Chapter-6 Combustion and Flame

Question: List conditions under which combustion can take place.
Answer:- *Following are the three conditions under which combustion can take place:-*

i. *Air, for oxygen*
ii. *Fuel*
iii. *Heat, for ignition temperature.*

Question: *Explain how the use of CNG in automobiles has reduced pollution in our cities.*

Answer:- *The use of Petrol and diesel as fuels in automobiles is being replaced by CNG because CNG produces the harmful products in very small amount. Therefore, it is less polluting and is a cleaner fuel.*

Question: *Compare LPG and wood as fuels.*
Answer:- *Wood has been a traditional fuel for both domestic and industrial use. However, it produces a lot of smoke that can cause respiratory diseases. Also, wood is obtained from trees. Thus using wood as a fuel causes deforestation. Therefore, slowly wood is replaced by LPG, which is liquified form of petroleum gas. It does not give out smoke and other pollutants and is a cleaner fuel.*
Again fuel efficiency of LPG is more than that of wood. The calorific value of LPG is 55,000 kj/kg. While that of wood is between 17,000 to 22,000 kj/kg. Hence, LPG is favoured over wood.

Question: Give reasons*.*

i. *Water is not used to control fires involving electrical equipment.*
ii. *LPG is a better domestic fuel than wood.*
iii. *Paper by itself catches fire easily whereas a piece of paper wrapped around an aluminium pipe does not.*

Answer:-

i. *Water is a good conductor of electricity. If it is used for controlling a fire involving electrical equipment, then the person dousing the fire might get an electric shock.*
ii. *LPG is a better domestic fuel as it doesn't produce smoke and unburnt carbon particles which cause respiratory diseases.*
iii. *A piece of paper wrapped around aluminium pipe does not catch fire easily because aluminium being a metal is a good conductor of heat. Therefore, heat is transferred from the paper to the metal and the paper doesn't attain its ignition temperature.*

Question: *Name the unit in which the calorific value of a fuel is expressed.*
Answer:- *pending*

Question: *Explain how CO_2 is able to control fires.*
Answer:- *Pending*

Question: *It is difficult to burn a heap of green leaves but dry leaves catch fire easily. Explain.*

Answer:- *Green leaves have a lot of moisture in them. This moisture doesn't allow them to catch fire easily. However, dry leaves have no moisture in them. Therefore, they catch fire easily.*

Question: *Which zone of a flame does a goldsmith use for melting gold and silver and why?*
Answer:- *Goldsmith use the outermost part of the flame to melt gold and silver because the outermost zone of the fire undergoes complete combustion and is the hottest part of the flame.*

Question: *In an experiment 4.5 kg of a fuel was completely burnt. The heat produced was measured to be 180,000 kj. Calculate the calorific value of the fuel.*
Answer:- *The heat produced by 4.5 kg of 180,000 KJ is:-*

1 kg of fuel = 180,000/4.5 kj/kg.
= 180,000/4.5 of 10/10 = 180,0000/45
=40,000 kj/kg.
Hence, the calorific value of the fuel is 40,000 kj/kg.

Question: *Can the process of rusting be called combustion? Discuss.*
Answer:- *Combustion is a chemical process in which a substance react with oxygen and gives out energy during the process in the form of either heat or light or both. Rusting of iron is an exorthermic process as heat is released during. Hence, it is a kind of slow combustion.*

Question: *Abida and Ramesh were doing an experiment in which water was to be heated in a beaker. Abida kept the beaker near the wick in the yellow part of the candle flame. Ramesh kept the beaker in the outermost part of the flame. Whose water will get heated in a shorter time?*
Answer:- *The water is the Ramesh's beaker will heat up in a shorter time. This is because the outermost zone of the flame is the hotteist zone while the yellow zone in which Abida had kept the border is less hot.*