c) Anthracite > bituminous > lignite > peat
 - (d) Lignite > anthracite > bituminous > peat
- **35.** Which of the following is an example of a liquid fuel?
 - (a) Paraffin wax (b) Coal gas
 - (c) LP.G. (d) Alcohol

Answer With Solution

- **1.** (a) Petroleum is a fossil fuel as it is obtained by the decomposition of the remains of plants and animals under the sea over millions of years.
- **2.** (a) Usually petroleum and natural gas occur at the same place. Petroleum occurs as liquid, whereas natural gas is in the gaseous state above petroleum.
- **3.** (a) Petroleum is a thick, black coloured, viscous liquid which is a rich source of different, useful and expensive products like kerosene, petrol, diesel etc., as gold, hence it is called as black gold.
- **4.** (b) The most common sources of energy used in automobiles are petroleum and diesel.
- **5.** (c) In the oil wells along with petroleum, natural gas also exists. It comes out first when an oil well is drilled through rocks.
- **6.** (a)Petroleum is refined by the process of fractional distillation as the constituents of petroleum products are in the liquid state and differ in their boiling points.
- 7. (b) During fractional distillation, crude petroleum that is obtained from the earth's crust is heated to a temperature of about 400-500 °C. The different constituents present start separating out at different heights of the fractionating column depending upon their boiling points.
- **8.** (a) Solid fuels leave more smoke and ash on burning because they contain a large number of impurities.
- 9. (c) Fractional distillation is a method of separation of liquid substances based on their different boiling points.
- **10.** (a) Gasoline is one of the products obtained during the fractional distillation of petroleum. Gasoline works as petrol. Hence, it is used as fuel in vehicles.
- (a) When dead plants and animals get buried deep under the earth, they get decomposed by the action of anaerobic bacteria.
 Hydrogen and oxygen escape as gases leaving behind carbon. As years pass, layers of carbon atoms are added one above the other forming a stony substance called coal, this process is called carbonisation.
- 12. (d) Coal is of four different varieties: peat, lignite, bituminous and anthracite. Among these, peat is the low grade quality coal. It is formed during the starting stage of coal formation. It has the lowest percentage of carbon around 10% 20%.
- 13. (a) Anthracite is a fine quality coal. It contains the highest percentage of carbon. It contains 94-98% carbon.
- **14.** (d) As oxygen is a supporter of combustion, fuels burn in oxygen to produce heat and light.
- **15.** (b) Natural gas is a mixture of methane, ethane, propane, butane, carbon dioxide, nitrogen and oxygen. But methane CH_4 constitutes a major percentage of about 85.

- 16. (b) Gobar gas (produced by the decomposition of animal dung, domestic and agricultural waste in the presence of anaerobic bacteria) contains methane in bulk (50-68%) and other gases in relatively low proportions, i.e. $CO_2(25-35\%), H_2(1-5\%), N_2(2-7\%)$
- **17.** (b)Generally, gases are liquified by applying high pressure (or) low temperature. In LPG cylinders especially, the gas is liquified by applying high pressure and it is stored in cylinders.
- **18.** (b) In fractional distillation of petroleum, the vapours with the highest boiling point cannot move up in the fractionating column, (as they have low vapour pressure). So, the liquids with high boiling points condense in the lowest (tray) portion of the fractionating tower.
- **19.** (c) Kerosene oil is more suitable than petrol in oil lamps because kerosene oil is less volatile than petrol. It costs less and is easy to handle.
- **20.** (b) Kerosene is mainly gused as a fuel in jet engines.

(b) The correct combination is: a - 2, b - 1, c - 4,d - 3. Carbonisation - coal Destructive distillation - coke Cracking - hydrocarbons Refining - petroleum

- **22.** (a) Petroleum gas is a mixture of ethane, propane and butane. Butane, being a major part of the composition is about 95%.
- **23.** (c)Fly ash is a fine powder formed when large amount of coal is burnt in sufficient quantity of air in places like thermal power stations etc. The ash is carried by atmospheric air due to strong current of air in the furnace, Hence, this ash is called fly ash. It causes respiratory problems when inhaled by man
- **24.** (b) Biogas is formed by anaerobic degradation (fermentation) of plants and animal wastes. Hence, it is not a fossil fuel.
- **25.** (c) Coke is a tough, porous, black substance. It is almost a pure form of carbon and used in the manufacture of steel.
- **26.** (c) Petroleum has less density than water so it floats on water. It is insoluble in water because petroleum is non-polar while water is polar.
- **27.** (a) Fuel is said to be good if it has the following characteristics:
 - (i) Low ignition temperature.
 - (ii) Low cost.
 - (iii) Causing minimum pollution on burning.
 - (iv) Readily available.
- **28.** (d) Producer gas is not a good fuel because it contains nitrogen which does not burn.
- **29.** (a) Carbon monoxide is the most harmful substance for the human body.

- 30. (d)A fuel should have the following characteristics to act as a rocket fuel:
 (i) It should be light and compact.
 (ii) It should produce high energy on burning.
 (iii) It should burn rapidly.
- (a) Biogas is produced by the decomposition of animal dung, domestic and agricultural waste in the presence of anaerobic bacteria. It contains methane in bulk (50 68 %) and other gases in relatively low proportions i.e. CO₂(25-35%), H₂(1-5%), N₂(2-7%) etc.
- **32.** (d) Water has the highest boiling point.
- **33.** (d) Coke is almost a pure form of carbon, it is a good fuel and burns without smoke. While coal is an impure form of carbon and burns releasing smoke.
- **34.** (c) Anthracite is by and far. The most superior quality of coal which contains 94 98% carbon. It is lustrous. It burns without smoke and gives more heat and little ash. Hence, the grading of coal from superior to inferior is Anthracite, bituminous, lignite, peat.
- **35.** (d) Fuels can be classified on the basis of their physical state like solid, liquid and gas. Alcohol is an example of liquid fuel.