FREQUENTLY ASKED QUESTIONS:

1. What are pigments? Enlist pigments of plant and animal origin.

Ans) Pigments are natural substances in cells and tissues of plants and animals that impart color. The pigments of plant and animal origin are chloroplast, myoglobin, hemoglobin, anthocyanins, flavonoids,tannins, betalins, quinines, xanthones and carotenoids .

2. Explain the stability of carotenoids during processing.

Ans) Carotenoids are relatively stable during typical storage and handling of most fruits and vegetables. Freezing causes little change in carotene content. However, blanching is known to influence the level of carotenoids. Often blanched plant products exhibit an apparent increase in carotenoid content relative to raw tissues. This is caused by inactivation of lipoxygenase, which is known to catalyze oxidative decomposition of carotenoids, the loss of soluble constituents into the blanch water, or the mild heat treatments traditionally

used during blanching may enhance the efficiency of extraction of the pigments relative to fresh tissue.

3. What are chlorophyllins?

Ans) Chlorophyllins are the green pigment formed when the methyl and phytyl groups are removed from chlorophyll in an alkaline medium.

4. What are anthocyanins?

Ans) The word anthocyanin is derived from two Greek words: *anthos,* flower, and *kyanos,* blue. Anthocyanins are responsible for a wide range of colors in plants, including blue, purple, violet, magenta, red, and orange. The flavonoid subgroup contains the anthocyanins, one of the most broadly distributed pigment groups in the plant world. Anthocyanins are considered flavonoids because of the characteristic C6C3C6 carbon skeleton.

5. What are betacyanins?

Ans) These are the group of betalins which are responsible for the reddish –purple color of beets. It is not an anthocyanin, but behaving colorwise in the same fashion.

6. What are the conditions necessary for the heme pigments while packaging?

Ans) The important condition necessary for the heme pigments

is its stability under appropriate atmospheric conditions. The problem of discoloration caused by heme oxidation (Fe2+ Fe3+) can be resolved by using modified atmosphere (MA) packaging. This technique requires the use of packaging films with low gas permeabilities. After packaging, air is evacuated from the package and the storage gas is injected.

7. Explain the colour loss of chlorophyll during thermal treatment.

Ans) Loss of green color in thermally processed vegetables results from formation of pheophytin and pyropheophytin. Blanching and commercial heat sterilization can reduce chlorophyll content by as much as 80–100% [92]. Evidence that a small amount of pheophytin is formed during blanching before commercial sterilization is provided.

8. Name the methods by which we can alter the chlorophyll.

Ans) The various methods by which we can alter the chlorophyll are as under:

Enzymatic

Heat and acid

Metallo complex formation

Allomerization and

Photodegradation.

9. What are the functions of chlorophylls in photosynthetic tissues.

Ans) Chlorophylls play a vital and central role in photosynthesis, creating the basis for the animal food chain on which most living organisms depend. The initial step of photosynthesis involves absorption of light by the light-harvesting antennae complexes and funelling the resulting electronic excitation to the photosynthetic reaction center, where the energy is used for the convertion of carbon dioxide and water into carbohydrates with the liberation of oxygen. The chlorophylls are organized in these light-harvesting complexes found in subcellular organelles known as chloroplasts, more specifically located in the lipid (or thylakoid) membranes, creating a maximum area of absorption. The major function of chlorophylls is to capture sunlight and funnel light energy to the reaction center where it is subsequently used for the conversion of carbon dioxide and water into carbohydrates with the liberation of oxygen.

10. What are the functions of carotenoids.

Ans) The main functions of carotenoids are

a. In animals, the major function of carotenoids is as a precursor to the formation of vitamin A. Carotenoids with provitamin A activity are essential components of the human diet, and there is considerable

evidence that they are absorbed through the diet and often metabolized into other compounds.

b. Carotenoids are essential to plants for photosynthesis, acting in light harvesting and especially in protection against destructive photooxidation. Without carotenoids, photosynthesis in an oxygenic atmosphere would be impossible.

c. plant carotenoids also serve as pigments that, along with anthocyanins and betalins, provide color to flowers, ripening fruit, and other plant part.