

Q Explain lifecycle of a star.

- i- Nebula : Star begins with a nebula - a giant cloud of dust and gas.
- ii- Protostar : <sup>Gravity causes</sup> Nebula <sup>to</sup> contract <sup>and</sup> <sup>heat up</sup> and forms a dense, hot core known as protostar.
- iii- Main Sequence star :  
As the core becomes hot enough, the nuclear fusion begins, converting hydrogen to helium. The star reaches a stable phase. This stage lasts for millions to billions of years.
- iv- Red Giant / Red Supergiant : As the core runs out of hydrogen gas, the core contracts and the outer layers expand and cool, forming red giant (for average stars) and red super giant (for massive stars).
- v- Stellar Death and Remnants
  - a- <sup>For</sup> low / Medium mass stars : These stars shed their outer layers, forming a planetary nebula, leaving behind a dense, hot

core known as white dwarf. The white dwarf cools down to form black dwarf.

b- For high mass stars: These stars undergo supernova explosion and the remaining stellar core is known as neutron star or black hole.

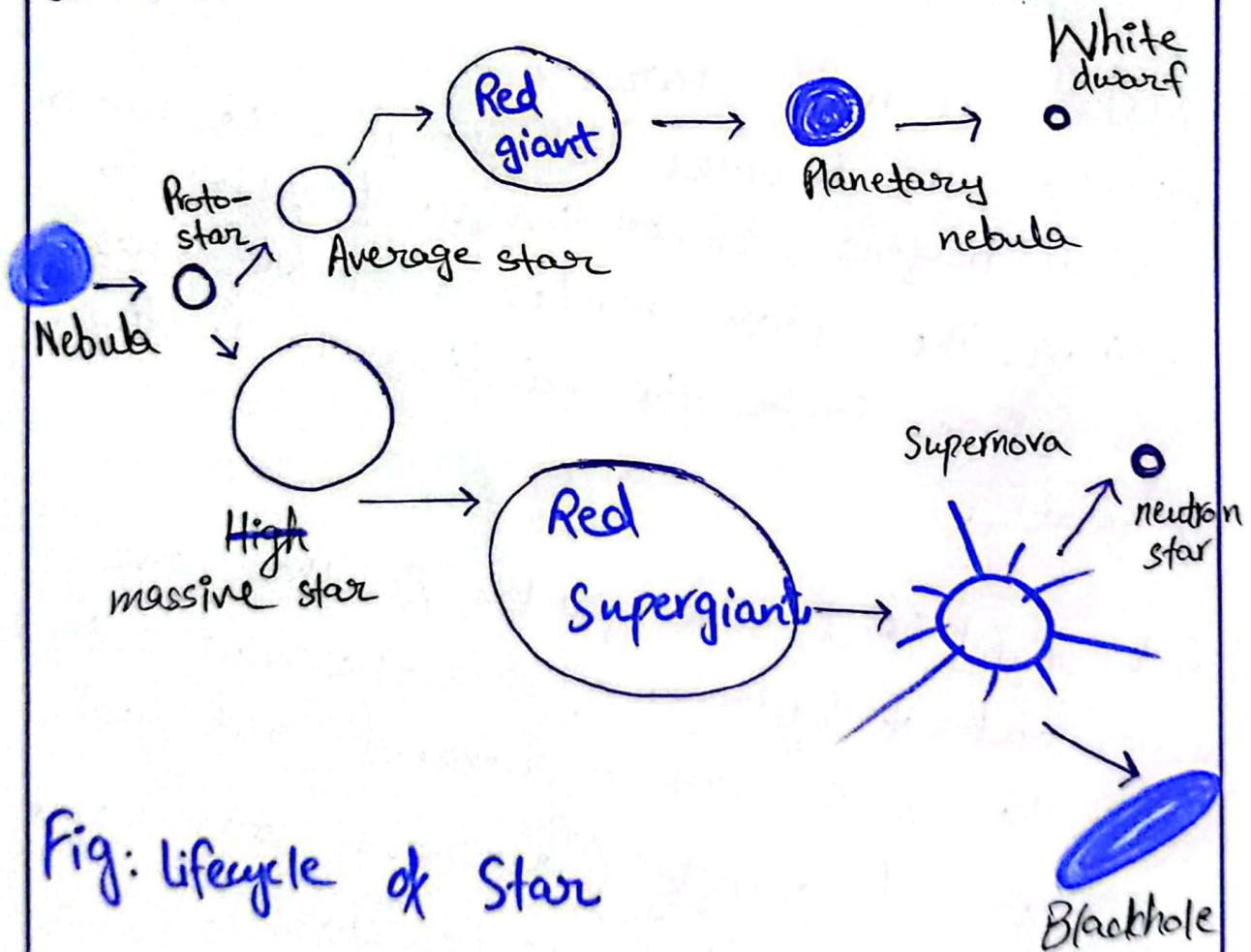


Fig: Lifecycle of Star

Q2 Write a note on balanced diet.

Balanced diet is an eating pattern that provides all essential nutrients i.e. carbohydrates, proteins, vitamins, fibre, fats,

and minerals to body for maintaining weight, energy and health of body.

## Sources of Balanced Diet

- a. Carbohydrates : Wheat, maize, rice, sugar, potato.
- b. Proteins: Fish, meat, milk, eggs, nuts, pulses
- c. Vitamins : Fruits, vegetables, milk, eggs and beef liver
- d. Fibre : Oats, nuts, berries, prunes, broccoli, sprout
- e. Minerals : Fish, dairy products, fruits, wholegrains, leafy green vegetables
- f. Fats: Butter, oil, ghee, avocado, fatty fish (salmon).

### Q3 Write a note on carbohydrates.

Carbohydrates are organic macromolecules primarily polyhydroxy aldehydes or ketones, composed of carbon, hydrogen and oxygen primarily in the ratio of 1:2:1 ( $\text{C}_n\text{H}_{2n}\text{O}_n$ ).

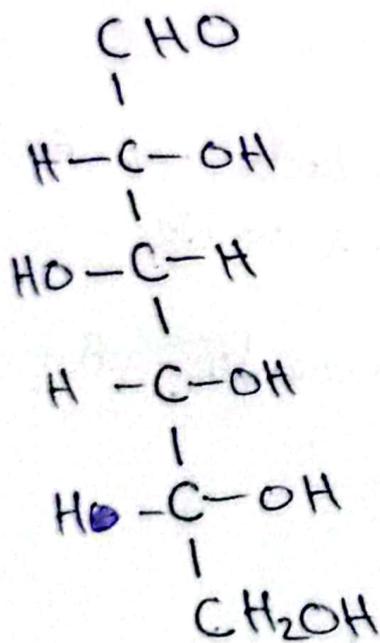
Function : They act as primary energy

source for cells, organs and tissues of body.

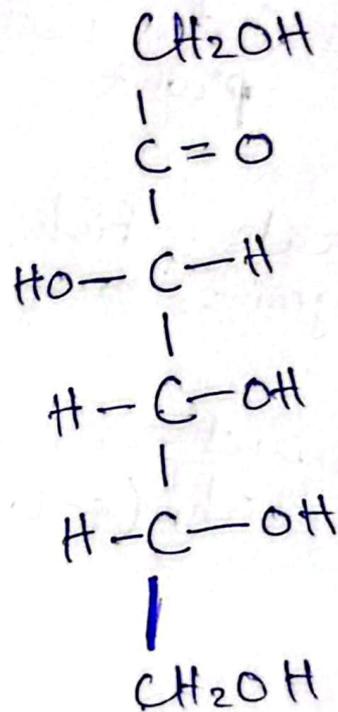
## Types of Carbohydrates

i- Monosaccharides: The simplest form of carbohydrates that can not be hydrolysed into simpler sugars.

Examples: Glucose, Fructose with formula  $C_6H_{12}O_6$  for both.



Glucose  $C_6H_{12}O_6$



Fructose  $C_6H_{12}O_6$

ii- Disaccharides: They consist of two monosaccharide units linked together by glycosidic bond.

Example: Sucrose

iii- Oligosaccharides : They contain 3 to 10 monosaccharide units linked together by glycosidic bond.

Examples : Raffinose , Stachyose

iv- Polysaccharides : They contain long chains of hundreds to thousands of monosaccharide units linked together by glycosidic bond.

Examples : Starch , glycogen