Exam Preparation Activity

Multiple-Choice Questions (5 marks)

Choose the response that is correct or that **best answers** the question.

1. The process in which starch granules in flour absorb liquid and swell, resulting in the thickening of a sauce is referred to as:
   a. Coagulation.
   b. Dextrinisation.
   c. Denaturation.
   d. Gelatinisation.

   The correct answer is D.

   Gelatinisation is the process in which starch granules in flour absorb liquid and swell, resulting in the thickening of a sauce. When starch is exposed to heat and moisture, it absorbs the liquid and undergoes a physical change, swelling and absorbing water molecules. As a result, the starch granules lose their structure, and the sauce thickens. This process is commonly used in cooking to thicken various sauces, gravies, and soups.

2. Identify the dry cooking method from the list below:
   a. Poaching
   b. Frying
   c. Steaming
   d. Stewing

   The correct answer is B.

   Answer A, C and D are wet cooking methods.

3. Carrots, corn and pumpkin turn a golden-brown colour when roasting. This is known as
   a. Dextrinisation
   b. Caramelisation
   c. The Maillard Reaction
   d. Radiation

   The correct answer is B.

   Answer A and C are methods of browning, but caramelization is the main method of browning in this situation.

   D is not the answer as it is a method of transferring heat.

4. Which method of heat transfer occurs when a spoon left in a cup of tea becomes warm?
   a. Conduction
   b. Convection
   c. Radiation
   d. Induction

The correct answer is A.

Conduction is the method of heat transfer that occurs when there is direct physical contact between two objects of different temperatures.

5. Which addition below assists with the ripening of food?

   a. Mechanical action

   b. Acids

   c. pH

   d. Enzymes

The correct answer is A. D

Enzymes are biological molecules that act as catalysts, speeding up chemical reactions in living organisms. In the context of food ripening, enzymes play a crucial role in breaking down complex compounds, such as starches and proteins, into simpler forms that contribute to the ripening process.

Short Answer Questions (15 marks)

Question 1 (6 marks)

Study the recipe below and answer the questions:

Scrambled Eggs and Toast

Ingredients:

2 large eggs

2 slices of bread

Butter or cooking oil

Salt and pepper to taste

Method:

1. Crack the eggs into a bowl and whisk them until the yolks and whites are well combined. Add a pinch of salt and pepper and mix.
2. Heat a non-stick frying pan or skillet over medium-low heat. Add a small amount of butter or cooking oil to the pan, allowing it to melt and coat the surface.
3. Pour the whisked eggs into the pan and cook briefly without stirring. As the edges begin to set, gently push them toward the center of the pan with a spatula. Repeat this process until the eggs are mostly cooked but still slightly runny.
4. Remove the pan from the heat while the eggs are still slightly moist. The residual heat will finish cooking them to perfection.
5. Serve with toasted bread.

a. Identify the method of heat transfer used when making scrambled eggs. 1 mark

Coagulation

b. Explain how the method identified transfers heat to the eggs during the cooking process. 2 marks

When making scrambled eggs, the transfer of heat occurs through the process of conduction. Conduction is the transfer of heat between objects that are in direct contact with each other. In this case, the heat is transferred from the cooking surface (e.g., a pan) to the eggs that are in direct contact with it.

c. Identify the chemical process that bread undergoes when it is toasted. 1 mark

Dextrinisation

Describe the chemical change that the toast undergoes. 2 marks

Dextrinisation is a chemical change that occurs in starchy foods, including bread when it is toasted. It is a type of carbohydrate degradation reaction that involves the breakdown of starch molecules into smaller, simpler carbohydrate compounds called dextrins. This process occurs due to the application of heat during toasting.

Question 2 (9 marks)

Read the scenario below and answer the questions:

Taylor and Kelly are planning a special dinner, and one of the foods they want to include are golden brown and crunchy potatoes. However, they cannot decide whether to steam or roast the potatoes. Both methods have their merits, but they want to choose the best one to achieve the perfect texture and flavour.

a. Compare the two methods of cooking, steaming and roasting. 4 marks

Steaming: In steaming, food is cooked by exposing it to steam generated by boiling water. The steam surrounds the food and transfers heat, cooking it gently and evenly.

Roasting: Roasting involves cooking food by exposing it to dry, hot air in an oven or over an open flame. The dry heat cooks the food and creates a crispy outer layer while retaining moisture inside.

b. Identify the cookery method that would be the best choice and justify your choice by explaining how each method affects the texture and flavor of the potatoes. 5 marks

Roasting is the best choice for achieving golden and crispy potatoes because it creates a delectable contrast between the crisp outer layer and the tender interior. The dry heat of roasting allows for caramelization and the Maillard reaction, intensifying the taste of the potatoes. On the other hand, steaming is better suited for producing tender and moist potatoes without achieving the desired crispiness and complex flavor that roasting provides.

Written Activity One

10+ Questions!

Read the content at this link: https://foodstudies.com.au/courses/unit-2-2-5-2-2-6/

Answer the questions below.

1. What is the difference between chemical changes and physical changes in food during cooking?

   Chemical changes in food occur when the molecules undergo transformations, resulting in the formation of new substances. This can affect the sensory properties and nutritional composition of the food. Physical changes, on the other hand, refer to alterations in the food's physical characteristics, such as shape, size, texture, or state, without changing its chemical composition. Physical changes are usually reversible and do not involve the formation of new substances.

2. What are the different methods of heat transfer used when cooking?

   The different methods of heat transfer during cooking are conduction, convection, and radiation.

3. List one dry and one wet cooking method.

   Identify one advantage and one disadvantage of each method.

   Provide an example of a food cooked using this method.

   Grilling

   Advantage: Grilling imparts a smoky flavor to the food and creates appealing grill marks.

   Disadvantage: The direct heat can sometimes cause the food to become dry if not properly monitored.

   Example: Grilling a steak to achieve a charred and flavoursome exterior.

   Steaming

   Advantage: Steaming helps retain the natural flavors, nutrients, and moisture of the food without adding extra fats or oils.

   Disadvantage: It may result in a softer texture compared to other cooking methods, which may not be desirable for certain ingredients.

   Example: Steaming broccoli, where the vegetable is cooked using steam to preserve its vibrant colour, crispness, and nutrients.

4. How does electromagnetic radiation, during microwave cookery, affect the properties of food during cooking?

   In microwave cooking as a dry method, the microwaves cause water molecules within the food to vibrate rapidly, generating heat and cooking the food from within. In wet cooking methods using microwaves, the water molecules surrounding the food vibrate due to the electromagnetic waves, generating heat within the food.

5. Provide three examples of how enzymes can affect texture, taste, appearance, nutritional changes, and shelf life of food.

Enzymatic breakdown of proteins and fats during aging and fermentation can contribute to the flavor and aroma of cheese.

Enzymatic browning occurs in fruits and vegetables when enzymes react, resulting in the formation of brown pigments.

Enzymes like amylases break down starch into sugars, aiding in their digestion and absorption.

6. When altering the pH of a food ingredient or mixture during cooking, what is one change that can occur to the sensory properties of the food?

Some sample responses have been provided below:

Taste perception, as different taste sensations can be accentuated or balanced based on the pH level.

Colour stability, as pH can impact the intensity and hue of pigments in food.

Preservation and shelf life, as acidic conditions achieved through pH adjustments can inhibit the growth of microorganisms and increase shelf life.

7. What is an emulsion and why is it useful in cooking?

An emulsion is a mixture of two liquids, typically oil and water, that wouldn't normally combine. It is stabilsed with the help of an emulsifying agent. The emulsifying agent prevents the mixture from separating.

Emulsions are useful in cookery because they play a crucial role in cooking by enhancing texture, distributing flavours, providing stability, and expanding the range of culinary possibilities.

8. What kind of product might you make when using the aerating a mixture using beaten egg white? What are the physical properties of beaten egg whites?

When using beaten egg whites to aerate a mixture, you can create a variety of light and fluffy products, such as meringues, soufflés, or sponge food cakes.

Beaten egg whites have several physical properties:

- Beaten egg whites increase in volume and form a foam-like structure due to the incorporation of air during whipping.
- The foam-like structure contributes to a light and airy texture in baked goods, such as meringues.
- Beaten egg whites can hold their shape and provide stability to a mixture.
- The trapped air expands during baking, acting as a leavening agent and helping baked goods rise.
- Beaten egg whites can contribute to moisture retention in baked goods, keeping them moist.

9. What is the difference between the term's denaturation and coagulation?

Denaturation refers to the structural alteration of proteins, typically caused by external factors such as heat, pH changes, or the presence of certain chemicals. It disrupts the protein's three-dimensional structure, causing it to unfold and lose its original shape. Coagulation, on the other hand, occurs when denatured proteins interact with each other, forming a network or mesh-like structure that traps water or other molecules. This leads to the formation of a semi-solid or solid mass, such as what happens when egg whites solidify during cooking or when curds form in cheese-making.

10. How do the physical properties of food change after undergoing the Maillard reaction?

The Maillard reaction leads to several changes in the physical properties of food, including:

Browning: The Maillard reaction results in the formation of brown pigments, giving the food a desirable golden or brown colour. This browning effect enhances the visual appeal of cooked food.

Flavour Development: The Maillard reaction contributes to the development of complex and savoury flavours, often described as umami. It produces a range of aroma compounds that give cooked food its distinct taste and aroma.

Texture Modification: The Maillard reaction can impact the texture of food by altering its structure. It can lead to the formation of a crispy and crunchy exterior, enhancing the textural contrast in cooked food.

11. What is the term used to describe the thickening of a white sauce? How does this occur?

The term used to describe the thickening of a white sauce is "gelatinization." It occurs when starch molecules in the sauce absorb liquid and swell, creating a network that thickens the sauce when heated.

12. How does dextrinisation differ to caramelisation?

In summary, dextrinisation involves the breakdown of starch into dextrins through dry heat, while caramelisation involves the breakdown of sugar into caramel through high heat. Dextrinisation is associated with starchy foods, while caramelisation is specific to sugar.