





WBBCS 2022



SCIENCE

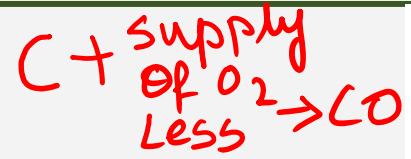
POLLUTION

PART-2



LIVE 11:30 AM

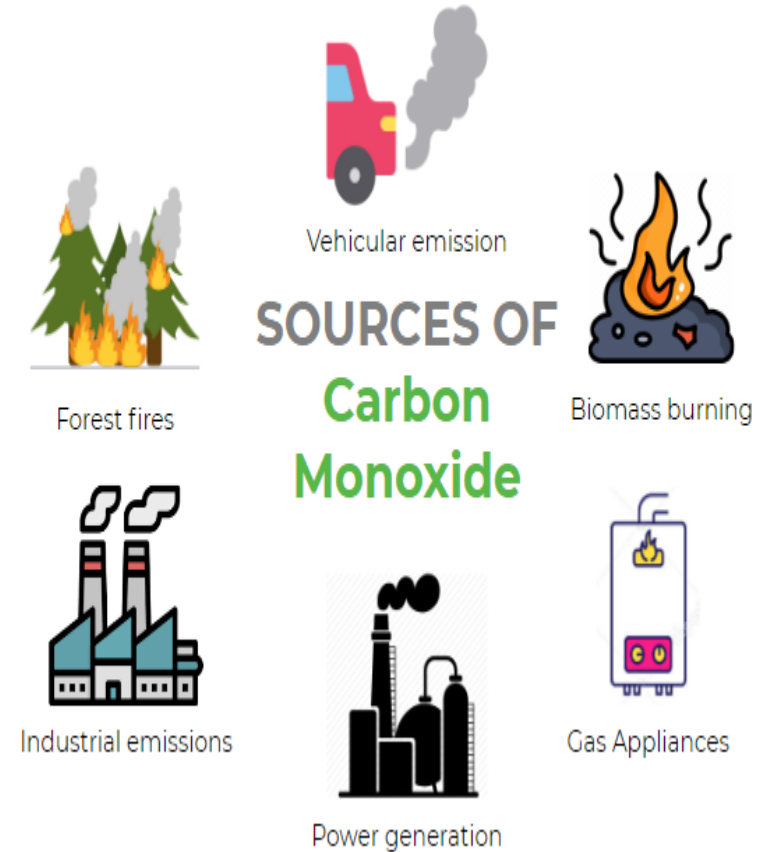
07 MARCH 2022



Oxides of Carbon (i) Carbon monoxide:

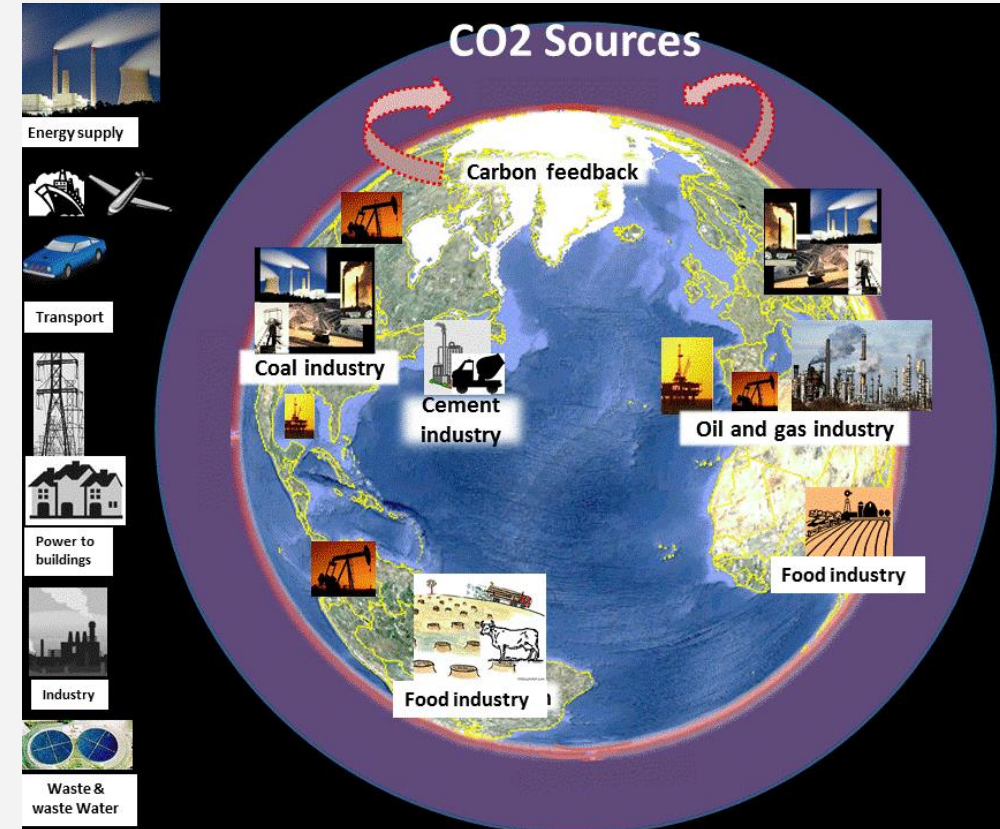
- ❑ Carbon monoxide (CO) is one of the most serious air pollutants.
- ❑ It is produced as a result of incomplete combustion of carbon. Carbon monoxide is mainly released into the air by automobile exhaust.
- ❑ Other sources, which produce CO, involve incomplete combustion of coal, firewood, petrol, etc.
- ❑ It binds to haemoglobin to form carboxyhaemoglobin, which is about 300 times more stable than the oxygen-haemoglobin complex.
- ❑ In blood, when the concentration of carboxyhaemoglobin reaches about 3–4 per cent, the oxygen carrying capacity of blood is greatly reduced. This oxygen deficiency, results into headache, weak eyesight, nervousness and cardiovascular disorder.

CO → POISONOUS Gas



Carbon dioxide:

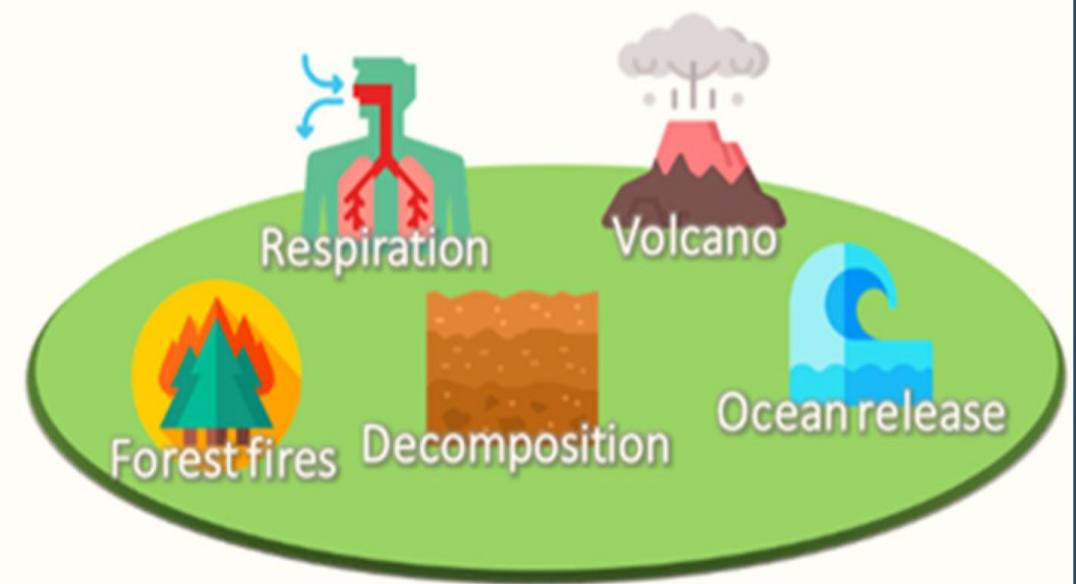
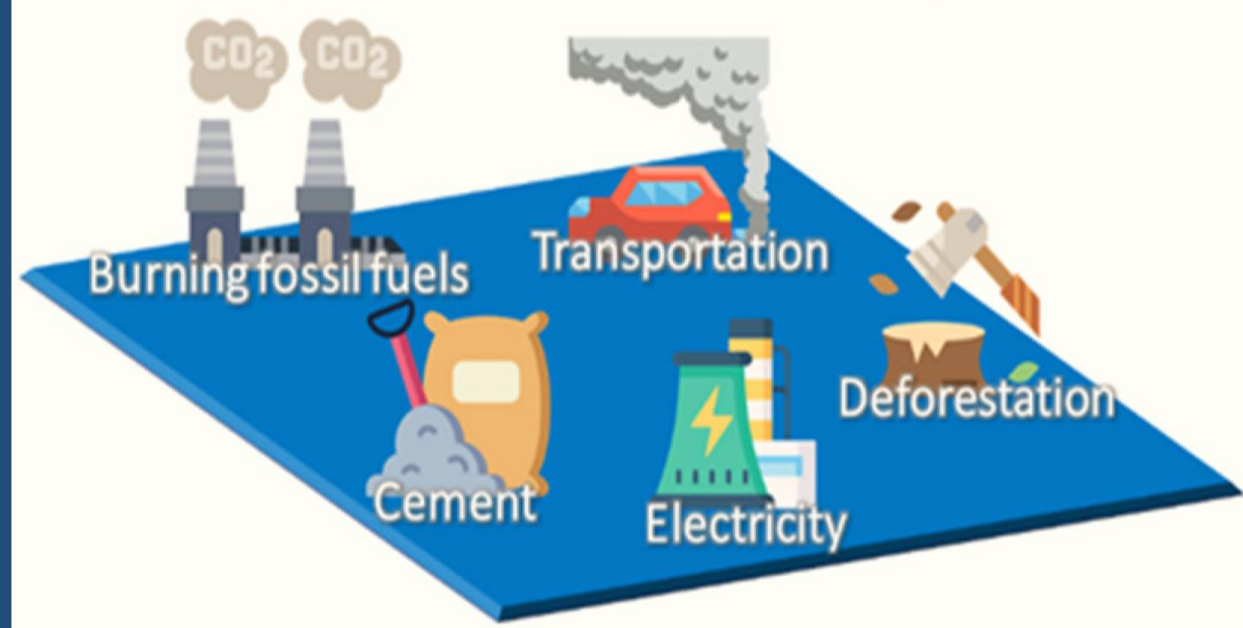
1. Carbon dioxide (CO₂) is released into the atmosphere by respiration, burning of fossil fuels for energy, and by decomposition of limestone during the manufacture of cement.
2. With the increased use of fossil fuels, a large amount of carbon dioxide gets released into the atmosphere.
3. Excess of CO₂ in the air is removed by green plants and this maintains an appropriate level of CO₂ in the atmosphere.
4. Green plants require CO₂ for photosynthesis and they, in turn, emit oxygen, thus maintaining the delicate balance.



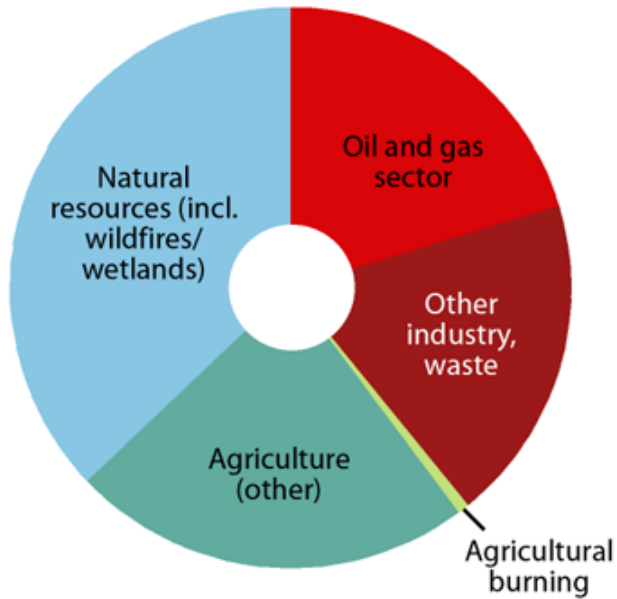
CO₂ sources
Green House Gas

Human Activities

Natural Sources

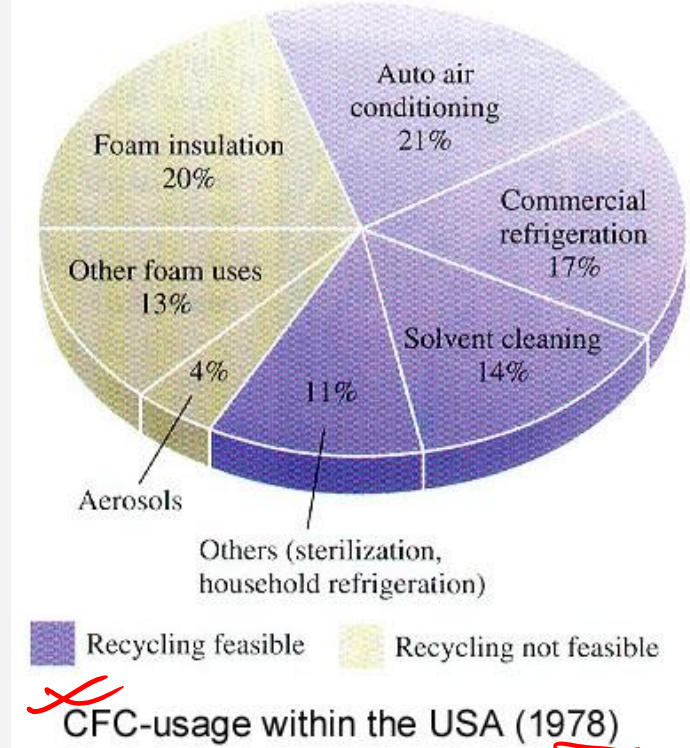


GLOBAL METHANE EMISSIONS
By source, 2010



SOURCE: Arctic Monitoring and Assessment Programme

1. Methane is produced naturally when vegetation is burnt, digested or rotted in the absence of oxygen.



1. Chlorofluorocarbons (CFCs) are man-made industrial chemicals used in air conditioning etc. CFCs are also damaging the ozone layer.

Global Warming and Greenhouse Effect

1. About 75 % of the solar energy reaching the earth is absorbed by the earth's surface, which increases its temperature.
2. The rest of the heat radiates back to the atmosphere. Some of the heat is trapped by gases such as carbon dioxide, methane, ozone, chlorofluorocarbon compounds (CFCs) and water vapour in the atmosphere.
3. Thus, they add to the heating of the atmosphere. This causes global warming.
4. Besides carbon dioxide, other greenhouse gases are methane, water vapour, nitrous oxide, CFCs and ozone.

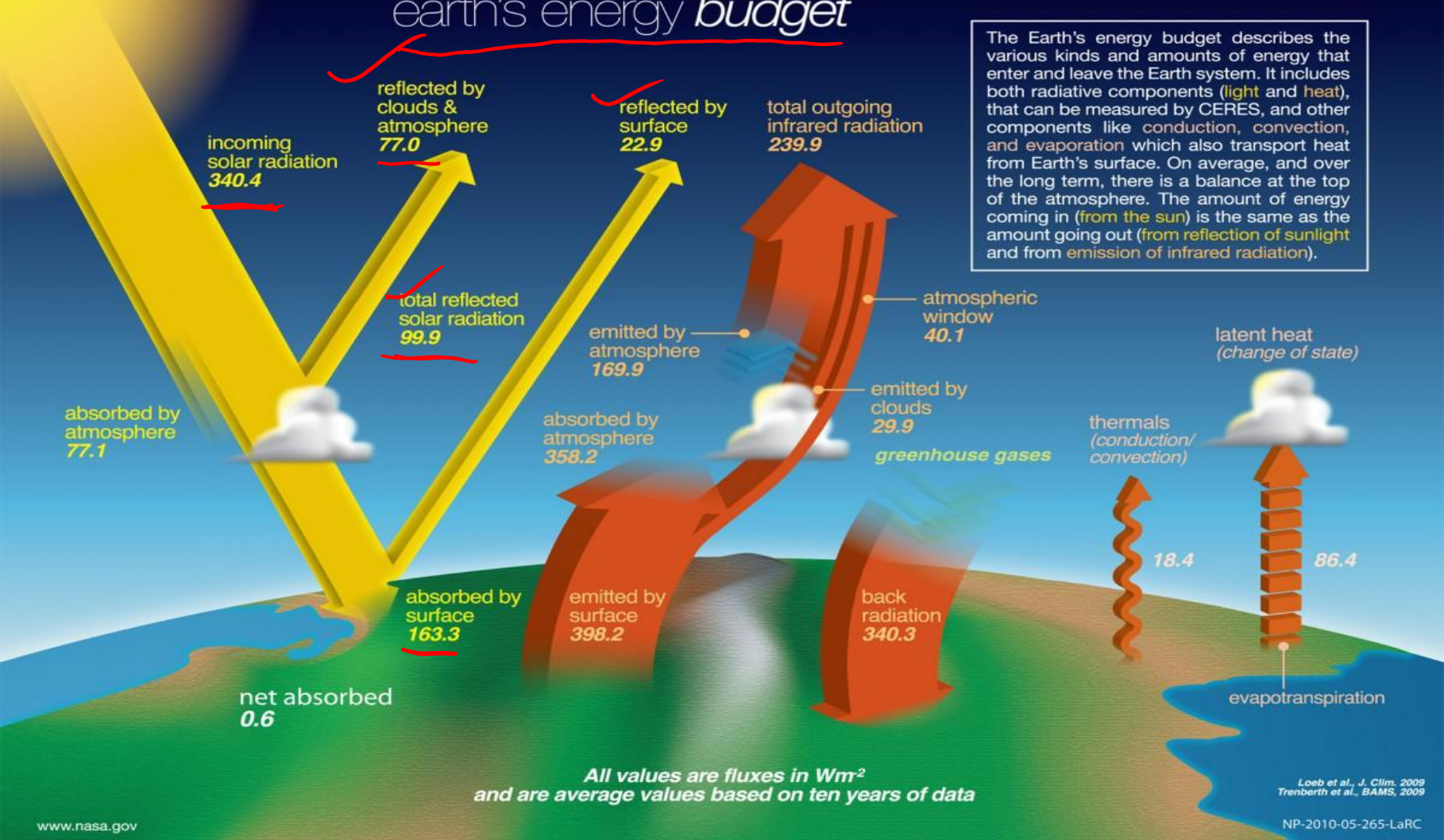


National Aeronautics and Space Administration



earth's energy budget

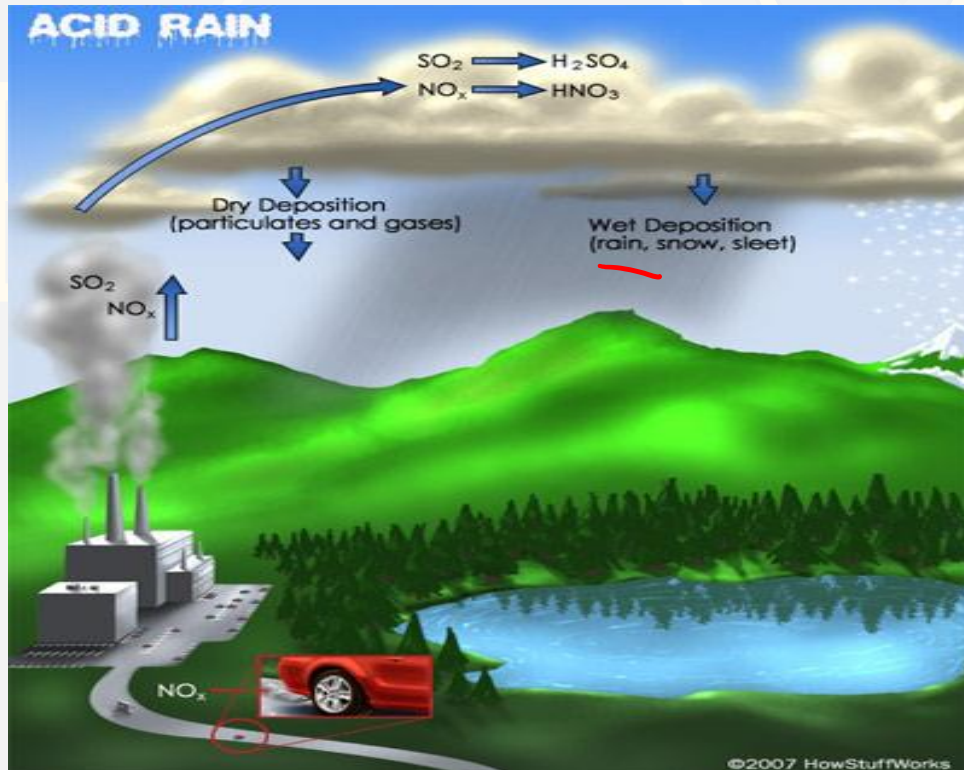
The Earth's energy budget describes the various kinds and amounts of energy that enter and leave the Earth system. It includes both radiative components (light and heat), that can be measured by CERES, and other components like conduction, convection, and evaporation which also transport heat from Earth's surface. On average, and over the long term, there is a balance at the top of the atmosphere. The amount of energy coming in (from the sun) is the same as the amount going out (from reflection of sunlight and from emission of infrared radiation).



Acid rain:

- When the pH of the rain water drops below 5.6, it is called acid rain.
- $2\text{SO}_2 (\text{g}) + \text{O}_2 (\text{g}) + 2\text{H}_2\text{O} (\text{l}) \rightarrow 2\text{H}_2\text{SO}_4 (\text{aq})$
- $4\text{NO}_2 (\text{g}) + \text{O}_2 (\text{g}) + 2\text{H}_2\text{O} (\text{l}) \rightarrow 4\text{HNO}_3 (\text{aq})$

- ❖ Acid rain is a by product of a variety of human activities that emit the oxides of sulphur and nitrogen in the atmosphere.
- ❖ SO_2 and NO_2 after oxidation and reaction with water are major contributors to acid rain, because polluted air usually contains particulate matter that catalyse the oxidation.



SMOG

The word smog is derived from smoke and fog

Fog + SO₂ + Dust

CLASSICAL SMOG



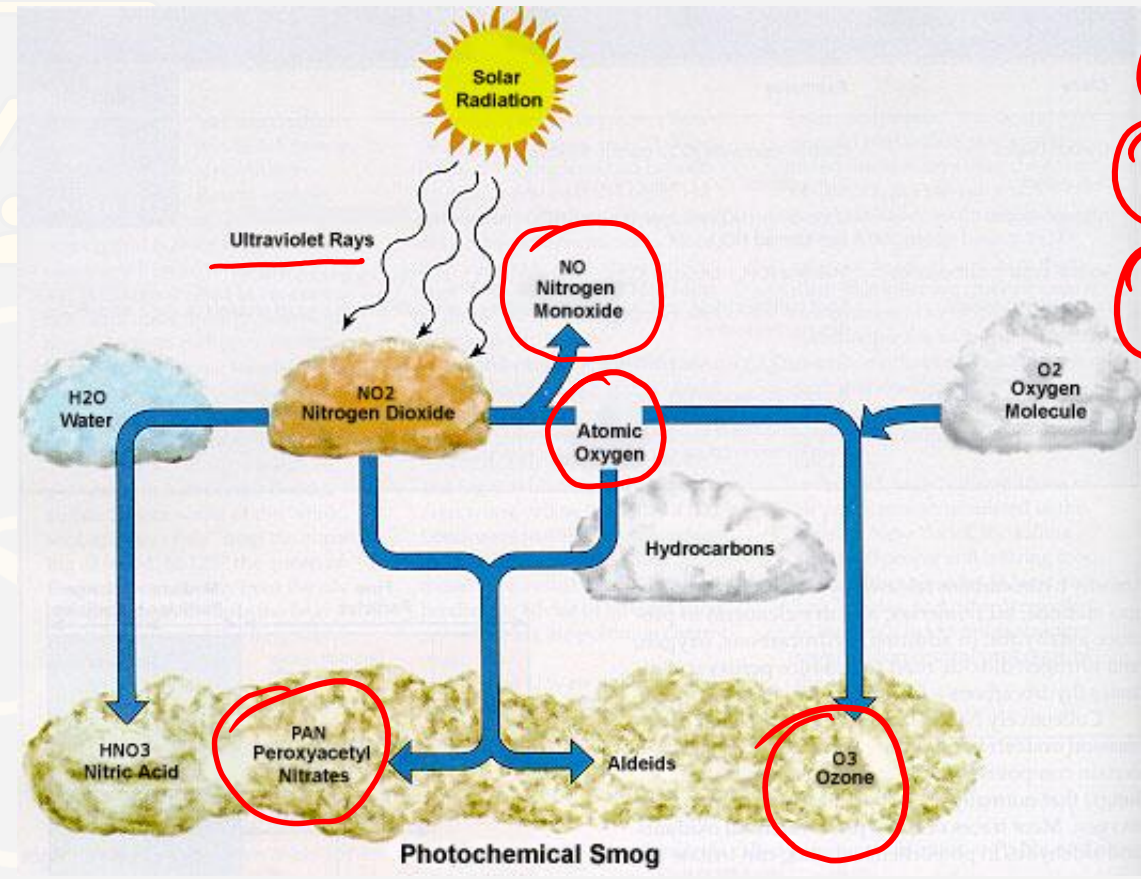
eg. 1952
The great smog
of London



Oxidising smog

Photochemical smog

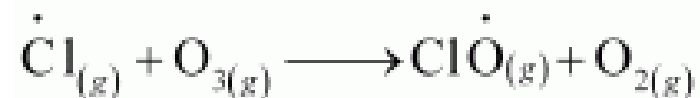




- ① NO_2
- ② O_3
- ③ PAN [Peroxy Acetyl Nitrate]

Stratospheric Pollution Formation and Breakdown of Ozone

The upper stratosphere consists of considerable amount of ozone (O_3), which protects us from the harmful ultraviolet (UV) radiations (λ 255 nm) coming from the sun. These radiations cause skin cancer (melanoma) in humans. Therefore, it is important to maintain the ozone shield.





WBCS BATCH 2022



NITESH MAHENDRAS
(REASONING)



SANJIB MAHENDRAS
(GA)



ANURAG MAHENDRAS
(GA/GS)



SUMANA MAHENDRAS
(GS/BENGALI)



SRAYA MAHENDRAS
(ENGLISH)



VISHAL MAHENDRAS
(MATHS)



AYAN MAHENDRAS
(GS)



BORNON MAHENDRAS
(GA/GS)



GAVISH MAHENDRAS
(ECONOMICS)

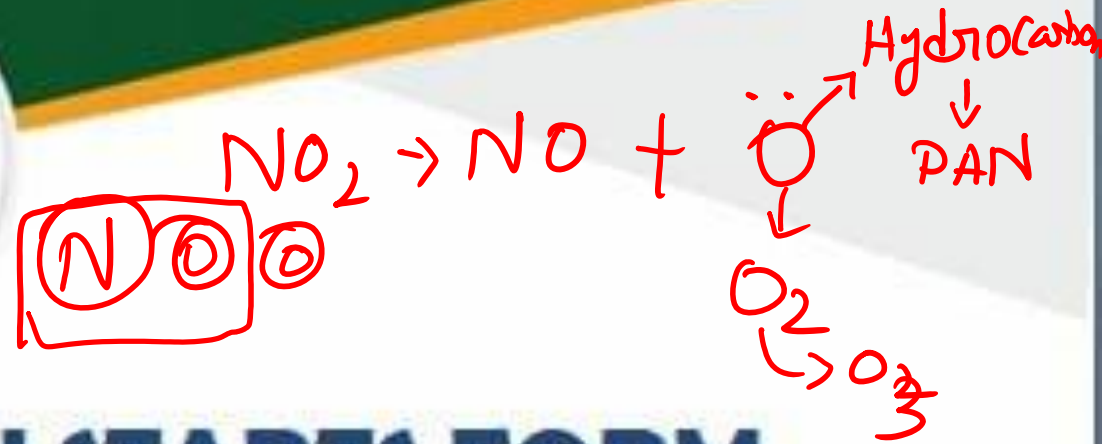
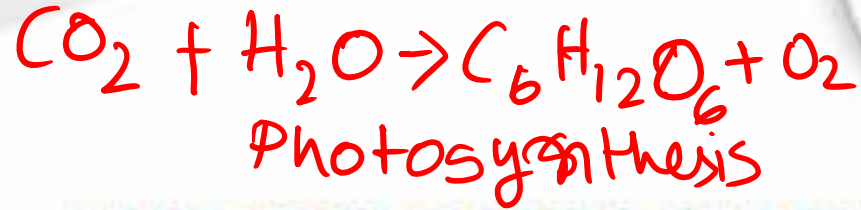
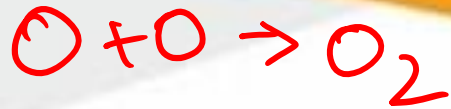
LIVE 11:30 AM ONWARDS

W.B.C.S - YouTube schedule for 5-days

TIMING	DAYS				
	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
11:30	ECO	CA	ECO	POL	BEN
12:00	REAS	SCI	POL	SCI	CA
12:30	ENG	MATHS	ENG	MATHS	ENG
13:00	GEO	HIS	GEO	HIS	HIS



WBCS BATCH 2022



WBCS OFFLINE BATCH STARTS FORM

26TH FEBRUARY / 5TH March

TIMING - 1:30-5:30PM

BOOK YOUR SEAT NOW

9230141497/8017652045/6386903177/6291322109

