



Food science quiz

Year 11 Food Preparation and Nutrition

Food science

1. Fats and oils have many scientific functions in cookery. Identify the correct terminology:

• P =

• E =

• A =

• S =

ANSWER

- **Plasticity**
- **Emulsification**
- **Aeration**
- **Shortening**

Food science

2. Explain what is meant by the term **denature**:

ANSWER

The chemical bonds that hold the protein molecule bundle together can be broken, which makes the protein molecules bundle unfold and change shape.

Food science

What effect does denatured protein have on the following foods?

- Meat =

- Eggs =

ANSWER

Meat = tender muscle fibres / juicy

Eggs = coagulation / setting of the egg /

Food science

At what temperature does sugar start to caramelize?

ANSWER

160C - 170C

Food science

Explain 3 ways of preventing enzymic browning of fruit or vegetables?

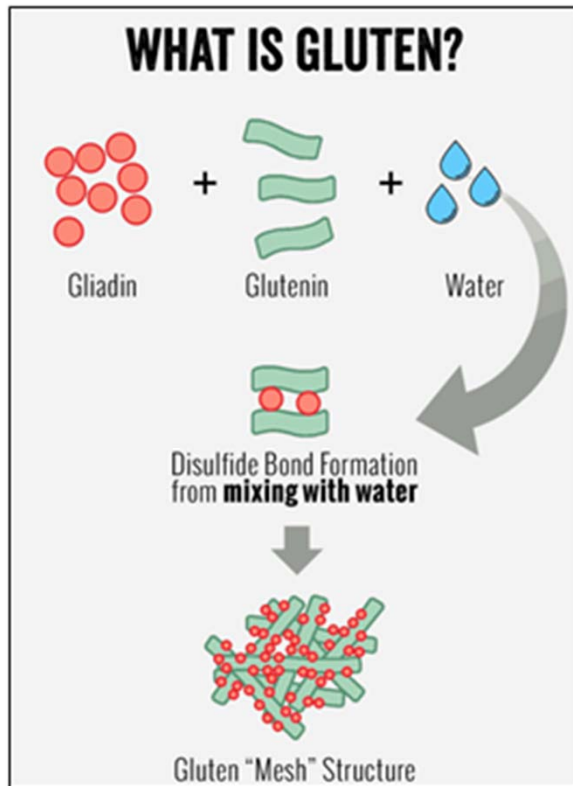
ANSWER

- **Blanching cut fruits or vegetables in boiling water.**
- **Blanching vegetables before freezing**
- **Dipping the fruit or vegetable in acid e.g. lemon juice**
- **Removal of air by submerging in water/ wrapping up**
- **Cooking e.g. stewing fruit, roasting parsnips**

Food science

Explain exactly how gluten is formed?

ANSWER



**Gliadin and glutenin
are proteins found in
flour**

Food science

Why should you allow pastry to rest?

ANSWER

Resting allows the stretched gluten to relax. The stretched coils of gluten gradually return to their original size and shape during resting.

If not rested the pastry will shrink rapidly causing mixture to leak out.

Food science

When egg white is overwhisked the protein bonds break. Liquid then leaks out – that is this process called?

ANSWER

'Syneresis'

Food science

Name the natural emulsifying agent found in egg yolk...

ANSWER

Lecithin

Food science

Name a biological raising agent

ANSWER

Yeast

Food science

What is the coagulation temperature of:

Egg white

Egg yolk

ANSWER

Egg white – 60C

Egg yolk - 70C

Food science

Give two reasons for putting a marinade on meat before it is cooked?

ANSWER

- Add colour
 - Add flavour/seasoning/spices/improve taste
 - Adds moisture/prevents drying
 - So the meat is more tender/softens(when it is cooked)
-

Food science

Oxidation can be reduced during preparation and cooking by?

ANSWER

- **Cooking vegetables in small amounts of water**
- **Using quick cooking methods**
- **Serving vegetables immediately after cooking**
- **Keeping the lid on when boiling vegetables**
- **Using the cooking water in gravy**

Food science

Explain the process of gelatinisation (6)

ANSWER

When starch molecules are added to water and heat is applied, they begin to absorb the water and start to swell. This happens at approximately 60C

At approximately 80C the starch molecules burst, releases starch into the surrounding liquid. A starch network is created, trapping water inbetween the starch molecules and preventing them from moving around the mixture. This creates a thickening effect.

- At boiling point (100C) the sauce will have completely thickened. As the sauce cools, it becomes a solid gel.

Food science

Describe 3 ways that you can add air to a cake mixture? What is this process called ?

ANSWER

Beating

Whisking

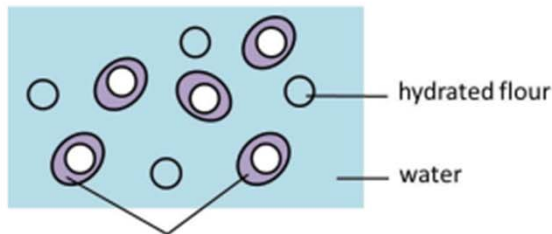
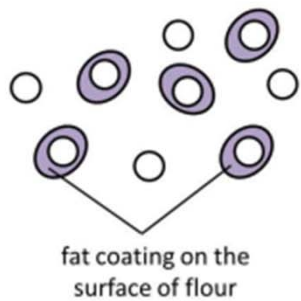
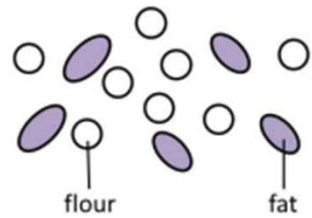
Sifting

'Aeration'

Food science

How does fat shorten a pastry mixture?

ANSWER



The waterproof fat coating around flour reduce their interaction with water

Fat coating on flour affects
water absorption 19

Fats with plasticity rub in easily. Fat coats the flour molecules, making them waterproof and therefore preventing gluten development.

This leads to a short and crumbly texture. E.g. shortbread biscuits

Food science

Name 3 types of chemical raising agent?

ANSWER

Bicarbonate of soda

Baking powder

Self-raising flour

Food science

During baking bread, yeast cells are destroyed. At what temperature does this normally happen?

ANSWER

60C

Food science

True or false?

1. Sugar delays the protein denaturation, e.g. – in the preparation of meringues, sugar should be added after the egg white has denatured – smaller foam will be formed if sugar is added early?
2. Sugar decreases the temperature required for coagulation?

Food science

True or false? **ANSWER**

1. Sugar delays the protein denaturation, e.g. – in the preparation of meringues, sugar should be added after the egg white has denatured – smaller foam will be formed if sugar is added early? **TRUE**

2. Sugar **decreases** = **INCREASES** the temperature required for coagulation?
FALSE

Food science

True or false?

1. Salt promotes denaturation and coagulation by lowering the coagulation temperature, e.g. – in cheese making, salt is added to curd to increase firmness?
2. Rennet is the enzyme used to coagulate milk proteins

Food science

True or false? **ANSWER**

1. Salt promotes denaturation and coagulation by lowering the coagulation temperature, e.g. – in cheese making, salt is added to curd to increase firmness? **TRUE**

2. Rennet is the enzyme used to coagulate milk proteins. **TRUE**

Food science

Which scientific term does this describe?

Fried foods are dipped in egg and breadcrumbs or in batter that contains egg, before frying.

The egg protein in the hot oil, seals and protects the food inside as it cooks, e.g.–Fried fish and chicken–Tempura

Plasticity

Coagulation

Emulsification

ANSWER

Coagulation

Food science

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Plasticity

Coagulation

Emulsification

Food science

Name two examples of modified starch that are used in cookery?

ANSWER

Instant thickening granules

Quick-cook pasta or rice