UNIT 5
TOPIC – 1

Fruits and vegetables exhibit a wide range of physical and thermal properties, which can vary depending on the specific type of fruit or vegetable. Here are some common physical and thermal properties associated with these food items:

1. Texture:
    - Firmness: The firmness or hardness of fruits and vegetables can vary significantly. Some are crisp and firm (e.g., apples, carrots), while others are soft (e.g., bananas, tomatoes).
    - Turgidity: The turgidity or rigidity of plant cells is responsible for maintaining the shape and texture of fruits and vegetables. Loss of turgidity can lead to wilting.
    - Texture changes during cooking: Cooking can soften or alter the texture of fruits and vegetables. Some become tender when cooked (e.g., potatoes), while others may become mushy (e.g., zucchini).
2. Color:
    - Color is an important visual indicator of ripeness in fruits and vegetables.
    - Pigments like chlorophyll (green), carotenoids (orange and yellow), and anthocyanins (red and purple) contribute to the coloration.
    - Cooking can change the color of some fruits and vegetables due to chemical reactions (e.g., blanching green beans can turn them bright green).
3. Water content:
    - Fruits and vegetables typically have high water content, which contributes to their juiciness and freshness.
    - Water content can vary widely; some are more water-rich (e.g.,

watermelon) while others are drier (e.g., sweet potatoes).

4. Size and shape:
   - Fruits and vegetables come in various sizes and shapes, ranging from small berries to large pumpkins.
   - Size and shape can affect cooking times and methods.
5. Density:
   - The density of fruits and vegetables can vary based on their water content and cellular structure.
   - Dense vegetables like carrots may take longer to cook than less dense ones like lettuce.
6. Thermal properties:
   - Heat capacity: Fruits and vegetables have different heat capacities, which affect how quickly they heat up or cool down when exposed to temperature changes.
   - Thermal conductivity: The ability of a fruit or vegetable to conduct heat can influence its cooking characteristics.
7. Thermal processing:
   - Cooking methods such as boiling, steaming, baking, frying, and microwaving are used to prepare fruits and vegetables.
   - The choice of cooking method can impact the texture, flavor, and nutritional content of these foods.
8. Enzymatic activity:
   - Many fruits and vegetables contain enzymes that can be deactivated or activated by heat. For example, blanching vegetables can inactivate enzymes that cause deterioration.
9. Nutritional changes:
   - Thermal processing can affect the nutritional content of fruits and vegetables, including the degradation of vitamins and phytochemicals.

It's important to note that the physical and thermal properties of specific fruits and vegetables can vary greatly, so cooking and handling

techniques should be adapted accordingly to achieve desired results in terms of taste, texture, and appearance.