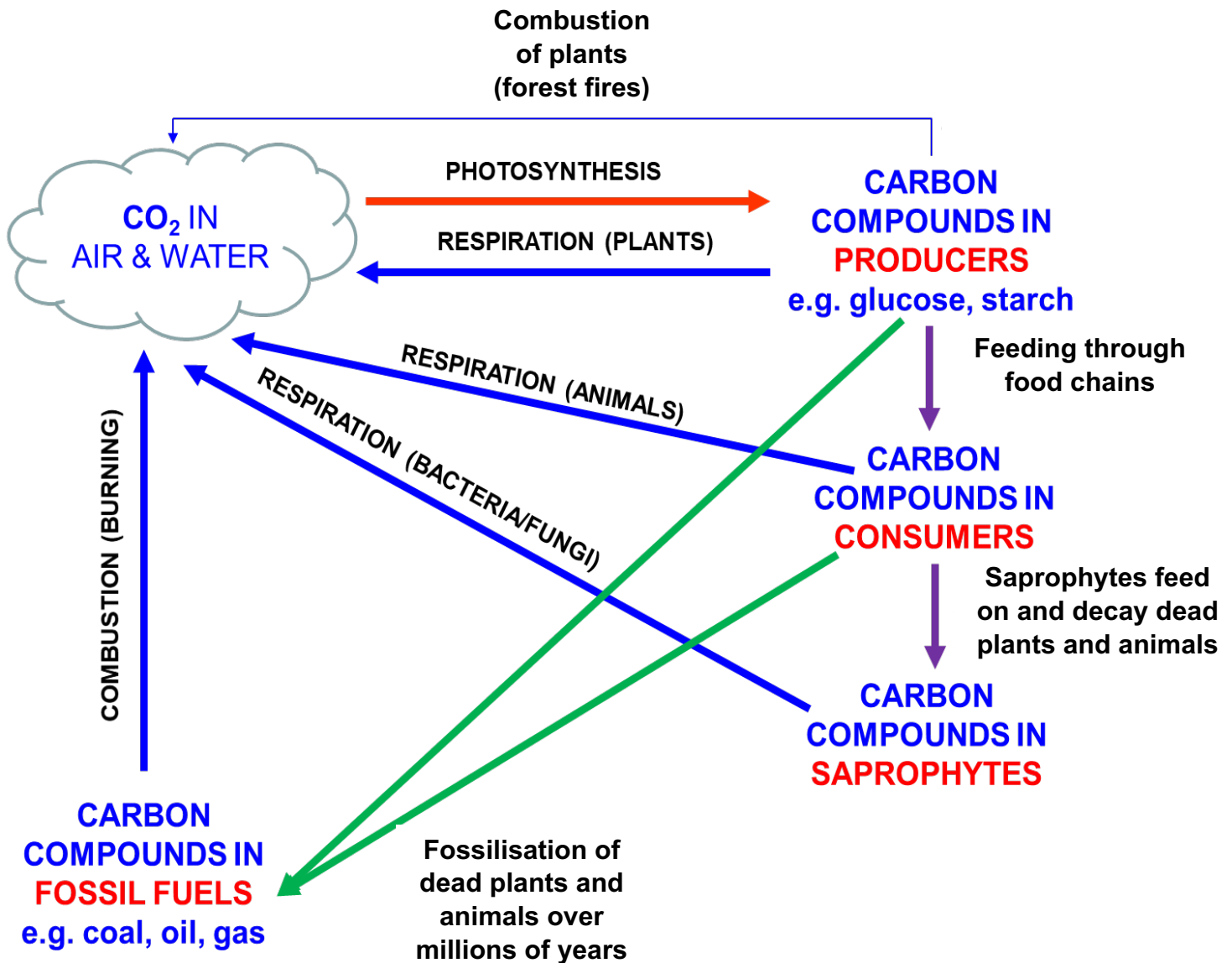


A. THE CARBON CYCLE

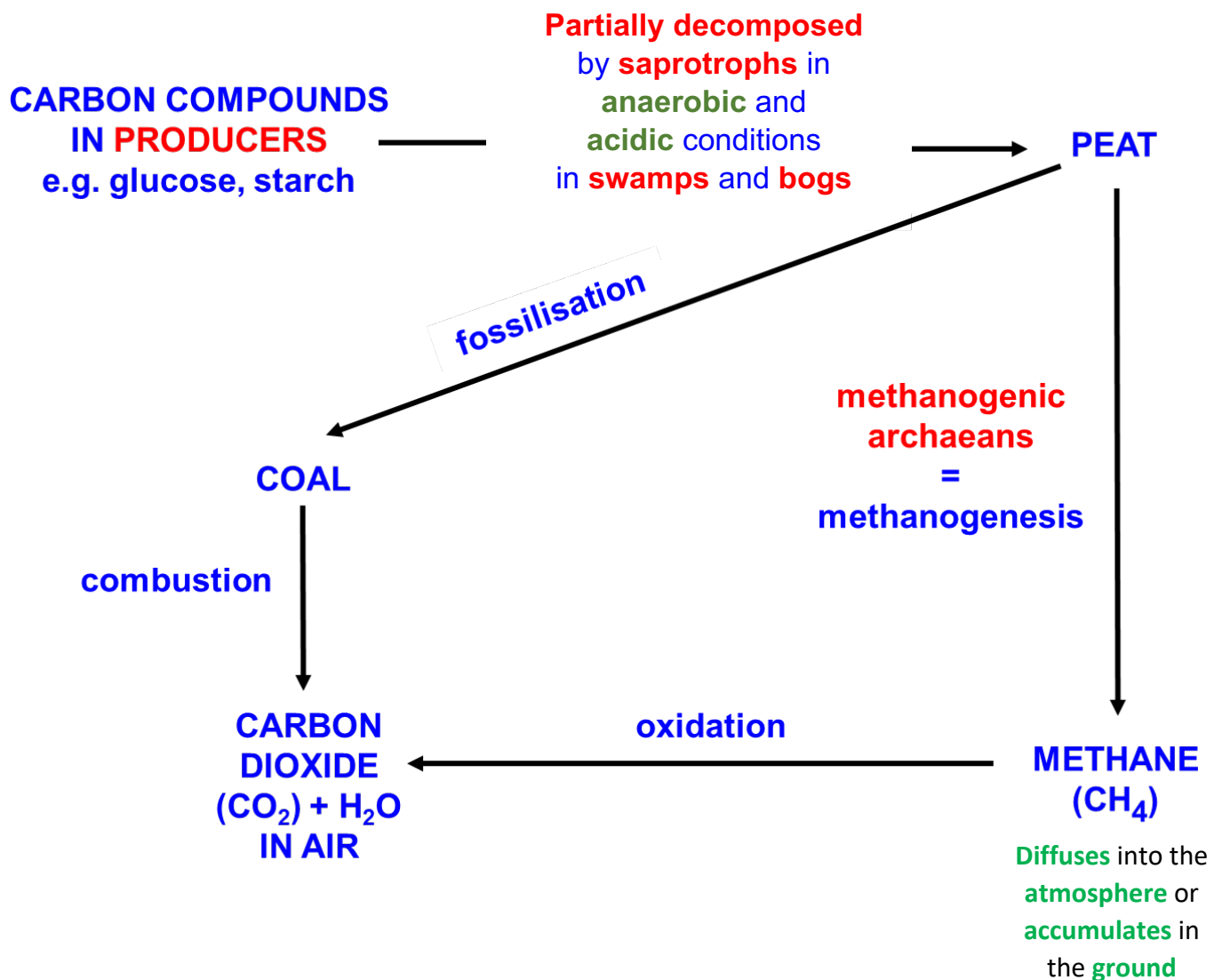
- The 'journey' of **carbon** through a series of different **transfers** and **conversions**.
- Start with **CO₂** in **air** and **water**.
- If an '**Explain**' question, **plan** your answer and **annotate** all diagrams **fully** with enough detail.



- **CO₂**, produced by **respiration**, **diffuses out** of **organisms** into the **air** and **water**

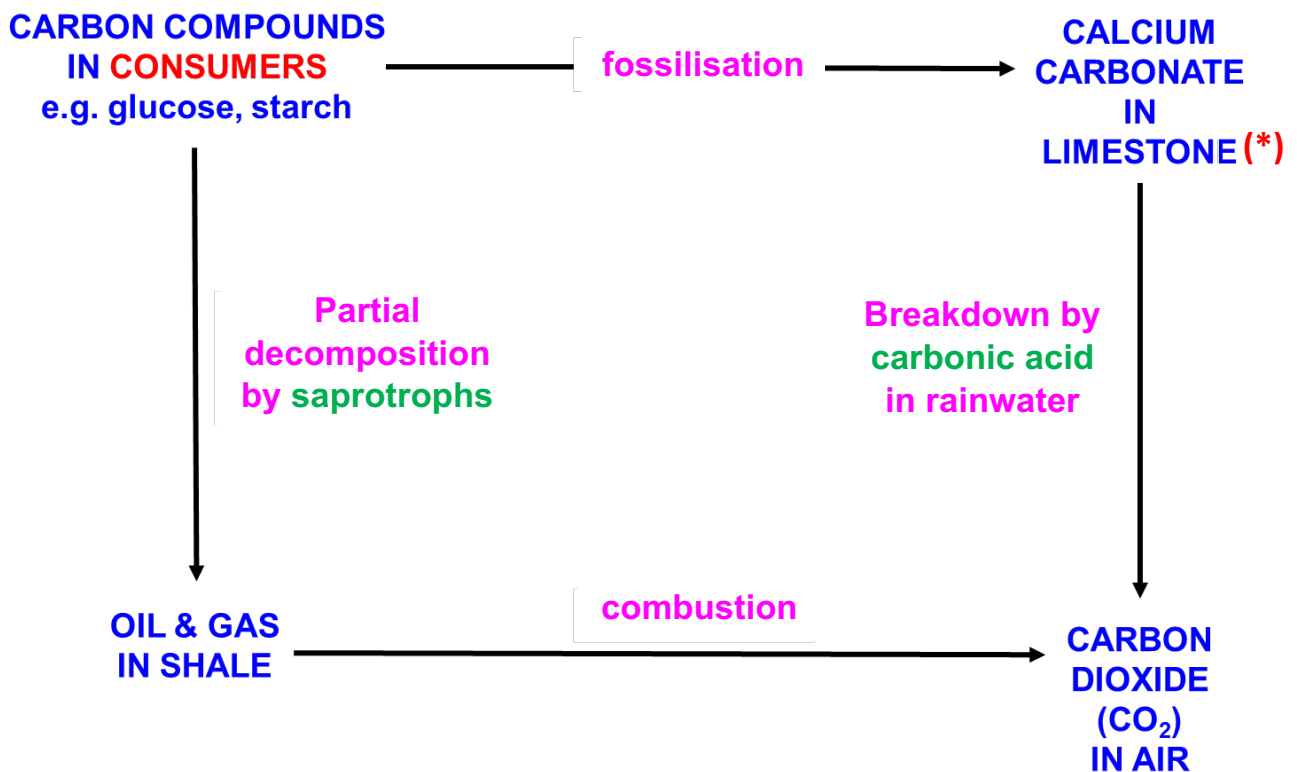
B. FORMATION OF PEAT, COAL & METHANE (FROM DEAD PLANT MATTER)

- **Peat** and **methane** are originally formed from **dead plants**.
- In **waterlogged** sites, such as **bogs** and **swamps**.
- **Anaerobic** and **acidic** conditions are needed to form both **peat** and **methane**.
- **Dead plant matter** is **not fully decomposed**.
- This is because **saprotrophs** are **inhibited**, to some degree.
- It takes a **very long time**.



- **Methanogenic archaeans** are a type of **bacteria** that can produce **methane** gas from **peat**.

C. FORMATION OF CALCIUM CARBONATE, OIL AND GAS (FROM DEAD ANIMAL MATTER)



- The **hard parts** of **corals** and **shells** of **molluscs** are made of **calcium carbonate**.
- These can **also** become **fossilised** in **limestone**.

D. CARBON SOURCES IN AIR AND WATER FOR PLANTS



- **Aquatic autotrophs** = plants that live in water use both **carbon dioxide** and **hydrogen carbonate ions**.

E. CARBON FLUXES (TRANSFERS)

- A **carbon flux** is the amount of **carbon exchanged** between Earth's **carbon pools** - the **oceans**, **atmosphere**, **land**, and **living things**.

Process	Carbon flux / gigatonnes per year
Photosynthesis	-120.0
Respiration	+119.6
Ocean uptake (from air)	-92.2
Ocean loss (to air)	+90.6
Deforestation and land use changes	+1.6
Combustion of fossil fuels	+6.4

- **Photosynthesis** has the **greatest** role in **transferring carbon**.
- **Photosynthesis** has a **negative** value as it **take carbon** (dioxide) **out** of the **atmosphere**.

In diagrams:

The **wider the arrow**, the **greater the amount** of **carbon transferred**