

## UNIT:15 - CHEMISTRY IN EVERYDAY LIFE

Class: VIII

Subject: Science

### I. Choose the best answer.

- The chemical mixed with LPG that helps in the detection of its leakage is \_\_\_\_  
a. methanol                      b. ethanol                      c. camphor                      **d. mercaptan**
- Which is known as syngas?  
a. Marsh gas                      **b. Water gas**                      c. Producer gas                      d. Coal gas
- The unit of calorific value of fuel is \_\_\_\_\_  
a. KJmol<sup>-1</sup>                      b. KJg<sup>-1</sup>                      **c. KJkg<sup>-1</sup>**                      d. Jkg<sup>-1</sup>
- \_\_\_\_\_ is the coal of superior quality.  
a. Peat                      b. Lignite                      c. Bituminous                      **d. Anthracite**
- The main component of natural gas is \_\_\_\_\_  
**a. methane**                      b. ethane                      c. propane                      d. butane

### II. Fill in the blanks.

- Producer gas is a mixture of Carbon monoxide and nitrogen.
- Methane is known as marsh gas.
- The term petroleum means Rock oil
- Heating coal in the absence of air is called Destructive distillation.
- An example for fossil fuel is Coal

### III. Match the following.

- |                         |   |                  |
|-------------------------|---|------------------|
| 1. Octane rating        | - | Petrol           |
| 2. Cetane rating        | - | Diesel           |
| 3. Simplest hydrocarbon | - | Methane          |
| 4. Peat                 | - | First stage coal |
| 5. Lignite              | - | Brown in colour  |

### IV. Answer briefly.

#### 1. What do you mean by catenation?

The property of carbon atom to form bonds with itself resulting in a single large structure or chain is called catenation.

#### 2. Mention the advantages of natural gas.

- It produces lot of heat as it is easily burnt.
- It does not leave any residue.
- It burns without smoke and so causes no pollution.

- This can be easily supplied through pipes.
- It can be directly used as fuel in homes and industries.

### 3. Expand CNG. List out its uses.

- CNG - Compressed Natural Gas.
- It is the cheapest and cleanest fuel.
- Vehicles using this gas produce less carbon dioxide and hydrocarbon emission.
- It is less expensive than petrol and diesel.

### 4. Identify the gas known as syngas. Why is it called so?

Water Gas is also called as syngas or synthesis gas as it is used to synthesize methanol and simple hydrocarbons. It is used as an industrial fuel also.

### 5. Anthracite is known as the highest grade coal. Give reason.

- Anthracite is the highest grade coal.
- It has a very light weight and the highest heat content.
- Anthracite coal is very hard, deep black and shiny.
- It contains 86-97% carbon and has a heating value slightly higher than bituminous coal.
- It burns longer with more heat and less dust.

### 6. Distinguish between octane number and cetane number.

#### Octane Number:

- Octane rating is used for petrol
- It measures the amount of octane present in petrol
- Octane number of petrol can be increased by adding benzene or toluene.
- The fuel with high octane number has low cetane number

#### Cetane Number:

- Cetane rating is used for diesel
- It measures the ignition delay of the fuel in diesel engine.
- Cetane number of diesel can be increased by adding acetone.
- The fuel with high cetane number has low octane number

### 7. Name the places in Tamilnadu harnessing wind energy from wind mills.

Wind mills are mostly located at Kayathar, Aralvaimozhi, Palladam and Kudimangalam in Tamil Nadu.

## 8. Solar energy is a non depleting energy. Justify.

- Solar energy is the only viable fuel source of non - depleting nature for, Sun provides a free and renewable source of energy.
- It is the renewable type of energy without endangering the environment.
- It is the potential source to replace the fossil fuel in order to meet the needs of the world. With the advancements in science and technology, solar energy has become more affordable, and it can overcome energy crisis.

## V. Answer in detail.

### 1. Explain the different types of coal.

#### Lignite:

- Lignite is a brown coloured coal of lowest grade.
- It has least content of carbon. The carbon content of lignite is 25 - 35%.
- Lignite contains a high amount of water and makes up almost half of our total coal reserves.
- It is used for electricity generation.
- It is used to generate synthetic natural gas and produce fertilizer products.
- Sub-bituminous:
  - When lignite becomes darker and harder over time, sub-bituminous coal is formed.
  - Sub-bituminous coal is a black and dull coal.
  - It has higher heating value than lignite and contains 35-44% carbon.
  - It is used primarily as fuel for electricity power generation.
  - This coal has lower sulfur content than other types and burns cleaner.
- Bituminous:
  - With more chemical and physical changes, sub-bituminous coal is developed into bituminous coal.
  - It is dark and hard. It contains 45-86% carbon. It has high heating value.
  - It is used to generate electricity.
  - Other important use of this coal is to provide coke to iron and steel industries.
  - By-products of this coal can be converted into different chemicals which are used to make paint, nylon and many other items.
- Anthracite:
  - It is the highest grade coal. It is hard and dark black in colour.
  - It has a very light weight and the highest heat content.

- Anthracite coal is very hard, deep black and shiny.
- It contains 86-97% carbon and has a heating value slightly higher than bituminous coal.
- It burns longer with more heat and less dust.

## 2. What is known as destructive distillation? Write about the products obtained from fractional distillation of petroleum.

- Coal when heated in the absence of air does not burn but produces many by-products. This process of heating coal in the absence of air is called destructive distillation of coal.

### Products obtained from petroleum:

- Liquefied Petroleum Gas or LPG
- Diesel and petrol
- Kerosene
- Lubricating oil
- Paraffin
- Bitumen or asphalt
- Refinery Gas
- Naphtha
- Fuel Oil
- Chemicals
- Jet fuel
- Waxes
- Polishes



## 3. Explain the different types of fuel gases.

Fuels are classified into solid, liquid and gaseous fuels according to their physical state.

### Solid fuels:

- Fuels like wood and coal are in solid state and they are called solid fuels.
- This type of fuel was the first one to be used by man.
- These fuels are easy to store and transport.
- The production cost is also very low.

### Liquid fuels:

- Most of the liquid fuels are derived from the fossil remains of dead plants and animals petroleum oil, coal tar and alcohol are some of the liquid fuels.
- These fuels give more energy on burning and burn without ash.

### Gaseous fuel:

- Coal gas, oil gas, producer gas and hydrogen are some of the gaseous fuels.
- It can be easily transported through pipes and they do not produce pollution.

