Frequently asked questions:

1) **Which are the major sources of edible oil?**

AnsSoybean, cottonseed, peanut, and sunflower are the major oilseeds grown in the world.

2) **What are the nutritional properties of oil?**

Ans: Unhydrogeated and partially hydrogenated oils from cottonseed, peanuts, soybeans, and sunflowers are good sources of linoleic acid.

3) **What are the nutritional properties of proteins and meals?**

Ans: Nutritional properties of the oilseed meals and derived protein products depends on their amino acid composition, and a variety of nonprotein compounds that occur in the defatted meal. Also, phytic acid found in oilseeds prevents absorption of dietary zinc, calcium, magnesium, and iron as per the research.

4) **Mention the nutritional properties of cottonseed protein?**

Ans: Cottonseed proteins are low in lysine, threonine, isoleucine, and leucine when compared with the Food Nutrition Board(FNB) ideal amino acid pattern. On moist heating of cottonseed, the e-amino group of lysine reacts with the aldehyde groups of gossypol to form a derivative which makes lysine unavailable during digestion, thus creating an imbalance with respect to lysine.

5) **What are the difference between peanuts and soybean protein?**

Ans: Low levels of lysine, threonine, isoleucine, and leucine make peanut proteins lower in nutritional value than soybean proteins. Peanut proteins generally are better than wheat or corn proteins, as , trypsin inhibitor is inactivated by moist heat.

Soybeans:

Methionine is the limiting amino acid in soybean proteins. Raw soybeans has poor nutritive value, but on cooking or fermenting, the nutritional quality is greatly increased. Moist heat, however, destroys most of theinhibitor activity.

6) **What are the limiting nutrients in sunflowers and protein?**

Ans: Sunflower proteins are deficient in lysine and leucine and borderline in threonine and isoleucine content as compared to the ideal protein for humans.Heating the seed before extracting the oil improves the nutritional value of the defatted meal.

7) **Mention the steps involved in processes?**

Ans: Depending on the oil content of the seed, processing consist of screw pressing, prepress solvent extraction, or direct solvent extraction. Pressing is used only with seeds having a high oil content. All three techniques are used in processing cottonseed.The seed is cleaned (removal of sticks, stones, leaves, and other foreign materials), delinted (mechanical removal of cotton fibers remaining after ginning), dehulled, and flaked (passage between smooth rolls). Some processors extract the flakes directly; others cook the flakes and then screw press them or a combination of screw pressing followed by solvent extraction.

Peanuts are processed by screw pressing or by screw pressing followed by solvent extracted, or prepress solvent extracted.
Soybeans contain only about 20% oil, so they are processed by direct solvent extraction. Soybeans are cleaned and dried, if necessary, and then stored. After storage, they are cleaned further, cracked to loosen the hulls, dehulled, and conditioned to 10-11% moisture for flaking.

8) What are the usage of crude oils obtained from oilseeds?

Ans: Crude oils obtained from oilseeds are processed further into salad and cooking oils, shortenings, and margarines. They can be utilized directly or blended with other vegetable oils or animal fats for use as shortening and margarine. Blends of oils of varying melting points are used to obtain desired mouth feel and plastic melting ranges and the most economical formulation.

9) What are the edible protein products?

Ans: At present, only defatted soybean flakes are processed into edible protein products. Until about 1986, peanut flour and grits were prepared from prepress hexane-extracted flakes and used as food ingredients, however, production has since been discontinued. Partially defatted peanut flours made by hydraulic pressing are still available commercially. Soybeans, on the other hand, are converted into defatted flours and grits, concentrates, and isolates.

10) Write a short note on defatted soybean flours and grits?

Ans: Edible-grade, defatted soybean flakes are manufactured after desolventizing, the defatted flakes. They are ground and classified by screening. Grits have particle sizes larger than 100 mesh, whereas flours are 100 mesh or finer in particle size. Varying degrees of heat treatment are given to grits and flours to inactivate enzymes and to improve flavor and nutritional quality. Extent of heat treatment is measured by determining the Nitrogen Solubility Index (NSI) or the Protein Dispersibility Index (PDI), which estimate the amounts of undenatured protein that remains dispersible in water under conditions of the tests. Defatted flours and grits have a minimum protein content of 50% on a dry basis.

11) Explain briefly soybean protein concentrate preparation?

Ans: These products are made from defatted soybean flakes or flours by removing the soluble sugars and other low-molecular-weight constituents. Three basic processes have been used to prepare protein concentrates. The first method employs aqueous ethanol to dissolve the sugars; the proteins and polysaccharides which are insoluble in alcohol and make up the concentrate after the solvent is removed.
In the second process, defatted flakes (or flour) are extracted with dilute acid at pH insoluble; after neutralizing and drying, the protein and insoluble polysaccharides constitute the second type of protein concentrate.
In the third process, the flakes or flour are first toasted to heat-denature and insolubilize the proteins. Protein concentrates contains a minimum protein content of 70% on a dry basis.

12) Defineand write a note on soybean isolates?

Ans: Isolates are the most refined form of soybean proteins. They are processed one step beyond the protein concentrates by removing both the water-insoluble polysaccharides and the water-soluble sugars. Defatted flakes with a high protein solubility are extracted with dilute alkali (pH 7-9) at 50 – 55 degree centigrade. The extract is adjusted to pH 4.5, the isoelectric point where the bulk proteins are insoluble and precipitate as a curd. The curd is then washed and may be spray-dried to obtain the isoelectric (water-insoluble) form of the protein. The proteinates are water-dispersible and thus easier to incorporate into wet food systems.An isolate contains a minimum of 90% protein on a dry basis.

13) What are the food uses of oilseed?

Ans: The value-added food products are made from oilseeds, particularly nuggets, snacks, curries, and sauces made from soy, rapeseed, mustard, sesame, peanuts, and other oilseeds.

14) What is the soya product texturization? Explain briefly?

Ans: The terms "texturization or texturing" mean the development of a physical structure which provide,a sensation of eating meat,when eaten

The soy product texturization can be classified in two categories. The first approach is to assemble a heterogeneous structure comprising a certain amount of protein fibres within a matrix of binding material.The second approach converts the soy material into a hydratable, laminar, chewy mass without true fibres .The starting material for spun fibres is isolated soybean protein. In contrast, extrusion or steam texturized soy products can be made from flour, concentrate or isolated protein.

15) Write the difference between meat texturization and extrusion texturization?

Ans: In meat texturization the soy material gets converted into a hydratable, laminar, chewy mass without true fibres .The starting material for spun fibres is isolated soybean protein.example are patties, fillings, meat sauces, meat balls.

In contrast, extrusion or steam texturized soy products can be made from flour, concentrate or isolated protein. They are more economic and more versatile for product development.