Now test yourself answers

1 Macronutrients

Protein
1 Three from:
- growth
- repair
- maintains the body
- makes cells/enzymes/antibodies/hormones/muscles
- a secondary source of energy.
2 Foods that contain all the essential amino acids are called high biological value (HBV) proteins. Foods that lack one or more of the essential amino acids are called low biological value (LBV) proteins.
3 Three from:
- soya
- cereals (e.g. rice, oats, quinoa)
- wheat, peas, beans, lentils
- nuts and seeds
- Quorn.
4 Two from:
- textured vegetable protein (TVP)
- tofu
- soya milk
- tempeh
- miso.
5 Protein complementation is combining LBV protein foods to form an HBV protein meal.

Fats and oils
1 Three from:
- provides energy
- keeps the body warm, as adipose tissue under the skin
- forms part of every body cell
- protects organs (e.g. kidneys)
- provides the fat-soluble vitamins A, D, E and K
- provides the essential fatty acids
- makes you feel full for longer because it slows down the stomach from emptying.
2 Fats can be visible in some foods, such as a fat layer on the outside of lamb or pork or inside meat as a white marbling. Fats can be invisible because they have been used to make the product (e.g. crisps, biscuits and cakes contain invisible fat).
3 Three from:
- vegetable and plant oils
- avocados and olives
- nuts and nut products
- seeds
- fat spreads.
4 Too much saturated fat in the diet has been linked to high blood cholesterol, which causes an increased risk of heart disease, type 2 diabetes and obesity.
5 Cholesterol is a fatty substance that is needed by the body to make cell membranes and helps with the digestion of fats.

Carbohydrates
1 Movement, growth, chemical reactions/processes.
2 Free sugars are added to food or found outside the cell structure (e.g. granulated sugar, icing sugar, treacle, syrup and honey). Fruit sugars are found naturally inside fruit and vegetable cells (e.g. sugar in fresh fruit).
3 Soluble fibre slows down the digestion and absorption of carbohydrates, so it helps to control blood sugar levels. Insoluble fibre passes through the body mostly unchanged as it is undigested.
4 Answers could include:
- starch is found in cereals and root vegetables
- pectin is found naturally in some fruits and helps jams to set
- glycogen is made from glucose by humans; it is stored in the liver and muscles as an energy reserve
- dietary fibre.

2 Micronutrients

Vitamins
1 Two from:
- eggs
- oily fish
- liver
- full-fat milk
- butter
Now test yourself answers

Exam practice answers and quick quizzes at www.hoddereducation.co.uk/myrevisionnotes

1. cheese
2. fortified margarines and fat spreads.
3. Risk of contracting scurvy.
4. Three from:
   - prevents bone diseases
   - helps the body to absorb calcium
   - develops and maintains bones and teeth
   - heals broken bones.
5. Most sources are from animals.
6. Four from:
   - rip or tear fruit and vegetables to reduce cell wall damage and to stop enzymes from being released that will destroy vitamins
   - don’t chop fruit and vegetables into very small pieces as more cell wall damage releases more enzymes
   - use a sharp knife as a blunt one will damage more cell walls
   - blanching stops enzyme activity and retains vitamins
   - do not soak before cooking; water-soluble vitamins will leach out of fruit and vegetables if they are placed in water
   - avoid peeling because vitamins are found just under the skin.
7. Vitamins A, C and E.

Minerals

1. Four from:
   - nuts
   - bread and fortified cereals
   - cheese
   - milk
   - green leafy vegetables
   - oily fish
   - soya and tofu.
2. Either of:
   - makes red blood cells
   - carries oxygen around the body.
3. Two from:
   - cheese
   - salted nuts
   - smoked fish
   - bacon
   - bread
   - crisps
   - ready meals
   - tinned foods.
4. Staining and pits develop on the teeth.
5. Maintains bones and teeth with calcium and releases energy from food.

Water

1. Two from:
   - cools the body by sweating
   - removes waste from the body
   - transports waste products from the body.
2. Most people need about 2 litres of water a day, which is about eight average-size glasses.
3. Two from:
   - feeling thirsty
   - dehydration
   - dark urine
   - less urine
   - headaches
   - lack of energy
   - light-headedness.
4. Four from:
   - Health: fever can increase water losses; vomiting and diarrhoea can cause high losses of fluids.
   - Age: young children need lots of water relative to their size because they are very active; older people may have a weaker sense of thirst and, if necessary, should be reminded to drink regularly.
   - Gender: generally, men are slightly bigger than women so require more water each day.
   - Physical activity: during exercise the body sweats to cool down; the longer the exercise the greater the demand to replace lost fluid.
   - Environment: hot or humid weather increases sweat losses; heated indoor air can increase sweat and skin losses during the winter.
   - Breastfeeding: women who are breastfeeding require extra water to produce milk.
   - Eating salty foods: salt makes body fluids more concentrated; this makes us thirsty and we need more water until the excess salt has been removed by the kidneys.

3 Nutritional needs and health

Guidelines for a healthy diet

1. (a) A healthy diet is a diet low in fat, salt and sugar, and high in fibre.
   (b) A balanced diet contains all the required nutrients in the correct amounts to meet individual needs.
2. Fruits and vegetables.
3. To strengthen bones and muscles, and to prevent obesity.
4. They are higher in fibre and whole grains contain more B vitamins.
Meal planning

1 Two from:
   ● young children
   ● the elderly
   ● those who are overweight/obese
   ● those with a low physical activity level.
2 It can lead to food waste, and can encourage overeating, which may lead to weightgain.
3 Three from:
   ● plan meals in advance
   ● use price comparison websites
   ● write a shopping list
   ● look out for special offers such as buy one get one free (BOGOF)
   ● buy value-line foods
   ● don’t shop when you are hungry
   ● buy reduced-price foods towards the end of the day
   ● shop online to help prevent pester power and impulse buying.

Planning for life stages

1 By the age of 5.
2 Vitamin D and calcium.
3 Over half of adults.
4 To prevent constipation, diverticular disease and cancer of the bowel.

Planning balanced meals

1 Lacto vegetarians and vegans.
2 Two from:
   ● wheat
   ● rye
   ● oats
   ● barley.
3 To prevent constipation, to reduce cholesterol, fibre fills you up, which prevents overeating and weight gain.

Energy needs

1 Three from:
   ● breathing
   ● digestion
   ● sitting
   ● lying down
   ● the function of internal organs
   ● any sport or action requiring movement.
2 Starchy carbohydrates should be the body’s main source of energy.
3 Three from:
   ● age
   ● activity
   ● health
   ● gender.
4 PAL stands for physical activity level. It shows your daily activity level as a number. It is calculated by dividing your physical activity level by your BMR. This can then be used to work out how many kcals you need each day.

Nutritional analysis

1 To ensure you consume a wide range of nutrients.
2 Using books (food tables) or a computer program.
3 It allows the nutrients in a recipe to be identified.
4 So that you can see if the dish/meal/diet provides the correct amount of nutrients for that target group.

Diet, nutrition and health

1 One from:
   ● school children are less active than children were in the past
   ● diet
   ● more fast foods
   ● more fatty and sugary foods are eaten.
2 It includes coronary heart disease and strokes; it means blood can’t flow properly around the body.
3 Three from:
   ● it can lower cholesterol levels
   ● it can lower blood pressure
   ● it can prevent weight gain
4 Three from:
   ● swap sugary drinks for milk, water or sugar-free soft drinks
   ● avoid high-sugar breakfast cereals
   ● eat, fewer sweets, chocolates, biscuits, cakes and puddings.

Bones and dental health

1 The vitamin that increases bone strength is vitamin D. The mineral that increases bone strength is calcium.
2 The action of sunshine on the skin provides vitamin D for the body.
3 Three from:
   ● rickets; osteoporosis
4 Sugar interacts with plaque on the teeth, which forms an acid. The acid attacks the tooth enamel, which may cause tooth decay over time.
Anaemia and diabetes

1 They have fewer red blood cells, so less oxygen can be carried around the body. The body tires when it is short of oxygen.

2 Answer could include:
   - side salad
   - steamed vegetables
   - any raw vegetables (e.g. carrot and yellow pepper sticks)
   - stir-fried vegetables
   - any colourful vegetable side dish.

Naming the vegetables will earn more marks.

3 Teenage girls have periods (menstruation) and so need to replace the resulting iron loss each month.

4 Three from:
   - being overweight or obese
   - being over 40
   - eating fatty, salty and sugary foods often
   - having high blood pressure
   - not taking regular exercise.

Cooking methods

1 (a) Heat will pass through water very quickly. It is transferred by conduction and convection currents.
   (b) Heat will pass through the air in convection currents in the oven and as radiation from a grill or barbecue.
   (c) Heat will pass through oil or fat by conduction or convection currents.

2 Advantages (any three from):
   - very quick so the loss of nutrients is small
   - keeps the crisp texture and colour of vegetables
   - softens and tenderises meats
   - flavours are enhanced
   - if cooking liquid is eaten with the dish, water-soluble nutrients will be eaten.

Disadvantages (any three from):
   - some vitamin C, vitamins from the B group, iron and calcium will leach into the cooking water
   - overcooking will turn vegetables mushy
   - flavours and colour will be lost
   - requires skill as it is easy to overcook food.

3 Advantages (any three from):
   - does not affect calcium and iron
   - gives a crispy texture and a golden-brown colour to the surface of food
   - some vitamins A and D are retained
   - fat drains off the food.

Disadvantages (any three from):
   - vitamin C and vitamin B1 are lost due to the heat
   - fat melts and runs out of the food so some vitamin A and D will be lost
   - not suitable for tough or very thick cuts of meat
   - overcooking can produce a bitter flavour and a black colour.

4 Advantages (any three from):
   - the fat-soluble vitamins A and D are retained
   - fast cooking retains some vitamin C and B1
   - gives food a very crispy texture
   - enhances the flavour of food by browning; does not affect calcium and iron.

Disadvantages (any three from):
   - some vitamin C and vitamin B1 is lost
   - fruit and vegetables may lose their colour
   - foods can be difficult to digest due to their high fat content
   - the fat content of the food increases
   - ‘reusing’ fat can transfer unpleasant flavours to food
   - careful supervision is required due to very high temperatures.

Cooking of food and heat transfer

Why food is cooked and heat transfer

1 Four from:
   - cooking food makes it safe to eat because it destroys harmful bacteria
   - cooking food improves the flavour, appearance and smell of food
   - some foods are easier to chew and digest when they are cooked
   - cooking food extends its shelf life and allows food to be stored for longer
   - using different cooking methods adds a variety of flavours and textures to the diet.

2 Conduction, convection, radiation.

3 Cooking can change the (three from):
   - appearance
   - colour
   - flavour
   - texture
   - smell
   - of food.

4 Convection is when heat travels through air or water. A convention current is the movement of heat in water or in the air. Convention currents happen because hot air or water will rise and cool air or water will fall.
5 Functional and chemical properties of food

Proteins

1. All four required:
   - denature
   - coagulate
   - form gluten
   - make a foam.
2. Two from:
   - it gives food flavour
   - keeps it moist
   - makes it tender.
3. Egg white becomes solid and turns white at 60°C; egg yolk becomes solid and dry at 70°C.
4. Syneresis results from the over-coagulation of egg protein. Water is pushed out of the egg. This can be seen in overcooked scrambled eggs.
5. The proteins are glutenin, which gives the dough strength and elasticity, and gliadin, which binds the dough together into a sticky mass.

Carbohydrates

1. Gelatinisation begins at 60°C and ends at 100°C.
2. Three from:
   - amount of liquid
   - types of starch used
   - temperature
3. Amylose and amyllopectin.
4. Dextrin adds a sweet taste to baked products. Also causes non-enzymic browning of food.
5. Caramelisation begins when sugar is heated and starts to melt, water evaporates as steam and, at about 180°C, the sugar turns from clear to dark amber. Overheating produces a bitter taste and a burnt appearance, and pure carbon is produced at about 200°C.

Fats and oils

1. Shortening allows fats and oils to give biscuits, shortbread and pastries a crumbly texture.
2. In cake making, the fat and sugar are creamed together using a whisk or spoon; bubbles of air are enclosed in the mixture; this makes a stable foam and baking gives a springy texture.
3. Plasticity affects the spreading, creaming and shortening of fats.
4. The emulsions are:
   - oil-in-water emulsion – this forms when the amount of water is more than the amount of oil; tiny droplets of oil are spread throughout the water (e.g. milk)
   - water-in-oil emulsion – this forms when the amount of oil or fat is more than the amount of water; tiny droplets of water are spread through the fat or oil (e.g. butter and fat spreads).
5. An emulsifier has two parts: the water-loving part is ‘hydrophilic’ and the water-hating part is ‘hydrophobic’. One part of the emulsifier attracts the water and one part attracts the oil. This combination holds the oil and water together. The emulsifier lowers the surface tension between the two liquids so that they can combine to form a stable emulsion.

Fruit and vegetables

1. Over-ripening, cutting, bruising and slicing fruit and vegetables.
2. Two from:
   - refrigeration and chilling – at temperatures below 7°C enzyme activity slows down
   - freezing – slows down but does not stop enzymes; after thawing, the enzyme activity will restart
   - change pH – lowering of the pH by adding acid stops the enzyme activity; enzymes are denatured
   - dehydration – removing water from the product stops the enzyme activity
   - blanching – boiling water denatures the enzymes.
3. Vitamin B group and C.
4. Two from:
   - minimise contact with air during preparation
   - use boiling water to reduce cooking times
   - reduce cooking time by using lids on saucepans
   - don’t overcook
   - reduce the amount of liquid
   - use the cooking water for sauces or gravy
   - serve straight away.

Raising agents

1. Air, steam, carbon dioxide.
2. Baking powder, bicarbonate of soda.
3. Four from:
   - whisking – high-speed whisking traps air bubbles
   - beating – using a spoon traps air bubbles in a liquid
   - folding – air is trapped between the layers during folding
   - sieving – sieving traps air in flour
   - creaming – beating fat and sugar together traps tiny air bubbles into the mixture
   - rubbing in – rubbing the fat into flour.
4. Yeast needs warmth, food and liquid to ferment.
5. Fresh yeast is a firm, moist, cream-coloured block that must be stored in a refrigerator. It is blended with warm water when required for dough making. Dried yeast takes the form of small granules of yeast that will keep for many months. There are two types:
fast-acting ‘easy blend’ is usually mixed with the flour during the dough-making process

active dried yeast needs to be mixed with warm water and sugar before use.

6 Food spoilage and contamination

Micro-organisms and enzymes

1 Yeasts, moulds, bacteria
2 They cause ripening and browning of food (enzymic browning)
3 Food, moisture, warmth, time
4 Cooked chicken and traditional quiche are both high in protein, moist, have a near neutral pH and are ready to eat without further cooking.
5 Answers could include:
   ● prepare broccoli just before you are ready to cook it, to reduce its exposure to air
   ● use boiling water to speed up the cooking time to reduce oxidation
   ● put a lid on the saucepan to keep in the steam, which will speed up the cooking time and so reduce oxidation.

Food spoilage/micro-organisms/bacterial contamination

1 By causing enzymic browning of foods and by causing foods to over-ripen.
2 Yeasts, moulds, bacteria.
3 Yeasts – as a raising agent (e.g. in bread and bakery products), in the brewery industry (e.g. to make wine and beer)
   Moulds – in cheese making, the mould develops a distinctive colour and flavour; in mould-ripened sausages to improve their flavour and texture; to make soy sauce
   Bacteria – for cheese making and to make yoghurt.
4 Any three from:
   ● raw foods such as raw meat and their juices, raw eggs and their shells, raw shellfish such as mussels and oysters, unwashed vegetables and uncooked rice, which may be contaminated with soil
   ● work surfaces and kitchen equipment if they are unclean
   ● food handlers may contaminate food by touching it, sneezing or coughing near it
   ● pests such as flies, mice, rats and domestic pets
   ● waste food and rubbish.

<table>
<thead>
<tr>
<th>Name of pathogenic bacteria</th>
<th>Foods bacteria is found in: (Any 2 examples)</th>
<th>Source of bacteria – where bacteria comes from: (Any 2 examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Campylobacter</td>
<td>Poultry&lt;br&gt;Milk&lt;br&gt;Milk products</td>
<td>Unclean water&lt;br&gt;Unpasteurised milk&lt;br&gt;Bottled milk pecked by birds&lt;br&gt;Raw poultry&lt;br&gt;Sewage</td>
</tr>
<tr>
<td>2 E. coli</td>
<td>Undercooked meat&lt;br&gt;Undercooked meat burgers and minced meat&lt;br&gt;Unwashed contaminated fruit</td>
<td>Raw and undercooked meat&lt;br&gt;Dirty water&lt;br&gt;Sewage</td>
</tr>
<tr>
<td>3 Salmonella</td>
<td>Undercooked or contaminated cooked meat&lt;br&gt;Beansprouts&lt;br&gt;Unpasteurised milk&lt;br&gt;Food made from imported poultry and eggs</td>
<td>Intestines of ill people&lt;br&gt;Animals, birds&lt;br&gt;Raw meat&lt;br&gt;Unpasteurised milk&lt;br&gt;Imported poultry and eggs</td>
</tr>
<tr>
<td>4 Listeria</td>
<td>Pâté&lt;br&gt;Cooked chicken&lt;br&gt;Prepared salads&lt;br&gt;Some soft cheeses</td>
<td>Sewage, decaying vegetation and unclean water</td>
</tr>
<tr>
<td>5 Staphylococcus aureus</td>
<td>Unpasteurised milk&lt;br&gt;Meat&lt;br&gt;Meat products</td>
<td>Human food handlers touching, coughing or sneezing on to food&lt;br&gt;Human-to-human contact</td>
</tr>
</tbody>
</table>
7 Principles of food safety

Buying and storing food

1. A freezer should be -18°C or below.
2. Food should be chilled (refrigerated) between 0 and below 5°C.
3. The temperature danger zone is between 5°C and 63°C.
4. Food should be cooked to an internal temperature of 75°C.
5. Food should be reheated to an internal temperature of 75°C.

2 Any three from:
- temperature of fridge should be between 0 and below 5°C
- high-risk foods should be kept in the fridge
- check all shelves are within the correct temperature range
- store raw meat and eggs on the bottom shelf
- pack food with spaces in between so the cold air can circulate
- rotate stock to use older foods first
- cool food to room temperature before putting it in the fridge
- open and close the fridge door as little as possible
- wrap all food that is stored in the fridge.

3 Any three from:
- check the freezer is at the correct temperature of -18°C or below
- when freezing some fruits (e.g. apples) or vegetables (e.g. corn on the cob) blanch them first
- once defrosted, use frozen foods the same day as the micro-organisms come out of their dormant state
- freeze foods for no more than one year or follow ‘best before’ dates on bought foods
- defrost and clean the freezer at least once a year
- frost-free models should be switched off, emptied and cleaned at least once a year.

4 These foods only lose sensory qualities after this date (e.g. taste, texture), but do not have the conditions needed for pathogenic (food poisoning) bacteria to grow.

5 Any two reasons:
- to keep it clean
- to prevent cross-contamination
- to prevent it from drying out (dehydration).

Preparing, cooking and serving food

1 By your hands.
2 Any three from:
- before you start any food preparation
- after touching your hair or face
- after using the toilet
- after using a handkerchief or tissue to cough or blow your nose
- after cleaning or putting rubbish into the bin
- after handling raw meat, poultry, vegetables or eggs
- after eating or drinking.

3 Because:
- most bacteria are on the outside of a piece of beef
- once the beef is minced the bacteria are spread throughout the burger, right through to the centre
- this means there could be pathogenic (food poisoning) bacteria in the centre of the burger
- these need to be destroyed by thorough cooking to an internal temperature of 75°C or higher to destroy these bacteria.

4 This is the part that will take the longest to reach the required temperature.
5 It will have passed through the temperature danger zone several times, increasing the risk of food poisoning.

8 Factors affecting food choice

Factors that influence food choice

1 Any two from:
- improved transportation
- improved storage
- more preservation methods
- more imports of food.

2 Any one of:
- more plentiful
- cheaper when in season
- locally produced
- fresher.

3 PAL is the amount of physical activity you do each day (it stands for physical activity level).
Three required from the following [1 mark for the factor and 1 mark for the explanation].

- **Physical activity level (PAL)**
  - How active you are influences your food choice. To maintain a healthy weight, the energy taken in as food needs to balance the energy used up during activity.

- **Celebration/occasion**
  - Food can play a vital role in any celebration or special occasion, such as a birthday.
  - Religious festivals in the year such as Easter, Christmas and Rosh Hashanah.

- **Cost of food**
  - Discount food retailers such as Aldi and Lidl can offer very competitive pricing on selected products.
  - Foods are often cheaper in a supermarket than in a corner shop.
  - Shops now offer food at a wide variety of price ranges, from value ranges (low cost) to premium ranges (high cost).

- **Enjoyment and preferences**
  - We choose foods we like to eat because it provides enjoyment and meets an emotional need.
  - The smell, taste, texture and appearance of food stimulate all of the senses.
  - Everyone has unique likes and dislikes. These preferences develop over time and are often influenced by personal experiences.

- **Food availability**
  - Much of our food is available all year round. The choice has increased in recent years due to new developments in:
    - transport
    - preservation
    - storage of foods.

- **Healthy eating**
  - A wide range of reduced-fat, low-calorie, sugar-free and salt-free food products now exist due to greater public awareness of the potential risks to health of a high-fat, high-salt and high-sugar diet.
  - The increase in the number of consumers participating in slimming diets and following specialist, low-carbohydrate or high-protein diets has also widened the choice of products available.
  - Interest has grown in healthy convenience foods.

- **Income**
  - Those with a higher disposable income spend more money on ready-to-eat ‘premium’ food products and higher-quality food with minimal preparation.
  - More high-fat and high-sugar foods may be chosen if income is limited.
  - Fruit and vegetables may not be purchased as they can be expensive.

- **Lifestyles**
  - People have busy and flexible lifestyles.
  - More women and men are now both working full-time, reducing the time and motivation they have to cook meals every evening.
  - Working parents may choose to eat out, or purchase ready meals or part-prepared food products.
  - As the number of people living alone has increased, the number of single-portion ready meals purchased and consumed has grown.
  - Many people now travel greater distances to work; this means they will often eat on the move.
  - Food products reflect our more flexible lifestyles (e.g. protein shakes that can be consumed quickly).
  - Due to busy lifestyles within families, there is often less emphasis on eating family meals together. Family members may have activities in the evenings, so quick snacks or ready meals are more convenient and family members may not all eat together every day.

- **Seasonality**
  - Some foods are seasonal, which means they are available only at certain points in the year. People choose to eat seasonal foods because they can be:
    - plentiful and therefore often cheaper
    - locally produced
    - fresher.
  - In the UK, developments in the transport, preservation and storage of foods mean that much of our food is available all the year round (although it may be more expensive to buy when it is out of season).
  - Time of day
    - We tend to choose different foods to eat at breakfast, lunch and evening meal.
  - Time available to prepare and cook
    - Due to people’s lifestyles being so busy, there is less time available to prepare and cook meals.
    - Consumers are demanding greater convenience from food products, so may buy products like, say, grated cheese, prepared salads and pre-chopped vegetables.
Peer pressure
- Teenagers may choose certain foods in order to fit in or to be liked and accepted.

Media
- Information in the media will also influence food choices.
- Food scares, such as the discovery of horse meat in some processed foods.
- The media also use advertising techniques to persuade us to make particular food choices.
- What celebrities choose to eat – some young people may want to copy these celebrities, aspiring to look and be like them.

Fashions and trends
- There are always new fashions and trends emerging, which may influence our food choice (e.g. an increase in the popularity of kale, juicing and the use of spiralisers).

Food choices
1. It contains wheat flour, which a coeliac is sensitive to.
2. It contains milk, which is a dairy product containing lactose, which cannot be digested by someone who is lactose intolerant.
3. Hinduism.
4. Jews must not eat dairy and meat in the same meal.

Food labelling and marketing influences
1. A ‘best before’ date appears on foods that keep for longer (e.g. dry pasta). The food should be eaten before this date for quality purposes, but is safe to eat after this date. A ‘use by’ date appears on foods that go off quickly (e.g. fresh chicken) and they should be eaten by this date for food safety reasons.
2. Two from the following:
   - buy one get one free (BOGOF)
   - price reduction
   - free samples to taste or try in store
   - product placement within the store.
3. Three from:
   - to enable the consumer to make informed decisions and choices, and educate them about the food they choose to buy
   - store, prepare and cook the food we choose to buy correctly
   - establish the nutrient content of the food
   - to identify the fat or sugar content of the food
   - if the consumer has a health condition, such as diabetes or high blood pressure, they may want to check the carbohydrate or salt content of the food
   - if the consumer has a severe allergy to certain ingredients (e.g. nuts), they need to check if the food contains those ingredients
   - if they need to complain about the food, they will need the manufacturer’s name and address
   - the consumer may want to buy local produce, or be environmentally aware and will want to know where the food comes from.

4. A red label means the food is high in something consumers should try to cut down on in their diet, or should have only occasionally; such foods should be chosen less frequently and eaten in small amounts.

9 British and international cuisine
1. Cuisine is a style of food characteristic to a particular country or region.
2. Two from the following [1 mark for the reason and 1 mark for explanation]:
   - the Chinese use a lot of vegetables – low in fat, contain vitamins
   - food cooked quickly – retains vitamins
   - stir-fried in a little oil – healthy method of cooking as quick and uses a small amount of oil
   - much of their food is steamed – healthy method of cooking as no fat used.
3. Three from the following [1 mark for the name of a piece of equipment, 2 marks for its description]:
   - casserole dishes – deep, round containers with lids made out of glass, ceramic or metal; used for beef, lamb, chicken, vegetable casseroles
   - moulds and tins for baking pies and tarts – these can be round, oval or square with deep sloping sides, made out of metal or glass; used for apple pie, quiche, tartlets
   - Yorkshire pudding tins – tins very similar to patty tins made out of metal; the batter is placed in the separate sections and cooked in a hot oven.
   - roasting tins for roasting large joints of meat such as beef, pork, lamb, or chicken; made from metal, oval or rectangular in shape
   - cake tins usually made out of metal, in varying shapes and sizes (e.g. 20 cm round tins for making Victoria sandwich cake, rectangular tin for making Swiss roll).
4 Elevenses is the name for a mid-morning snack usually consisting of a cup of coffee and some biscuits.

10 Sensory evaluation

1 Two from:
- to check a food product meets a consumer’s expectations
- changes to an existing food product mean the product remains acceptable
- food products remain consistent over time
- a food product compares to other similar products
- a food product meets the original specification
- the quality and shelf life of food products over time.

2 Sweet, salt, sour, bitter, umami.

3 If you wanted to find out if the differences between two samples could be detected by testers.

4 Example of an analysis:
- do not allow tasters to discuss results
- provide glasses of water in order to clean the palate between tastings
- serve spaghetti Bolognese on identical plates
- they should be identical-sized portions
- label with a code so that tasters do not know which spaghetti Bolognese is which
- provide a sheet for the tasters to record their responses
- any of the following tests would be appropriate
  - triangle test
  - rating test
  - ranking test.

11 Environmental impact and sustainability of food

Food sources

1 Three from:
- Free-range animals can graze and look for food; the animals are more likely to behave naturally and eat a more varied diet.
- Some consumers feel that animals produced by free range production have had a better life, so prefer to buy these products.
- Some consumers and chefs believe that the meat from free-range, grass-fed cows tastes better than that from intensively farmed grain-fed cows.
- Free-range animals can roam around and are less likely to spread diseases among themselves.

2 Genetically modified foods (or GM foods) are foods produced from plants or animals that have had their genetic information changed.

3 Three from:
- better resistance to insects, pests or disease
- increased storage life when harvested
- can survive poor weather conditions (e.g. resistance to low rainfall)
- faster growth
- can be produced in large amounts
- cheaper as don’t need as much pesticide and herbicide; fewer people needed to grow them
- can be developed to have a large amount of a specific nutrient in them.

4 Three from:
- the pollen from GM crops could mix with wild plants, affecting the natural species in the long term
- could affect animal habitats
- the food source for an animal could change if a new plant is introduced
- pests could become resistant to the new crop and continue to thrive
- some GM foods are modified using bacteria and viruses, so there is a fear that new diseases will develop
- the labelling of GM foods can cause confusion
- GM ingredients in a food must be identified on the label; labelling is not required where the total amount of GM ingredients in the food is less than 1 per cent
- products such as meat, milk and eggs from animals fed on GM animal feed do not need to be labelled.

5 A farming system that aims to produce as much yield as possible, usually with the use of chemicals and in a restricted space.

6 A method of farming where animals have access to outdoor spaces for at least part of the day.

Food and the environment

1 A measure of the impact our activities have on the environment in terms of the amount of greenhouse gases produced.

2 Three from:
- reduce the amount of food bought
- buy items in recycled packaging, or packaging that can be recycled
- buy foods in season
- buy from local suppliers or farmers’ markets
- grow your own fruit and vegetables
- don’t buy bottled water
- shop less often
● shop online
● reduce consumption of meat (methane).
3 Two from:
● more space
● natural lighting
● comfortable bedding
● environmental enrichment (e.g. objects for birds to peck at)
● shade and shelter.
4 Three from the following [2 marks for each explanation]:
● plan ahead – plan all meals and make a shopping list
● buy only what you need
● store food correctly to ensure it keeps for longer
● cook the right amount so there is none left over
● if there is any food left over, make sure you freeze it or use it for something else
● recycle any food you cannot eat.
5 Three from:
● use less energy
● reduce the consumption of water
● avoid waste
● recycle and reuse as much as possible.
6 Compost it or use the leftover food to make another dish.

Sustainability of food

1 Short-term food insecurity is when people do not have enough to eat for a short period (e.g. due to a sudden drop in the harvest or lack of access to food due to price increases). Long-term food insecurity is when people do not have enough to eat for a long period of time; it often affects people living in poverty.
2 Three from the following [1 mark for point raised and 1 mark for the explanation]:
● damage to the soil by the overuse of chemical fertilisers and removal of vegetation
● reduction of the number of bees as some pesticides destroy all insects
● decreases in natural food reserves through excessive fishing to meet population demands
● reduction of animal habitats by overgrazing, and clearing land and forests for food production
● increased diseases in farm animals and crops because of insects spreading
● reduces water supplies because agriculture accounts for 70 per cent of global water use
● contributes to the growth of deserts – as global temperatures increase, rainfall is reduced
● harms water supplies by using fertilisers
● reduces fossil fuels because energy from fossil fuels is used to produce food
● contributes to climate change because farming releases gases that cause global warming.
3 Three from:
● food supplies are limited
● demand for food increases
● a few big companies control the trade of food
● the rising cost of grain to feed animals
● when prices go up, big companies keep the profits
● prices in the global food markets are very unstable
● unfair rules control global trade
● more land is needed to grow crops to feed animals
● increased demand for meat and dairy products.
4 Two from:
● reduce food waste
● change our diet
● change our food shopping habits to buy local or seasonal produce.

12 Food production and processing

Food production

1 Methods include:
● controlling the temperature – different temperatures will slow down the ripening process; refrigeration is ideal for most fruit and vegetables
● controlling the atmosphere – adding carbon dioxide gas to the storage unit will slow down decay
● controlling the moisture – coating with wax slows down the ripening process by preventing carbon dioxide from leaving the fruit and oxygen from entering
● blanching – destroys enzymes and slows decay
● drying – sun drying or tunnel drying by hot air removes moisture (preventing decay)
● preserving in sugar – large amounts of sugar stop decay
● freezing – freezing fruit and vegetables to −18°C
● preserving in an acid – e.g. vinegar – prevents decay.
1. Canning – lack of oxygen and cooking the fruit or vegetables inside a sealed can stops decay.
2. The extraction rate is the percentage of flour by weight that is taken from the whole grain to make flour.
3. Calcium, iron, vitamin B1, vitamin B3.

**Technological developments associated with better health**

1. Any four from:
   - to make foods last longer
   - to give a wider range of food products
   - to improve the flavour of a food product

2. Drying removes water. The removal of water means that the water soluble vitamins (vitamin C, vitamin B1, folic acid and vitamin B12) content of the fruit and vegetables will reduce. The removal of water means that the concentration of fat soluble vitamins (vitamin A and E) in the fruit and vegetables will increase.
3. Vitamins A and D.