FAQs

1. **Give a brief account of transformation of rearing poultry birds in India.**

Transformation of poultry rearing in India from a mere backyard activity into a major commercial activity in the last four decades is as follows.

Backyard poultry: Birds live in free range and hatch their eggs. Their diet is supplemented with crop waste or food leftovers. The labor involved in backyard poultry production is part - time.

Farm flock: Eggs are hatched at a separate location where the hatch and the sexing of the birds are controlled.

Commercial poultry: The farm production involves full - time labor and is geared toward producing on a sufficient scale for the sale of both eggs and poultry meat.

Specialized egg production: It consists of separating poultry for meat and egg production. In the egg producing plant, specialized employees oversee specific aspects of egg production.

Integrated egg production: It is the most advanced enterprise and involves full mechanization and automation of egg production cycle. This includes egg laying, temperature controls, scientific feeding and mechanized egg collection methods.

2. **What are principal components of egg? Give brief account of albumen and yolk.**

The principal components of the egg are – shell, shell membranes, egg white or albumen, yolk, air cell and germ spot.

Albumen or egg white: Albumen consists of four fractions chalaziferous layer, inner thin layer, structural or firm gel - like layer and outer thin layer. Albumen is high in water content and rich in protein. Albumen accounts for 58% of egg weight.

Yolk: Yolk consists of yolk material, latebra, germinal disc and vitelline membrane. The yolk material is high in fat content. The yolk is approximately 31% of the total weight of the egg. The yolk may be light or dark yellow, according to the feed and the individual characteristics of the hen.

3. **Define external quality of egg.**

Normal egg has oval shape. Abnormal egg has ridges, rough areas with thin spots and body checks. Soundness of shell indicates whether shell is unbroken, cracked, leaking or smashed. Candling is holding an egg before the direct light in a box. Any crack on the shell is visible. Yolk shadow is prominent.

4. **What is Haught unit score?**

Haugh unit score is the albumen height adjusted according to the weight. Haugh unit value can be determined by the following equation.

Haugh unit = 100 X (H - 1.7 $W^{0.37}$ + 7.57)

where H = Albumen height in mm,

W = Weight of egg in grams

Height of albumen can be measured by using Haugh meter.

5. **Define Albumen index and yolk index.**

Albumen index: Ratio of height and width of thick albumen measures albumen index.

Albumen index = Height of thick albumen / Width of thick albumen

Good egg has albumen index of 0.09 - 0.1.

Yolk index: Ratio of height and width of yolk is measured gives yolk index.

Yolk index = Height of yolk / Width of yolk

A good egg has yolk index of 0.32 - 0.4.

6. **What are the nutrients in egg albumen?**

Egg albumen contains more protein and very little fat. The protein of the egg contains all the necessary amino acids in well - balanced proportions. The proteins in thick albumen are ovomucin, ovalbumin, conalbumin, ovoglobulin and ovomucoid. The albumin contains some water soluble B vitamins, especially riboflavin. The thin albumen is much like the thick albumen with less ovomucin. There is an antitryptic enzyme in raw egg albumen that interferes with digestion by trypsin. Heat destroys antitryptic enzyme. The digestibility of albumen is improved by cooking. Coagulated egg albumen excites more gastric secretion than the raw substance.

7. **What are nutrients in egg yolk?**

Egg yolk is a concentrated food containing a wide variety of nutrients. The important yolk proteins are ovovitellin and livestina. The fatty substances are mostly glycerides, lecithin and cholesterol. The yolk contains almost all of the vitamins except vitamin C. It also contains iron, sulfur, copper, phosphorus, potassium, sodium, magnesium, chloride, calcium and manganese. Almost two - thirds of these are lipids (easily digestible) of high - energy value and one third is

mainly phosphoprotein. Egg yolk stimulates secretion of gastric juices. Yolk suffers a nutritional loss when it is heated for extended periods of time at excessive temperatures. Essential minerals like phosphorus, iron, sulfur, magnesium, potassium, sodium, chlorine, zinc, copper, bromine, manganese and iodine are present in abundant.

8. Mention calorific value of egg.

The energy values of the eggs of various species of birds are not similar, not only because the eggs are unequal in size, but also because they are different in composition. The chicken egg has an energy value of 74 - 80 calories per 100 g. The shell yields about 1.6 calories per 100 g.

9. How eggs in shell are treated for preservation?

The treatments of fresh eggs to maintain their keeping quality are.

i. Washing with egg washing powder removes dirt / soil on the egg surface.
ii. Spraying with petroleum jelly based egg spraying oil
iii. Holding eggs in CO_2 atmosphere
iv. Sodium silicate treatment
v. Lime sealing and
vi. Over wrapping in cartons by cellophane.

10. What is thermal treatment of egg?

The immersion of eggs in water for 35 min at 49 ^{o}C, 15 minutes at 54 ^{o}C, 10 minutes at 59 ^{o}C or 5 minutes at 60 ^{o}C kills the embryo in fertile eggs, destroys some of the bacteria on the shell and inside and stabilizes the upstanding character of the yolk and white.

11. What are the native characteristics of raw egg?

The native characteristics of the raw egg are ability to coagulate with heat, production of stable foams when whipped, emulsifying power, color and flavor.

12. Why liquid egg is desugared prior to drying?

To retain the functional properties, color and flavor stability of liquid egg components, it is necessary to remove glucose present. If glucose is removed, the glucose – protein (Maillard) reaction producing undesirable color and the glucose – cephalin reaction causing off flavors are eliminated.

13. How glucose is removed in liquid egg?

Controlled bacterial fermentations using special cultures are commonly used to desugar egg white. Yeast fermentation with *Saccaromyces cervisiae* is occasionally employed to desugar egg white and whole liquid egg. Desugaring of liquid egg by using glucose oxidase – catalase system is a new method.

14. How egg powder is made by spry drying?

Liquid egg is spray dried by heating at an inlet temperature of 121 – 232 ºC. Liquid egg is atomized by spraying through high pressure (500 – 6000 pounds per square inch) nozzles in to a hot air stream that evaporates water instantly. Air is removed by an exhaust fan. After drying, the powder is cooled and sifted prior to packaging.

15. Mention different types of egg products.

There are many egg products which can be classified as (i) Pre - peeled hard cooked eggs preserved in a solution of sodium benzoate and citric acid, (ii) Improved scrambled egg mixes (omlets) for cooking in a plastic bags and (iii) Pre - cooked – frozen – thaw – reheated egg products. Whole liquid egg, albumen, yolk, frozen salted yolk or sugared yolk or dried whole egg, dried albumen and dried yolk are used as ingredients in various food applications.