

2M & 14M – IAE 1

1. Define PHT.

PHT is the application of science and technology to agricultural commodities which acts after harvesting food from farms for preservation, processing, packaging, storage, handling, transportation, and marketing. PHT is an actual application of food science & Technology. It is a path through which food comes from the farm to the consumer's plate. Post-Harvest Technology can minimize the losses of fresh food commodities & increase the value addition to crops, horticulture, livestock & fishery sector, etc. Plays a vital role in the reduction of wastage of food.

2. State the principles of PHT.

1. Increase in productivity
2. Ensuring value addition in food
3. Increasing diversification
4. Reducing post-harvest losses
5. Commercialization of agriculture
6. Generation of employment
7. Creating surplus for export agro-business
8. Generating availability of food in any season, access particular area
9. Storage, marketing & transportation of food
10. Waste management & reduction

3. List the importance of PHT.

- Post-harvest technology is the application of technology to the postharvest handling and storage of agricultural produce.

- Post-harvest technology can improve the quality and shelf life of agricultural products.
- Post-harvest technology can help to reduce the wastage of agricultural produce.
- Post-harvest technology can help to improve the economics of agriculture.
- Post-harvest technology is an important tool in the fight against hunger and malnutrition.

4 Define Equilibrium Moisture Content.

Every food exerts a characteristic vapor pressure at a certain temperature and moisture content. All porous food materials, when in contact with moist air, adsorb or desorb water molecules to attain equilibrium moisture content. This equilibrium moisture content depends very strongly on the partial pressure of the water vapor in the surrounding air and rather weakly on the air temperature that are commonly experienced in drying and storage of foods. If the moisture content of the food material does not vary with time for a given combination of water vapor pressure and air temperature, it is then said that it has reached the equilibrium moisture content (EMC) of the material at that water vapor pressure and temperature.

5 What does threshing mean? Write the principle of a working thresher.

“Threshing” is the operation of separating the grains from the plants. These operations may be carried out in the field or on the threshing floor, by hand or with the help of animals or machines.

6 Classify the drying rate period and brief in short on constant rate period of drying.

Divided into 3 periods –Constant rate period –First Falling rate period – Second falling rate period

- Moisture migration rate from inside of product to its surface is equal to the rate of evaporation of water from surface
- This period continues till critical moisture content is reached
- Critical moisture content: Moisture content of a product where constant rate drying ceases and falling rate starts
- This period is very short for agricultural products • Drying of sand and washed seeds takes place in constant rate period

7 Define the term psychometric.

They are terms used to describe or determine the physical and thermodynamic properties of gas-vapor mixtures. The term derives from the Greek psuchron meaning "cold" and metron meaning "means of measurement" the principles of psychrometry apply to any physical system consisting of gas-vapor mixtures

8 List the ways to minimize Post Harvest losses in grains.

Losses can be minimized by physically avoiding the entry of insects and rodents, and maintaining the environmental conditions that avoid growth of microorganisms. The knowledge of control points during harvesting and drying before storage can help in reducing losses during the storage of cereals.

9 Importance of moisture content in foods.

Moisture content has a lot to do with a food product's characteristics, including its physical appearance (shape, color, etc.), texture, taste, weight (which can impact the cost) in addition to factors that affect the product's shelf-life, freshness, quality, and resistance to bacterial contamination.

10 Outline the importance of drying.

- Permits long time storage of grain without deterioration
- Permits continuous supply of product thro' out the year
- Permits early harvest which reduces field damage and shattering loss
- Permits the farmers to have better quality product
- Makes products available during off season

11 Define the following terms

(i) Dew Point Temperature

The saturation temperature of the moisture present in the sample of air

- it can also be defined as the temperature at which the vapour changes into

liquid (condensation).

- is the temperature at which a moist air sample at the same pressure would

reach water vapor "saturation."

(ii) Psychrometric Ratio

It is the ratio of the heat transfer coefficient to the product of mass transfer coefficient and humid heat at a wetted surface.

Long Questions:

1. Explain in detail about the different methods of threshing and its components.
2. Justify the importance of moisture content in foods and the determination of moisture content by direct and indirect methods.
3. Summarise on post-harvest engineering, its principles, objectives, importance and its losses with respect to Cereals, Pulses and Oilseeds.

4. Elaborate the importance of psychrometry, psychrometric charts and its uses in detail.
5. Infer a detailed note on different Engineering properties of agricultural produces.
6. Simplify on the principles, importance and theories of drying for agricultural produces.
7. Elaborate on moisture content of foods, its measurements and methods.
8. Explain about Equilibrium Moisture Content of foods.