

Starter:



1. Define the term dextrinisation [1 mark]
2. What kind of carbohydrate undergoes gelatinisation? [1 mark]
3. Explain the process of gelatinisation [4 marks]
4. How can you prevent lumps in a gelatinised sauce? [1 mark]
5. Give two functions of sugar in cooking and provide an example for each. [4 marks]

Mark Scheme

Any four from:

(1 mark for each correct function and 1 mark for each example, max. 8 marks)

- Gives a sweet flavour (e.g. in cakes or beverages).
- Adds bulk to the mixture / adds volume (e.g. cakes, muffins).
- Gives texture by making aeration possible (e.g. ice creams).
- Improves the flavour (e.g. tomato sauce).
- Speeds up fermentation (e.g. in bread or wine).
- Extends the shelf life (e.g. in jam).
- Preserves the food by disabling microorganisms' growth (e.g. in jam).
- Changes the colour of the food (e.g. by caramelisation in crème brûlée or toffee sauce).

Accept any other suitable answer.

Revision- Food Science- Carbohydrates

Learning Objectives:

Recall information about carbohydrates

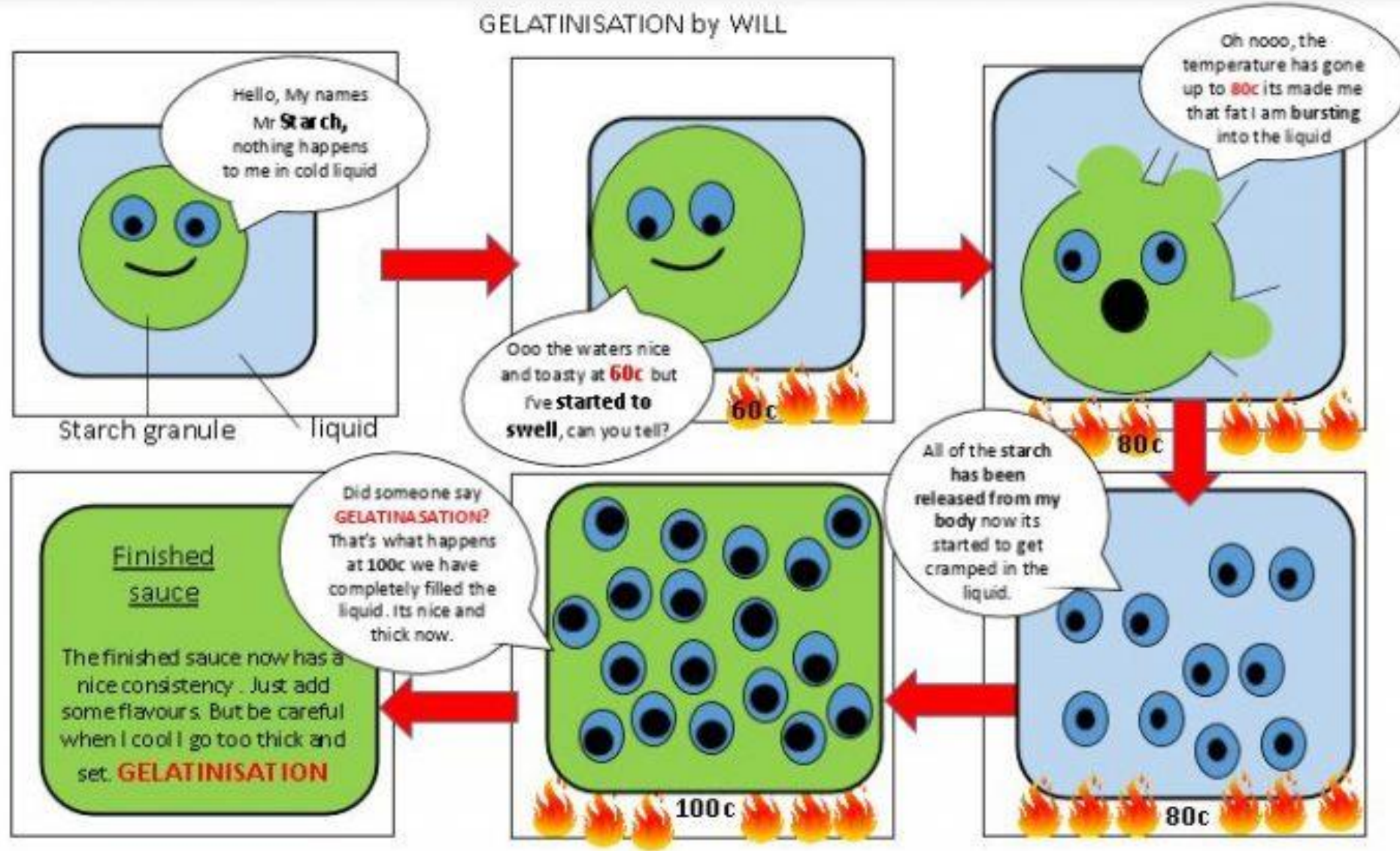
Address any misconceptions

Apply knowledge to exam questions

In depth look- Gelatinisation

- ▶ Definition- Gelatinisation= is the process in which moist heat is applied to starch grains, which swell(60°C), increase in size and then break open ($75\text{-}87^{\circ}\text{C}$), releasing amylose, which thickens the mixture around boiling point (100°C).
- ▶ Starch grains do not dissolve in water. When the liquid cools it forms a gel that will set (think cold gravy).
- ▶ Starches that can be used to thicken sauces:
 - ▶ Cornflour, arrowroot, potatoes, small pasta shapes, rice, barley

GELATINISATION by WILL



In depth look- Gelatinisation

- ▶ What can affect gelatinisation?
 - ▶ Amount of liquid
 - ▶ Type of starch
 - ▶ Temperature- starch will NOT dissolve in cold water
 - ▶ Stirring- starch will settle at the bottom of the pan and form lumps
 - ▶ Sugar- competes for water, sauce will be runny, add sugar after gelatinisation if needed
 - ▶ Acids- should be added after, as it can breakdown the gel



In depth look- Caramelisation

- ▶ Caramelisation causes changes to a food's colour and also flavour
- ▶ When food products come in contact with heat (180°C) sugars breakdown and start to darken, going from clear, to dark amber to black when burnt (which will produce a bitter taste- turning into pure carbon at 200°C)
- ▶ It happens because water is released from sugar as steam.
- ▶ It also occurs during the dry heating, shallow frying and roasting of meat and vegetables.
- ▶ Dextrinisation
 - ▶ Similar to caramelisation, but limited to a dry heat turning starch brown.



Plenary- Exam question

What are some factors to consider when making a sweet, lemon sauce to ensure a good quality outcome? [4 marks]

Identify two dishes that could use a gelatinised sauce. [2 marks]

Identify potential issues for someone making a gelatinised sauce and explain how they could combat these. [4 marks]