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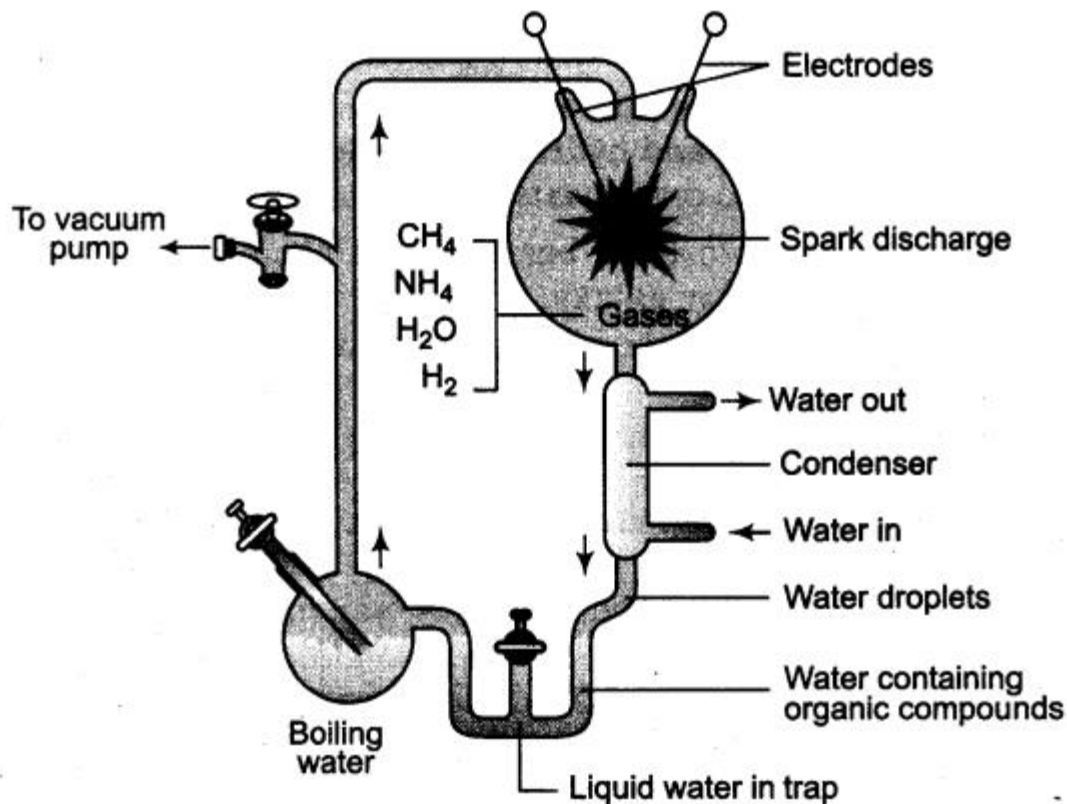
Class 12<sup>th</sup>

Sub. Biology

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**5. Miller's experiment** provided experimental evidence for chemical evolution.

- (i) The experiment was carried out by SL Miller and HC Urey in 1953.
- (ii) He took a closed flask containing  $\text{CH}_4$ ,  $\text{H}_2$ ,  $\text{NH}_3$  and water vapour at  $800^\circ\text{C}$  and created electric discharge. These conditions were similar to those in primitive atmosphere.
- (iii) After a week, formation of amino acids were observed. Complex molecules like sugars, nitrogen bases, pigments and fats were seen in the flask by other scientist.
- (iv) Analysis of the meteorite also revealed the presence of similar compounds.
- (v) Chemical evolution of life was more or less accepted.



Diagrammatic representation of Miller-Urey experiment

**6. Origin of First Cell**

- (i) First non-cellular life forms originated three million years ago.
- (ii) These molecules were like RNA, protein and polysaccharides.
- (iii) Cellular life form first evolved about 2000 million years ago.
- (iv) These were single-celled formed in aquatic environment.

(v) This form of abiogenesis, i.e. the first form of life arose slowly through evolutionary forces from non-living molecules It is accepted by many scientists.