

Food & Nutrition Glossary

Key Word/Term	Description
Aeration	When air is trapped in a mixture.
Amino Acids	Small units that form the chains in protein.
Antibacterial	Substance that will usually kill bacteria.
Caramelisation	Process of changing the colour of sugar from white to brown when heated.
Coagulation	When eggs are heated they change colour and become firm-set.
Cross Contamination	The transfer of food spoilage/poisoning from one food to another.
Curdling	Fat separates from the sugar and eggs when the egg is added.
Dextrinisation	When starch converts into a sugar.
Emulsifier	A substance that stops oil and water from separating.
Emulsion	Mixture of two liquids.
Enzymic Browning	Reaction between a food product and oxygen resulting in a brown colour, e.g. a sliced apple starts to go brown when sliced and left in the air.
Foams	A mixture of gas and liquid.
Food Additive	A substance added to a food product to improve its quality.
Gelatinisation	Heated starch granules absorb liquid and swell and burst to thicken liquid.
Gluten	Protein found in flour.
Hygiene	Clean, sanitary. Prevents food spoilage or poisoning occurring.
Micro-organism	Tiny living thing that can only be seen through a microscope.
Modified Starches	Starches that have been altered to perform additional functions.
Net Weight	Not including packaging.
Non starch polysaccharide	The part of the food that is not digested by the body. Also known as fibre.
Nutrient	The part of food that performs a particular function in the body.
Pathogenic	Causing disease.
Preservative	A substance that extends the shelf life of a food.
Raising Agent	Increases the volume of doughs, batters and mixtures by promoting gas release (aeration).
Shortening	When fat coats the flour particles preventing absorption of water resulting in a crumbly texture.
Staple Food	A food that forms the basis of a traditional diet – wheat, barley, rye, maize or rice, or starchy root vegetables such as potatoes.
Suspension	A solid held in a liquid.
Sustainability	To continue to support.

Nutrition

Carbohydrates

What are carbohydrates?

- Starches – found in potatoes, flour, pasta, rice and bread.
- Sugars – found in fruits, drinks and sweet baked products.

Starch

Functions – bulking agent, thickening agent, gelling agent.

Bulking – Main ingredient, main structure.

Thickening – gelatinisation process (see class notes).

Gelling - after gelatinisation the thickened liquid forms a gel.

Modified Starches

Starch which has been altered to perform additional functions. Used in products such as cup-a-soup and instant desserts (angel delight).

Sugars

Sugar is identified by the size & colour of the crystals. Examples of sugars are granulated, caster, icing, Demerara and muscavado.

Many manufacturers are now adapting the sugar in recipes in response to consumer concerns and healthy eating guidelines. **Manufacturers use sugar substitutes (artificial sweeteners) to:**

- Create a “low calorie” or diet product
- Promote food for dental health
- Market products for people with diabetes

When sugar substitutes are used they :

- Can leave a bitter after-taste
- Lack the bulk necessary for a recipe
- Do not have the same properties of sugar so results can be unsatisfactory
- Reduce the shelf-life

Non-Starch Polysaccharides (NSP – Dietary Fibre)

What is NSP?

Non-starch polysaccharides are found in the cell walls of plants. They are required by the body to ensure that solid waste products are easily excreted. This process is important to prevent waste products from becoming potentially toxic to the body.

Foods NSP is found in

NSP is found in unrefined foods such as fresh fruit, jacket potatoes, nuts, cabbage, beans, swede, parsnip, wholemeal and granary breads, wholemeal pasta, dried fruits and wholegrain cereals. Animal tissue contains no NSP.

The NSP content in food products can be improved by:

- Using wholewheat, wholemeal and high-fibre white breads rather than ordinary white bread.
- Using a proportion of wholewheat or wholemeal flour instead of white flour in products
- Using wholewheat pasta rather than pasta made with white flour
- Using brown rice
- Including skins, when using fruits and vegetables, where possible

Protein

What are Protein Foods?

Protein foods are made up of small units called amino acids that are linked together like the links in a chain. When protein foods are heated the links in the chain change and this alters the structure of the food. Protein foods are needed for growth, repair and maintenance of the body.

Protein foods which contain good quantities of the 8 essential amino acids are classed as high biological value (hbv) and those that lack one or more of the essential amino acids are classed as low biological value (lbv).

HBV foods are derived mainly from animal sources such as meat, fish, eggs, cheese and milk, and also soya beans.

LBV foods are derived mainly from plant sources such as cereals, pulses and nuts.

Nutrition

Fats and Oils

Fat is needed in the diet as a concentrated source of energy; as an insulating layer under the skin; - protection for vital organs and an energy store. Fats are also used to make and repair cells.

There are many different types of fat. Fats are produced from three different sources:

- Animals
- Fish
- Vegetables

General rule: At room temperature fats are solid and oils are liquid.

Saturated v. unsaturated fats

Saturated fats are generally found in animal foods – lard, butter, suet and also in some vegetable oils.

They should be eaten sparingly as they tend to contain higher quantities of cholesterol.

Unsaturated fats are found mainly in vegetable oils and soft margarines. They contain less cholesterol.

Properties of fats

- Fats and oils do **not** dissolve in water
- Fats are affected by heat – they will melt at approximately 30°C and if overheated will ignite.
- Fats change shape when pressure is used.

Low fat spread

Too much fat can be a danger to long term health.

Low fat spreads can contain half the fat of soft spreads and butter. They contain higher proportions of water and this is how the fat has been reduced.

The high water content makes low fat spreads unsuitable for frying and baking.

Improving Fat Quality in Food

- Using lean meat rather than fatty meat
- Using lean bacon and grilling it to cut down on fat
- Using chicken and fish in place of red meats
- Using low-fat cheeses
- Using semi-skimmed or skimmed milk
- Trimming visible fats from meats and draining off fat when cooking
- Adding pulses to meat dishes so less meat is used

Vitamins

What are vitamins?

Vitamins are required by the body because they:

- Help to protect against disease
- Regulate the chemical reactions which release energy in the body
- Regulate the building and repair of cells

Vitamins can be grouped into two-types: water-soluble and fat-soluble.

Water-soluble vitamins

Vitamins B and C are water-soluble vitamins. A daily supply of these is required as they cannot be stored in the body.

B group vitamins are found in meat, oily fish, wholemeal and white bread, wholegrain cereals, fortified breakfast cereals and pulses. Vitamin B2 and vitamin B12 are also found in dairy products and eggs.

Vitamin C is found in fresh and frozen fruit and vegetables, particularly citrus fruits and green vegetables.

Fat –soluble vitamins

Vitamins A,D, E and K are fat soluble vitamins. They can be stored in the body.

Vitamin A is found in liver, oily fish, full-fat milk and dairy products, butter, margarine, carrots, green leafy vegetables, peaches, nectarines and apricots.

The main source of **vitamin D** is the action of sunlight on our skin. Food sources are few – oily fish, eggs, margarine and fortified breakfast cereals.

Vitamin E is found in a wide variety of foods including vegetable oils, eggs, wholegrain cereals and leafy green vegetables.

Vitamin K is found in wholegrain cereals and leafy green vegetables.

Nutrition

Minerals

What are minerals?

Minerals are inorganic substances which are needed to enable important bodily functions to take place. Vitamins and minerals work together on many occasions so a well-balanced diet, containing a wide variety of foods, is extremely important.

Calcium – found in full and low fat dairy produce, canned fish, white bread, pulses, leafy green vegetables and dried fruit.

Iron – found in meat, fish, dairy produce, cereals and vegetables.

Sodium and potassium – potassium is found in all fruits and vegetables.

Sodium occurs naturally in many of the foods we eat, but a good proportion of the sodium we eat is added as table salt.

Diet and Health

Guidelines for a healthy diet

- Base your meals on starchy foods
- Eat lots more fruit and vegetables
- Eat more fish
- Cut down on saturated fat and sugar
- Try to eat less salt – no more than 6g a day
- Get active and try to be a healthy eight
- Drink plenty of water
- Don't skip breakfast

Five a day

Scientific studies have shown that people who eat a lot of fruit and vegetables may have a lower risk of ill health. That is why it is recommended that you eat at least 5 portions of fruit and vegetables every day. A poor diet can lead to: obesity; strokes, high blood pressure, coronary heart disease, tooth decay, diabetes (type 2).

Diet and Health

What is a balanced diet?

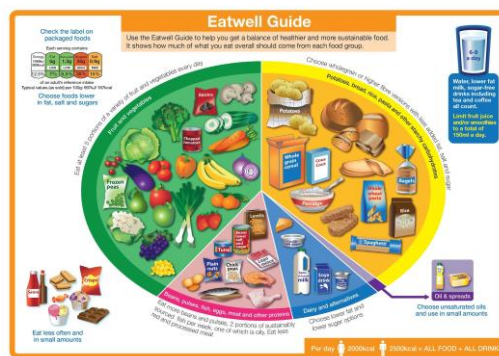
A balanced diet provides all the necessary nutrients in the appropriate proportions and quantities to meet the body's needs, To follow a balanced diet we need to eat a variety of foods.

The Eatwell Guide

The eatwell guide is the healthy eating model for the United Kingdom. It makes healthy eating easier to understand.

The two keys to a healthy diet are: eating the right amount of food for how active you are; eating a range of foods to make sure you are getting a balanced diet.

Fruit and Vegetables
40%



Bread, rice, potatoes
and other starchy foods
38%

Oils and spreads
1%

Meat, fish, eggs and beans
and other non-dairy sources
of protein
12%

Milk and other dairy
products
8%

Nutrition

Dietary Needs & Different Dietary Needs

Some people have to follow a special diet because:

- They may need to lose weight
- They have an illness that needs to be controlled by what they eat
- Certain foods make them ill

Diabetes:

Diabetics need a healthy diet and have to control sugar intake. Diabetes develops when the body cannot use glucose properly. People with diabetes need to maintain a healthy weight and eat a diet that follows healthy eating guidelines

Coeliac Disease:

This is an intolerance to the protein gluten, which is found in wheat, barley and rye. Foods such as bread, biscuits, cakes and pasta must be avoided. Gluten free products are available.

Calorie controlled:

The general guidelines for people on a calorie controlled diet are to eat more starchy foods and cut down on fat and high sugar foods.

Nut Allergies:

Many food products have a statement or an allergy advice box on the label saying they contain nuts. It is not compulsory for food labels to state this.

Lactose Intolerant:

People with lactose intolerance can't digest the milk sugar lactose. Cow's milk must be avoided but cheese, yoghurt and soya milk can be eaten.

Vegetarians:

Vegetarians do not eat meat or fish. There are 3 main types of vegetarian.

Dietary Reference Values

Dietary Reference Values (DRV's):

Nutritional guidelines for the majority of the population.

Reference Nutrient Intakes (RNI):

the amount of nutrients that are needed for almost everyone in a particular group (about 97% of the population).

Estimated Average Requirements

(EAR): the amount of the average need for energy or a nutrient. Some people will need more and some people less.

Nutritional labelling

Most manufacturers put the nutritional information on food product labels, although it is not required by law unless a special claim is made about the product, e.g. "low in fat". The main system used in the UK is the Traffic Light system.

Traffic Light Labelling:

Allows consumers to make a healthy choice at a glance.

Based on:

Presenting separate information on fat, saturated fat, sugars and salt.

Using red, amber or green colour coding to provide information.

Using nutritional criteria to determine the colour banding.

Examination Style Questions

The table below shows food facts for two similar products.

PRODUCT A		PRODUCT B	
Wholemeal short crust pastry made with polyunsaturated fat, reduced fat cheese, fresh sliced tomato, onions and herb topping.		Flaky pastry made with butter, topped with full fat cream cheese, onion flavouring and sundried tomatoes.	
Energy	146 Kcal	Energy	229 Kcal
Protein	1.7g	Protein	1.5g
Carbohydrates	23.8g	Carbohydrates	65g
Fat	4.8g	Fat	11g
Fibre	0.7g	Fibre	0.5g

Explain which product provides the healthier option.

(6 marks)

What are the effects of changing the polyunsaturated fat to butter.

(2 marks)




How do food manufacturers inform consumers about healthy eating guidelines? (3 marks)

Explain **five** key features of the 'Eat well Guide.

(5 marks)

Examination Style Questions

Complete the chart below to explain **two** developments that will help **each** product meet healthy eating guidelines. (12 marks)

<p>Development ideas for healthier chocolate éclairs.</p> 	<p><i>Development 1</i></p> <p>.....</p> <p>.....</p> <p><i>Reason</i></p> <p>.....</p> <p>.....</p> <p>.....</p>	<p><i>Development 1</i></p> <p>.....</p> <p>.....</p> <p><i>Reason</i></p> <p>.....</p> <p>.....</p> <p>.....</p>
<p>Development ideas for reducing fat levels in sausage rolls.</p> 	<p><i>Development 1</i></p> <p>.....</p> <p>.....</p> <p><i>Reason</i></p> <p>.....</p> <p>.....</p> <p>.....</p>	<p><i>Development 1</i></p> <p>.....</p> <p>.....</p> <p><i>Reason</i></p> <p>.....</p> <p>.....</p> <p>.....</p>
<p>Development ideas for increasing the fibre (NSP) content of a sandwich cake.</p> 	<p><i>Development 1</i></p> <p>.....</p> <p>.....</p> <p><i>Reason</i></p> <p>.....</p> <p>.....</p> <p>.....</p>	<p><i>Development 1</i></p> <p>.....</p> <p>.....</p> <p><i>Reason</i></p> <p>.....</p> <p>.....</p> <p>.....</p>

Combining Ingredients

Raising Agents

The three most common raising agents are:

Air Steam Carbon dioxide

Air: Ways air can be added include sieving flour, creaming together fat and sugar, rubbing fat into flour, whisking and beating.

Steam: Only works as a raising agent in mixtures that have high amounts of liquid in the mixture and have high baking temperatures which allow the liquid to quickly reach boiling point.

Carbon dioxide: Incorporated into mixtures in two ways – using chemical raising agents, using biological raising agent.

Food Structures

Colloidal structures give texture to many products and are formed when ingredients are mixed together.

There are four types of colloidal structure that you need to know.

Raising Agents cont:

Biological	A biological raising agent is added which produces CO ₂ gas.	The Fermentation process is activated during bread production when yeast is combined with sugar in a warm moist condition. When the fermented yeast is added to the flour and warm liquid it increases in size during the “proving” stage. Example: Bread
Mechanical	Manually adding air into food products using different techniques.	The processes of sieving, whisking, folding, rolling, creaming all mechanically add in air during food production.
Chemical	Adding a chemical which causes a chemical reaction producing CO ₂ gas. In an oven the CO ₂ gas expands and pushes up the mixture. Some of the gas escapes but some is trapped in the mixture as it cooks and sets.	Examples in food production include baking powder and bicarbonate of soda. Bicarbonate of soda is used to make soda bread, the bread which does not use yeast as the raising agent. Bicarbonate of soda + cream of tartar = baking powder.

Examination Style Questions

What are the three most common raising agents?

(3 marks)

Name two chemical raising agents.

(2 marks)

What is an emulsion? Give an example in your answer.

(2 marks)

Explain the term "Colloidal Structure".

(2 marks)

Explain why manufacturers use baking powder in the production of Bakewell tarts. (2 marks)



Food Additives

Food Additives

Main functions:

1. Maintain product consistency.
2. Improve or preserve the nutrient value.
3. Maintain the wholesomeness of foods.
4. Control the acidity and alkalinity, and to provide leavening.
5. Provide colour and enhance flavor

Common Types of Food Additive:

Colors

Emulsifiers

Flavorings

Gelling agents

Preservatives

Sweeteners

Anti-cake

agents

Antioxidant

Are food additives safe to eat?:

Manufacturers, as well as the Government's Food Standards Agency, test all additives that may be used in food products to prove that they are safe to eat. All food additives once tested and found to be safe are given a number and a prefix E; these are known as E numbers. These foods can then be sold in the European Union. Highly processed foods can contain large numbers of E numbers.

There are concerns about the effects E numbers are having on our bodies as well as babies and young children.

Why do manufacturers use additives?

All additives must be harmless to the consumer but they also need to be flavourless, colourless and odourless so that they do not alter the natural sensory characteristics of the food product unless the manufacturer requires them to do so. Additives can be used to disguise poor quality foods.

Preservatives: Help food stay edible and unspoiled for longer. Stop the growth of bacteria, yeasts and moulds. Found mainly in meat products that have been processed, e.g. bacon, sausages.

Colour: Added to food to make them more attractive and appealing to consumers. Come from both synthetic and natural sources. Also added to foods that would otherwise be colourless.

Flavourings: Improve the flavour of foods so they appeal to the consumer. Used to restore the original food flavours when these have been changed during processing.

Emulsifiers and Stabilisers: Essential to ensure the ingredients do not separate into their component parts.

Examination Style Question

Give **two** examples of different types of food additives. (2 marks)

Explain some of the advantages **and** disadvantages relating to the use of food additives in food products. (8 marks)

Give **three** reasons why some manufacturers use natural flavours and colours instead of artificial flavours and colours in cake products. (3 marks)

Sauce Making Methods

A sauce is a thickened flavoured liquid which can be added to a food or dish for any of the following reasons:

1. To enhance the flavour of the food which it accompanies.
2. To provide a contrasting flavour to an otherwise mildly-flavoured food, e.g. cheese sauce with cauliflower.
3. To provide a contrasting texture to particular solid foods, e.g. poultry or fish.
4. To bind ingredients together for dishes such as fishcakes or croquettes.
5. To contribute to the nutritional value of a dish.
6. To add interest and variety to a meal.

A sauce should be free from lumps and should not be overcooked, as this may spoil their flavour.

Classification of white sauces

There are several types of sauces which can be grouped according to the method of making:




- **Roux sauces** – a basic white sauce
- **All-in-one sauce** – a simple to make white sauce
- **Blended sauces** – usually sweet and made with cornflour

Consistencies of sauces

The consistency of a sauce will vary according to how it will be served (see above).

Sauces can be classified into three main consistencies:

- **Pouring**
- **Coating**
- **Binding**

Pouring	Coating	Binding / Panada
<p>A pouring sauce, at boiling point, should just glaze the back of a wooden spoon, and should flow freely when poured.</p>	<p>A coating sauce, at boiling point, should coat the back of a wooden spoon, and should be used as soon as it is ready, to ensure even coating over the food.</p>	<p>A binding sauce or panada should be thick enough to bind dry ingredients together, so that they can be handled easily to be formed into croquettes, cakes etc</p>
		

Examination Style Question

<p>Stage 1:</p> <p>Collecting the ingredients</p>	<p>Here are the main ingredients used to make a cheese sauce: Plain flour Butter Milk Grated cheese</p> <p>Which ingredient contains starch? [1 mark]</p> <p>.....</p>
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<p>Stage 2:</p> <p>Mixing the ingredients together</p>	<p>Explain why it is important to stir the mixture all the time when using the all in one method. [2 marks]</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
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<p>Stage 3:</p> <p>Heating the mixture</p>	<p>Describe what happens to the starch granules when the cheese sauce is heated to the following temperatures: [4 marks]</p> <p>60°C:.....</p> <p>.....</p> <p>.....</p> <p>80°C:.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>100°C:.....</p> <p>.....</p>
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Electrical Kitchen Equipment

Hand-held, mechanical and electrical equipment are used in the development of prototypes in the test kitchen.

Which processes can be carried out using electrical equipment?

Weighing, mixing, chopping, slicing, kneading, whisking, liquidising, shredding, beating, freezing.

Main types of Equipment

Electronic scales – measure accurately.

Food processors – use a range of attachments to whisk, mix, knead, grate, slice, grind, shred and dice.

Mixers – also use a range of attachments to whisk, mix and knead.

Liquidisers and hand held blenders – make solid ingredients into liquid.

Bread makers and ice cream makers – have specific processes and are only used for the production of one type of product.

Mandolin – used to slice and cut food evenly.

Floor standing mixers – used in industry. Work like a huge food processor.

Microwave ovens – can be used to help maintain the nutritional content of food products.


Health and safety rules to be followed by food workers using electrical equipment.

- • Keep away from water
- • Follow manufacturers instructions
- • Check condition of flexes
- • Check wiring on plug
- • Do not use with wet hands
- • Do not leave flexes across water supplies
- • Check equipment has passed safety checks e.g. PAT tests
- • Accept equipment specific responses, e.g. blender, mixers
- • Hold securely / securely based during use.
- • Keep fingers / clothing/ hair away from any moving parts
- • Have training in correct use of equipment
- • Equipment should be clean before/after use
- • Personal safety precautions/ Wear clean, protective clothing
- • Concentration during use/ do not leave unsupervised.

Examination Style Questions

Give an example of how each item of equipment shown below is used in the kitchen.

Give reasons why the item is used. (6 marks)

<p>A grater</p> 	<p>Example of use</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Reasons</p> <p>.....</p> <p>.....</p>
<p>A steamer</p> 	<p>Example of use</p> <p>.....</p> <p>.....</p> <p>Reasons</p> <p>.....</p> <p>.....</p>
<p>A hand held blender</p> 	<p>Example of use</p> <p>.....</p> <p>.....</p> <p>Reasons</p> <p>.....</p> <p>.....</p>

Identify the safety precautions that food workers should take when using electrical equipment.

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Food Safety and Hygiene

What conditions do bacteria need to grow?

Temperature

- **Rapid** bacterial growth occurs at 37°C
- Bacterial growth happens between 5 and 63°C

Food

- High risk foods (protein rich foods) attract a lot of bacterial growth

Moisture

- Any moist food is ideal for bacterial growth

Time

- Bacteria reproduce by dividing in two. This can occur as often as once every 10 – 20 minutes

Stopping bacterial growth

Temperature – if we control temperatures we can slow down or stop bacterial growth

-18°C	bacteria are dormant and not able to reproduce
0 - 5 °C	bacteria are 'sleeping' and reproduce very slowly
5 to 63 °C	bacteria reproduce most actively (known as ' <u>danger zone</u> ')
37 °C	optimum temperature for bacteria to reproduce
72 °C	bacteria start to be destroyed and can't reproduce

Food Storage and Re-heating Foods

IMPORTANT TEMPERATURES TO REMEMBER

FREEZING	(0-18 °C)	bacteria does not grow
CHILLING	(0-5 °C)	extends shelf life

The core temperature when cooking high risk foods should be above 72 °C. This can be checked using a food probe.

Food Poisoning Bacteria

Pathogenic Bacteria (which cause food poisoning) are very harmful and may cause death in young children and the elderly.

Type	Symptoms	Onset	Source
Salmonella	Diarrhoea, vomiting, headaches and stomach pains.	12 – 36 hours.	Eggs Poultry.
Campylobacter	Diarrhoea, headaches	1 – 11 days	Meat, poultry and shellfish
Staphylococcus Aureus	Vomiting, abdominal pain, diarrhoea	1 – 6 hours	Present in nose, throat and skin of humans Meat, poultry and salads

Hazards in Food Preparation

What are Hazards?

Hazards are anything that can cause harm to the consumer. They can occur at any stage in the food production chain from the field to factory to shop to table.

Biological:

e.g. **salmonella** in raw chicken , seafood or eggs, **Campylobacter** (gastroenteritis) found in seafood, meat, poultry & milk; **Listeria** in soft cheeses and pates, **E-coli** in cooked meats, **Clostridium botulium** found in canned fish, meat & vegetables.

Chemical:

e.g. cleaning chemicals, agricultural chemical, paint, oil

Physical: e.g.

Glass from bottles, jars, light fixtures
Metal from machinery, equipment, packaging, jewellery
Wood from pallets, boxes
Insects from plants, open windows
Personal items e.g. jewellery, hair, fingernails, cigarettes
Packaging faults e.g. bags not sealed

What is 'Food contamination'?

Food contamination means:

- That food has micro-organisms/bacteria in it
- Food may cause food poisoning / unsafe food
- Food becomes harmful because of physical/chemical/biological contaminants
- You can also refer to 'high risk foods' and 'cross contamination'.

You will need to explain how food contamination can be prevented . Include checks on: Staff (clean uniform / healthy / no visible cuts / boils etc.), sanitising & cleaning equipment / surfaces; checking equipment is safe and in good condition, use of colour coded chopping boards, checking storage temperatures, rotation of stock (FIFO), using reputable suppliers & quality ingredients etc.

Food Handling

All people who work in the food industry need a good knowledge and understanding of how food is produced safely. It is vital that they have good personal food hygiene.



Examination Style Questions

Manufacturers must make risk assessments on any hazards present during production.

- 1.) Give examples of hazards in the making of a quiche
- 2.) Describe one way each hazard may be controlled (6 marks)

	Example of hazard	How to control hazard
Micro biological hazard		
Physical hazard		
Chemical hazard		

Explain what is meant by the term *temperature danger zone* for food products. (2 marks)

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Give the correct storage temperatures for the food products shown below. (2 marks)

Food Product	Temperature
Chilled Food	
Frozen Food	

How do food workers make sure that a chest freezer is kept at the correct temperature? (4 marks)

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Sensory Testing

Food manufacturers use sensory testing when they are creating or improving food products.

<p>Rating Test</p> <p>Used to assess a specific flavour or texture but require trained testers and the use of a particular scale. Products are given a rating – similar to when you visit the cinema</p> <p>Example: Tomato soup – seven point scale</p> <ol style="list-style-type: none">1. Dislike Extremely2. Dislike a lot3. Dislike a little4. Neither like of dislike5. Like a little6. Like a lot7. Like extremely <p>Rating tests can also be used for one particular attribute e.g. saltiness, sourness</p>	<p>Ranking Test</p> <ul style="list-style-type: none">• These test the degree of intensity of a specific sensory property, such as sweetness.• Food samples are ranked in order to show which one the taste tester preferred• Results recorded in a table• Testers are asked to rank the products in order (1st, 2nd, 3rd, 4th) <p>Example:</p> <p>A set of coded samples e.g crisp flavours is presented to the tester and they have to rank the samples in order of either a specific attribute e.g saltiness or which products they like the most</p>
<p>Profiling Test</p> <ul style="list-style-type: none">• This is also called sensory profiling. This is used to obtain detailed, descriptive evaluation of different food items.• A sensory profile of each product is developed which may look at the texture, flavour and aroma, appearance and sound.• Each tester rates a characteristic from 1-5 (1 being lowest and 5 being the highest)• Results from each tester are averaged and this score is put onto the star to give a visual profile.	<p>Difference Test</p> <ul style="list-style-type: none">• Tests used to find out if there is a clear difference between products• They could be used to test: low fat Vs original full fat traditional brand Vs an economy supermarket version Coke Vs pepsi• Two test versions: Paired comparison, Triangle test <p>Paired Comparison tests – coded samples are given to a tester to compare a similar characteristic e.g sweetness.</p> <p>Triangle test – Three samples are given to the tester two of which are the same and the tester has to identify the odd one out. This is useful if a small change has been made to the product. E.g reducing the sugar content.</p>

Sensory Testing

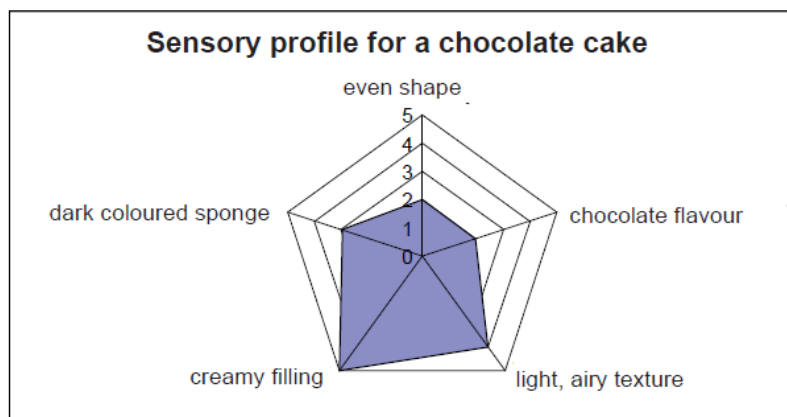
Testing is always carried out in **controlled conditions**. This refers to having **all conditions the same**, so it is unbiased and **you get the results of a fair test**.

Controlled Conditions:

- Same size samples
- Identical dishes
- Identical quantities of food
- Coded samples
- Same light conditions
- Noise free area
- Smell free area
- Individual booths for privacy
- Instructions given to taste tester
- Similar charts used to record outcomes 4-6 samples MAXIMUM
- Water / lime or lemon squash to drink between samples

Examination Style Questions

The profile below shows the results of sensory testing on a chocolate cake product.



Describe ways to make sure that sensory testing is fair. (6 marks)

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Food Labelling and Packaging

Compulsory:

By law, all food manufacturers (people who make food products) must have the following on their food labels:

- Name of product
- Description of product
- Manufacturer's name & address
- Weight or volume
- Storage instructions
- Cooking or preparation instructions (e.g. heating up ready meals)
- List of ingredients (heaviest first)
- 'Best before' / 'Use by' date

The Purpose of Packaging

Protection - Packaging protects foods from:

- Physical damage during transportation and storage
- The effects of temperature changes, insect or rodent attacks, mould growth etc. Packaging guarantees food safety and hygiene.
- Preventing Tampering – Packaging helps stop the tampering of goods. It's almost impossible to make packaging tamperproof, but it can be designed so that it's obvious if the package has been opened.

Portability - Packaging contains the contents:

- so that they can be transported, stored and displayed easily.
- Packaging can make awkwardly shaped products easy to handle.

Preserving

- Packaging can be part of the preservation process such as tin cans and modified atmosphere packaging (MAP)

Product recognition – Identify labels and advertising

- Packaging describes and identifies the contents.
- Good packaging design gives a brand image and links other products in the range.
- Orange, yellow and blue are popular packaging colours.

Optional Food Labelling:

Food Manufacturers will often add one or more from the list below, although these are not required by law:

- Illustration (picture / photo)
- Bar code or smart code – they identify the price and are used by shops and manufacturers for stock control.
- Special claim (e.g. 'low fat') – **if a special claim is given it must have nutritional information provided – compulsory!**
- Symbol for average quantity (e)
- Nutritional information of the product. **If the special claim is about a nutrient, this information MUST be included.**
- Customer guarantee
- Price – although lots don't as they have smart codes.
- Allergy advice
- Recycling logos and anti-litter symbols to encourage consumers to recycle.
- Serving suggestions e.g. serve with custard or cream.



Material	Advantages	Disadvantages	Uses
Glass	<ul style="list-style-type: none"> • reusable • heat-resistant • recyclable • keeps shape • low cost 	<ul style="list-style-type: none"> • fragile • safety issues • heavy 	<ul style="list-style-type: none"> • baby foods • salad cream • pickles
Metal	<ul style="list-style-type: none"> • recyclable • lightweight • impermeable • withstands heat processing 	<ul style="list-style-type: none"> • may react with food 	<ul style="list-style-type: none"> • soup cans • take-away containers • bottle tops
Card/paper	<ul style="list-style-type: none"> • easy to print on • cheap to produce • biodegradable • recyclable • can be moulded • can be coated • lightweight 	<ul style="list-style-type: none"> • not water-resistant • easily damaged 	<ul style="list-style-type: none"> • fruit-juice cartons • egg boxes

Examination Style Questions

Why do food products need to be packaged? (4 marks)

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Name a suitable material used to package eggs. Explain why it is suitable. (3 marks)

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How do manufacturers make sure that food packaging is environmentally friendly? (3 marks)

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Name **four** items of information that, by law, must be given on the packaging. (4 marks)

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The packaging on a milk drink gives storage instructions:

Once opened store in a refrigerator.

Why is it important that this instruction is followed by consumers? (2 marks)

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Sustainability and Environmental Considerations

Packaging Issues:

- Excess use leads to poor environmental control / deforestation / world's natural resources (e.g. oils) running out
- Use of recyclable packaging/biodegradable/concern over length of time to decompose
- Ethical/ environmental /moral concerns/issues.
- no use of packaging if preferable but need to package certain foods.
- Land fill
- Storage problems for foods and left over packaging
- Queries over information provided on packages e.g. Nutritional labelling
- Chemicals used in some food packaging
- Impact/harm of wildlife
- New technologies – vacuum packaging nanotechnology/ coatings, MAP, aseptic (e.g. TetraPak) – benefits and advantages.

GM Foods:

Genetically modified food is produced from plants which have had their genetic make-up tweaked in the lab. Scientists "cut and paste" a gene from another organism into a plant's DNA to give it a new characteristic. This can be to increase yield or to allow the plant to exist in a more hostile environment than normal.

Pro-GM scientists say this means cheaper more plentiful food but opponents argue we do not know the consequences of meddling with nature.

Organic Farming:

Organic crops are grown without toxic pesticides or growth hormones. The soil is usually enriched by natural mineral fertilisers only.

Instead of pesticides, organic farming relies on beneficial insects that eat harmful insects. Plus, they also use a farming technique called "crop rotation" to rob insects of food and prevent weeds from developing.

Seasonality:

By purchasing local foods in-season, you eliminate the environmental damage caused by shipping foods thousands of miles, your food pound goes directly to the farmer, and your family will be able to enjoy the health benefits of eating fresh, unprocessed fruits and vegetables. Foods that are in season are better in terms of nutritive value and are cheaper. Buying seasonal produce also provides an exciting opportunity to try new foods and to experiment with seasonal recipes. It simply tastes better too!

See

<http://www.bbcgoodfood.com/content/local/seasonal/table/>

Food Miles:

Is the distance food travels from where its produced to where it's sold

Facts and figures

UK food exports in 1994 - 12 million tonnes. UK food imports in 1994 - 20 million tonnes.

Each tonne of food travelled an average of 123 km in 1998 (the average figure was 82 km in 1978)

Food in the UK now travels 50% further than it did 15 years ago.

Five large retail chains account for 80% of food sold in the UK.

Transportation of food was responsible for 33% of the increase in road freight over the last 15 years.

In the UK, road transport is the only source of a greenhouse gas (carbon dioxide) that is still increasing.

What can we do about this?

Buy locally sourced ingredients and eat in season. Try to avoid buying ingredients that have travelled long distances.

Social, Moral and Ethical Issues

Social Issues	Moral/ Ethical Issues	Environmental Issues
These are things that affect lifestyle , such as religion, family or wealth and change over time.	These are factors that can be seen as morally right.	These are factors that help reduce the impact of food production on the environment and might cause someone to choose to buy a product.
<ul style="list-style-type: none"> ● Special diets ● Religion ● Budget ● Travel ● Celebrity endorsements ● Food scares - sugar 	<ul style="list-style-type: none"> ● How animals are kept on farms ● GM foods ● Irradiated foods ● Farm Assured Food ● Fair Trade food ● Free Range food 	<ul style="list-style-type: none"> ● Organic farming ● Farm Assured Food ● GM Foods ● Food Packaging ● Reduction of food miles

Cultural or Spiritual Needs:

Religions:

- Jewish – do not eat pork
- Muslim – only eat halal meat
- Hindu – do not eat beef
- Buddhists – are vegan

Cultural Needs:

- **Traditions** – meals or ingredients for special occasions that have become part of our culture.
- **Ingredients** in dishes that come from or originate from specific countries in the world.
- **Cooking methods** that come from or originate from specific countries in the world.

Fair Trade:

Fair trade foods ensure that the workers or Farmers who produce the foods get a fair price for their produce and have a reasonable standard of living. Fair trade is about guaranteed fair prices for the farmers, farmer workers and their families, better working conditions and local sustainability. Companies who buy the farmers' products must pay the market price. Fair trade foods include coffee, tea, chocolate, icing sugar, caster sugar and bananas.

Free range:

Free range is a method of farming where animals are allowed to roam freely.

Free range farming has a number of rules, for example farmers who run these farms have to allow their poultry to roam outside for at least half their life – most of these chickens live to at least 56 days so that's at least 28 days they have to spend in the fresh daytime air.

Seasonal Foods:

Seasonality of food refers to the times of year when a given type food is at its peak, either in terms of harvest or its flavour. This is usually the time when the item is the cheapest and the freshest on the market. The food's peak time in terms of harvest usually coincides with when its flavour is at its best. There are some exceptions; an example being sweet potatoes which are best eaten quite a while after harvest.

Examination Style Questions

How can consumers make environmentally friendly choices when shopping for food products?
(7 marks)

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Explain what is meant by Fairtrade and discuss why sales of Fairtrade products have increased.
(8 marks)

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Explain the disadvantages of using Fairtrade ingredients when designing new food products.
(3 marks)

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