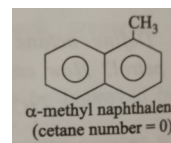
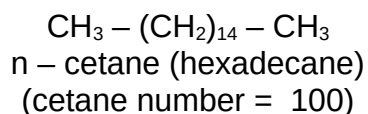


## Part – A

### 1. Define cetane number. Mention the cetane number of two hydrocarbons.

The cetane number is defined as the percentage of hexa decane present in a mixture of hexa decane and  $\alpha$ -methyl naphthalene, which has the same ignition lag as fuel under test.



### 2. Distinguish between proximate analysis and Ultimate analysis

Proximate Analysis	Ultimate analysis
i) It involves the determinations of physical constituents like moisture, volatile, ash and fixed carbon contents in coal.	It involves the determination of chemical constituents like carbon, hydrogen, nitrogen and sulphur and oxygen contents in coal.
ii) It gives the approximate composition of the main constituents of coal.	It gives the exact composition of the elementary constituents of coal.

### 3. Octane rating of a petrol? How can it be improved?

Octane number is defined as, “the percentage of iso-octane present in a mixture of iso-octane and n-heptane.”

Octane number can be improved by adding anti-knock agents like Tetra Ethyl Lead (TEL).

### 4. What is photogalvanic cell?

Photogalvanic cell is the one, which converts the solar energy (energy obtained from the sun) directly into electrical energy.

It consists of a p-type semiconductor (such as Si doped with B) and n-type semiconductor (such as Si doped with P). They are in close contact with each other.

As the solar energy is available freely and also it is pollution free, in future its utility is very important.

### 5. What is secondary cell? Give an example.

Secondary cells are cells in which the electrode reactions can be reversed by passing an external electrical energy. Therefore, they can be recharged by passing electric current and used again and again. These are also called Storage cells (or) Accumulators.

### 6. What are the uses of Lithium-ion Battery?

It is used in cell phone, note PC, portable LCD TV, semiconductor driven audio, etc.,