

Please note that you may have to study more than just the topic or chapter that questions are in to find the answers.

## Food for Health

### Chapter 1

#### Page 10

1. Macro-nutrients are the main nutrients needed by the body in relatively large amounts. They include protein, fats and carbohydrates.
2.
  - Growth and repair of body cells
  - Maintenance of body cells
  - Secondary source of energy
3. HBV – High Biological Value  
LBV – Low Biological Value
4. HBV – Where a protein contains all the essential amino acids, they are known as ‘High Biological Value’ (HBV) proteins and come from mainly animal sources.  
High Biological Value proteins are found in:
  - meat
  - fish
  - cheese
  - milk
  - eggs.
 HBV protein is also found in soya beans (vegetable source).  
 LBV – Where a protein lacks one or more of the essential amino acids, they are known as ‘Low Biological Value’ (LBV) proteins and come from mainly vegetable sources.  
 Low Biological Value proteins are found in:
  - cereals, e.g. wheat, rice, oats
  - pulses, e.g. peas, beans, lentils
  - some nuts.
 LBV protein is also found in gelatine (animal source).
5.
  - Can be converted to fat in the body.
  - Can lead to obesity if it is not used up as a secondary source of energy.

#### Page 11

1. Group 1: Sugars  
Group 2: Starches
2.
  - To supply energy for all activities.
  - To supply warmth and so help maintain normal body temperature.
3. **Starch**  
Reasons:
  - 1) Starches are good sources of other nutrients, e.g. potatoes are a good source of vitamin C; bread supplies protein, calcium and iron.
  - 2) They bulk out the diet and make you feel fuller for longer.
  - 3) They do not encourage dental cavities.
  - 4) Sugar is often referred to as an ‘empty calorie’ food as it provides energy and no other nutritional value.
4.
  - Sugar which is added to foods by manufacturers, cooks or consumers e.g. biscuits, soft drinks
  - Sugars naturally present in honey, syrup and unsweetened fruit juices

#### Page 14

1.
  - 1) Saturated fat
  - 2) Unsaturated fat
2.
  - To provide warmth through an insulated layer under the skin.
  - To provide a concentrated source of energy.
  - To provide the fat-soluble vitamins A, D, E and K.
  - To provide essential fatty acids.
  - To surround and protect the vital organs such as the kidneys.

3. Can lead to weight gain /obesity if it is not used for energy

Can lead to obesity so increasing the risk of HBP/ heart disease / strokes/ diabetes/ cancer

Too much saturated fats can result in raised levels of cholesterol in the blood

4. Trans-fatty acids are polyunsaturated fats which have been artificially hardened by adding extra hydrogen.

Effects on health:

- Increased risk of heart disease
- Increased risk of rheumatoid arthritis
- Linked to some cancers

5. Essential fatty acids (EFAs) are necessary fats that humans cannot make and therefore must be obtained through the diet. The main EFA is Omega-3.

Why should we include them in the diet?

- To help reduce the risk of blood clots.
- To help reduce the risk of heart attacks.
- To help reduce the risk of rheumatoid arthritis.
- Omega 3 is needed for brain development in babies and young children.

### Page 16

1.
  - Exposure to air leads to deterioration and rancidity of fats.
  - Fats become rancid due to oxidation – oxygen is absorbed by the fat molecules and reacts to produce an unpleasant flavour and colour.
  - Oxidation is accelerated by light and any impurities in the fat.
2.
  - Protein coagulates or sets when heated, e.g. egg white sets.
  - Protein in milk forms a skin on the surface when heated.

3. i. Heated:

- Solid fats melt to liquid on heating.

- ii. Overheated:

- A blue haze will be given off and the fat will ignite.
- When a fat reaches smoking point it will go rancid and smell.

4. Gluten

5. Dextrinisation gives baked items a brown colour. Dextrinisation happens when foods containing starch are subject to dry heat, e.g. toasting bread.

6. • Grating it

- Combining it with a starchy food, e.g. macaroni/potatoes

### Page 17

1.
  - To make visual purple, a substance in the eye, to assist in good vision, particularly in dim light.
  - To keep the mucous membranes healthy.
  - For the maintenance of healthy skin.
  - For normal growth in children.
  - Vitamin A is an antioxidant vitamin which helps to protect against heart disease and cancer.
2.
  - Reduced vision in dim light, leading to night blindness.
  - Dry and infected skin and mucous membranes.
3. Animal sources:
  - milk
  - cheese
  - eggs
  - oily fish
  - liver

Plant sources:

- carrots
- tomatoes
- apricots
- spinach
- cabbage

(NB: there are other examples of animal and plant sources.)

### Page 18

1. • For the proper formation of bones and teeth.
  - To promote quicker healing of bone fractures.
  - Required for the absorption of calcium and phosphorus.
2. • Poor growth and a risk of rickets in children where bones become soft and bend.
  - Osteomalacia (adult rickets) in the elderly.
3. Sunlight

### Page 19

1. • To help prevent certain cancers and heart disease.
  - For healthy skin.
  - Vitamin E is a very effective antioxidant vitamin.
2. To reduce or prevent damage to their eyes.
3. Deep-frying

### Page 20

1. All babies are given a vitamin K injection immediately after they are born to ensure their blood will clot if they are injured.
2. • Green vegetables
  - Pulses
  - Fruit
  - Cereals
  - Meat and liver

3. Vitamin K ensures that when someone gets injured and bleeds as a result, the blood clots and prevents harmful blood loss.

### Page 21

1. • Helps release energy from carbohydrates.
  - For growth and normal function of the nervous system.
  - For normal growth in children.
2. • Tiredness due to energy not being released from the carbohydrates.
  - Depression, irritability, anxiety.
  - Slow growth in children.
3. Vegans. Vitamin B12 is only found in animal products, which vegans do not eat.
4. • Essential for the formation of red blood cells.
  - Ensures unborn babies grow and develop properly and helps protect against neural tube defects such as Spina Bifida in unborn babies.

### Page 22

1. • To make connective tissue to bind the body cells together.
  - Helps cuts and wounds heal quicker.
  - It helps protect our immune system.
  - Assists in the absorption of iron to prevent anaemia.
  - To build and maintain the skin.
  - Vitamin C is an antioxidant vitamin.
2. • Cuts and wounds fail to heal properly.
  - Anaemia may develop as vitamin C has to be present to allow iron to be absorbed.
  - There is a greater risk of developing cancer and heart disease in later life as vitamin C is an antioxidant vitamin.
3. Free radicals are molecules which damage body cells/tissues. They put us more at risk of developing cancers/coronary heart disease.

4.
  - Cuts and wounds fail to heal properly
  - Anaemia may develop as Vitamin C is required to allow iron to be absorbed
  - Vitamin C is an antioxidant that helps prevent free radicals in our body from damaging our cells and tissues.
  - Due to its antioxidant properties Vitamin C may help reduce the risk of heart disease / some cancers in later life

### Page 24

1. A, C, E
2.
  - They form a defence system against free radicals which damage cells and tissues.
  - They help reduce the risk of heart disease.
  - They help reduce the risk of some cancers.
3. Any two dishes which include examples of the foods listed below:
  - Vitamin A – red and orange fruit and vegetables, e.g. carrots, tomatoes, apricots and peaches.
  - Vitamin C – citrus fruit, blackcurrants, kiwi fruit, green leafy vegetables, e.g. broccoli, spinach, cabbage.
  - Vitamin E – vegetable oils, wholegrain cereals, green leafy vegetables.

### Page 26

1. Store in the fridge in dark containers away from the light.
2. Use quick methods of cooking, such as:
  - steaming
  - stir-frying
  - microwaving
  - pressure cooking.
- 3.

Identification	Explanation
Buy as fresh as possible.	Vitamin C is lost through oxidation.
Store in a fridge, as low temperatures slow down oxidation.	Exposure to air changes the chemical structure of vitamin C. As a result, it cannot be used by the body.

Identification	Explanation
Avoid bruising or damage prior to storage.	Bruised fruits and vegetables lose vitamin C due to enzyme action and oxidation.
Avoid buying ready-prepared produce.	Ready-prepared produce has gone through processing which exposes the produce to air and light, reducing vitamin C content.

4.
  - Add to boiling water and cook for the minimum time.
  - Use as little water as possible to prevent loss through leaching.
  - Choose cooking methods such as microwaving and stir-frying to reduce this loss.
  - Cook for as short a time as possible.
  - Serve immediately.

### Page 28

1.
  - Milk, cheese, yoghurt
  - Fortified white flour
  - Green leafy vegetables
  - Tinned fish, e.g. sardines, salmon
  - Dried fruit, nuts, cereals
2.
  - It combines with phosphorous to make calcium phosphate, which gives hardness and strength to bones and teeth.
  - Required for the maintenance of bones and teeth.
  - Helps prevent osteoporosis in later life.
  - Helps blood to clot after injury.
  - Required for the correct functioning of muscles and nerves.
3.
  - Low intake over a period of time may lead to poor development of bones (leading to rickets – soft bones) and teeth (leading to dental caries).
  - If a bone is broken or damaged then it may take longer to heal if there is a lack of calcium.
  - Osteoporosis (brittle bones) in later life.
  - Osteomalacia (adult rickets).
  - Blood loss, as it does not clot well after an injury.

**Page 29**

1.
  - Iron is a component of haemoglobin, the substance that forms red blood cells.
  - Haemoglobin helps to transport oxygen around the body to every cell to help reduce the feeling of tiredness.
  - Iron is required to prevent anaemia.
2.
  - Pregnant women – iron requirements increase during pregnancy to allow for the development of the growing baby's blood supply.
  - Girls and women – regular menstrual loss of blood means that the iron lost during this time needs to be replaced.
  - Injuries and operations – loss of blood and the iron in it needs to be replaced.
  - Babies – babies are born with a supply of iron to last them for up to four months as milk contains very little iron.
3.
  - Red meat, especially liver, kidney, corned beef
  - Fortified flour and bread
  - Green leafy vegetables
  - Dried fruit and pulses
  - Cocoa and plain chocolate

**Page 30**

1. Salt is made up of two components – sodium and chloride. It is the sodium in salt that can lead to health problems. There are about 2.4g of sodium in 6g of salt.
2.
  - High blood pressure
  - Strokes
  - Coronary heart disease

**Page 33**

1.
  - Vital to life – it is required for all body fluids, e.g. saliva, digestive juices, blood, sweat, urine.
  - Helps excrete waste from the body as it combines with NSP to prevent constipation.

- Regulates body temperature through perspiration.
- Lubricates joints and membranes.

2. Approximately 2.5 litres but we also get water from foods.

3. Soluble fibre. This type is thought to slow down digestion and absorption of carbohydrates to help control blood sugar level – useful for diabetics.

Insoluble fibre. This type absorbs water and increases bulk, helping the gut work properly.

4.
  - Bowel disorders
  - Constipation
  - Bowel cancer
  - Diverticulitis

5. Age

- as people become older they may be less active so use less energy young children need energy to help them grow but they may also be quite active
- Body size/ weight
- The larger the body size the more energy is required

Occupation/ lifestyle

- The type of work undertaken by people will affect the amount of physical energy needed to carry it out and so the amount of energy intake
- Free time activities such as taking part in sports will affect energy intake

Basal Metabolic Rate

- BMR rate - the rate that the body uses energy - varies from person to person and can depend on gender, age and body weight

**Page 35**

1. Calcium and phosphorus are both needed together for the formation and maintenance of strong bones and teeth. Together they form calcium phosphate which gives bones and teeth their hardness. Vitamin D is the 'essential link'.

2. Vitamin C
3. a) Assist calcium absorption:
  - A good supply of vitamin D.
  - Lactose (a sugar found in milk).
  - Protein – the amino acids formed during digestion of protein combine with calcium to assist absorption.
- b) Hinder calcium absorption:
  - A lack of vitamin D.
  - Phytic acid found in wholegrain cereals.
  - Excess dietary fibre binds with the calcium in food and is passed out of the body.

## Chapter 2

### Page 40

1. • Eat total carbohydrates, especially starches containing dietary fibre
- Eat more dietary fibre
- Eat fruit and vegetables

### 2. Fat

Average intake of **total fat** to reduce to **no more than 35% of food energy**

Average intake of **saturated fat** to reduce to **no more than 11% of food energy**

Average intake of **trans fatty acids** to **remain below 1% of food energy**

#### Salt

Average intake of salt to reduce to **6g per day**

#### Sugar

Average intake of sugars not to exceed 5% of total energy in adults and children over 2 years. These are sugars that are added to foods by manufacturers, consumers and cooks as well as sugars naturally present in honey, syrups and unsweetened fruit juices

### 3. Sugar

High sugar intake is linked to obesity and tooth decay and a greater risk of developing diabetes.

### Fat

Saturated fat will raise cholesterol in the blood, leading to a narrowing of the arteries. This results in coronary heart disease, obesity and high blood pressure.

### Salt

A high intake of salt is linked to high blood pressure and coronary heart disease. It may also contribute to stomach cancer and lead to kidney problems in children.

### 4. Fat

- Choose low-fat versions such as semi-skimmed milk, cottage or Edam cheese, low-fat yoghurts. Low fat spreads
- Use only a little olive oil for stir-frying.
- Use spray oils which are low in calories and fat content.
- Choose lean meat – cut off any extra fat/ visible fat.
- Choose fish or white meat instead of red meat.
- Grill instead of frying food.
- Stir-fry instead of deep frying.

### Salt

- Use herbs and spices for flavouring instead of salt.
- Taste food before adding salt.
- Gradually cut down the amount of salt added to food during cooking
- Use reduced salt stock cubes
- Use vegetables to enhance flavour of dishes

### Sugar

- Use spices and dried fruits to add flavour instead of sugar.
- Try using some of the sugar alternatives suited to baking.

5. • Fruit and vegetables
- Oily fish
- Dietary fibre

**Page 44**

**1. Fruit and vegetables**

- a) intake to reach at least 5 portions / 400g per person per day.
- b) fresh/ frozen/tinned /dried vegetables and fruit/ soup packs.
- c) prevents bowel diseases/ HBP /CHD / obesity / anaemia / antioxidant vitamins may help prevent cancers

**Fibre**

- a) Intake of fibre for adults should increase to 30g. Children's intake should also increase – this will depend on their age
- b) wholegrain products such as breads/ breakfast cereals / rice /pasta
- c) prevents bowel disorders/ HBP /CHD / obesity / anaemia / fibre may help prevent bowel cancers

**Carbohydrates**

- a) Total carbohydrates should be maintained at an average intake of approx. 50% of total energy in the diet and no more than 5% of this total energy should come from sugars
- b) Breads / flour/potatoes/ rice etc Sugars should be naturally occurring sugars e.g. fruit and vegetables
- c) prevents bowel disorders/ HBP /CHD / obesity / anaemia / helps build strong bones and teeth

**Oily fish**

- a) Oil rich fish consumption to increase to one portion (140g) per person per week
- b) Fresh fish e.g. salmon/tinned/frozen/ vacuum packed / ready meals made with fish
- c) supplies Omega 3 which may be linked to reducing the risk of CHD / supplies protein for growth and repair/ calcium for strong bones and teeth

**Fat**

- a) Average intake of total fat to reduce to no more than 35% food energy  
Average intake of saturated fat to reduce to no more than 11% of food energy  
Average intake of trans fatty acids to remain below 1% food energy

- b) edam / cottage cheese / reduced fat spreads / skimmed or semi skimmed milk / spray oils / reduced fat alternatives
- c) Prevents overweight/ obesity / CHD/ HBP

**Salt**

- a) Average intake of salt to reduce to 6g per day
- b) low salt alternatives / reduced salt products/ fruit or vegetable sticks instead of salty snacks
- c) helps prevent HBP / CHD

**Sugar**

- a) Average intake of sugars not to exceed 5% of total energy in adults and children over 2 years. These are sugars that are added to foods by manufactures, consumers and cooks as well as sugars naturally present in honey, syrups and unsweetened fruit juices
- b) water or sugar free drinks / fruit/ vegetables / reduced sugar products
- c) prevents overweight/ obesity / HBP/ CHD/ tooth decay

**Calories**

- a) Average calorie intake should be reduced by 120kcal /100g by reducing intake of high fat and/or sugary products
- b) replace sugary food with starchy carbohydrates (e.g. bread, pasta, rice and potatoes) fruits and vegetables
- c) prevents overweight/ obesity / HBP/ CHD

**Red Meat**

- a) Average intake of red and processed meat to be around 70g per person per day. Care should be taken not to eat more than 90g per day
- b) lean meat , chicken, turkey, meat alternatives e.g. tofu
- c) reduces fat content helping to prevent HBP /CHD / obesity, may play a role in reducing the risk of bowel cancer, contains iron which helps to reduce the risk of anaemia, source of protein required for growth and repair

## 2. Grilling

- Little or no fat is used and any fat in the food drips out – contributing to the target ‘eat less fat’.
- A variety of foods can be grilled, such as lean meat, vegetables and bread – contributing to the targets ‘eat less fat’; ‘eat more fruit and vegetables’; ‘eat more bread’.

### Microwaving

- No fat is needed – contributing to the target ‘eat less fat’.

### Pressure cooking

- No fat is needed – contributing to the target ‘eat less fat’.

### Poaching

- Food is cooked in a liquid and is healthier as no fat is added – contributing to the target ‘eat less fat’.
- The liquid from fruit and vegetables could be made into a coulis or sauce to serve with the food – contributing to the target ‘eat more fruit and vegetables’.

### Stir-frying

- Very little oil used – contributing to the target ‘eat less fat’.
- Vegetables can be added – contributing to the target ‘eat more fruit and vegetables’.

### Baking

No added fat is used and a range of ingredients such as chicken, fish, fruit, vegetables and some baked products – contributing to the target ‘eat less fat’.

### Steaming

- No fat is used – contributing to the target ‘eat less fat’.
- No salt is added – contributing to the dietary target ‘eat less salt’.

## Chapter 3

### Page 47

- A balanced diet is one which:

    - Provides all the essential nutrients in the correct proportion and quantities to meet our needs.
    - Includes a variety of food which will provide us with all the essential nutrients.
    - Provides the right amount of energy, water and fibre.
  - Helps protect you from many diet-related illnesses such as obesity, high blood pressure, heart disease, diabetes, cancer and tooth decay.
    - Provides the right amount of energy for activities and so helps prevent you from becoming overweight.
    - Allows you to grow and have general good health.
- Your answers will depend on the ingredients you chose. Some examples are given in the table above.

Ingredients	Nutrients
Pasta	Carbohydrates
Cheese	Protein, fat, vitamin A, calcium
Milk	Protein, fat, calcium
Meat	Protein, fat, vitamin B complex, iron
Vegetables	Vitamin C, vitamin A
Tinned tomatoes	Vitamin A

- Tuna, sweetcorn with low fat mayonnaise on granary roll

#### Reasons:

#### Tuna

- Contributes to the target ‘eat more oily fish’.
- Adds protein.

**Sweetcorn**

- Contributes to the target to ‘eat more fruit and vegetables’.
- Adds vitamin C.

**Low-fat mayonnaise**

- Contributes to the target ‘eat less fat’.
- The mayonnaise mixed with the tuna would make the roll moist so no butter/margarine would be needed, thus reducing fat.

**Granary roll**

- Contributes to the target ‘eat more bread especially wholemeal’.
  - Contributes to the target ‘eat more total complex carbohydrates’.
  - Adds dietary fibre.
  - Adds iron.
  - Adds calcium.
- b) Some examples are given below:
  - Add salad/vegetables to the roll – increases fibre/helps to meet dietary target of 400g/no fat added/add vitamin C.
  - Add a piece of fruit to increase fibre/help to meet dietary target of 400g/no fat added/add vitamin C.
  - Add low fat cheese – adds calcium.
  - Water – needed for hydration.

**Page 53**

- a) Estimated Average Requirements
- b) i. 52.2g daily  
ii. 45.0g daily

Boys go through a ‘growth spurt’ at this age so need more protein.

Boys need more protein for muscle development.

Boys may be more energetic than girls so protein could be used as a secondary source of energy.

Boys may have a larger body size.

- a) + 100 µg daily, so that the mother does not become anaemic.

Needed for the development of the brain and nervous system.

Reduces the risk of babies being born with neural tube defects such as spina bifida.

- b) i. 14.8mg daily  
ii. 8.7mg daily

Females aged 11–14 need additional iron as they lose blood because of their monthly periods. Women aged 50 or over may have stopped monthly menstruation.

- a) i. 11.51 MJ daily  
ii. 8.77 MJ daily

Males 11–14 are more active and so need more energy than males over 75 who are generally not so active.

2. Protein – reduces slightly as protein is only used to repair damaged tissue (not for growth).

Vitamin C – increases slightly as vitamin C is still needed to prevent anaemia, heal cuts and wounds and act as an antioxidant to prevent cancers (increased risk of cancer as we get older).

Vitamin B1 – decreases slightly in males and stays the same in females as it is still needed to release energy for food.

**Page 54**

1.
  - Provides all the nutrients needed by the baby.
  - Less expensive than bottle feeding.
  - Easy to digest and more hygienic – less risk of stomach upsets.
  - Contains antibodies which will give protection from some illnesses.
  - Contains Omega 3 which will help brain development.
  - Helps mother and baby bond.
  - Breast feeding uses energy so helping the mother to lose excess fat stores gained during pregnancy.
  - It is also thought that breast feeding mothers have a lower risk of developing breast cancer.
2. To get the baby used to different flavours and texture, thus preventing the baby becoming a fussy eater as they get older. To check for allergic reactions to foods.

## Page 56

1.

Nutrients	Explanation	Some suggestions
Carbohydrates	Children can be very energetic, so carbohydrates, especially complex carbohydrates release energy slowly.	Breakfast cereals, wholemeal toast
Protein	Children grow quickly so protein is needed for growth of new body cells and tissues. They may also fall as they are quite energetic so protein is also needed to repair damaged tissues.	Eggs – boiled poached or scrambled
Vitamin B complex	Children will need Vitamin B complex to release energy from food and allow them to run about and not feel tired.	Breakfast cereal, wholemeal toast
Iron	Iron is needed to carry oxygen in the blood around the body. If there is a lack of iron then the child will feel tired and may become anaemic. Iron is also needed in childhood for brain development.	Eggs – boiled poached or scrambled
Vitamin C	Vitamin C aids iron absorption. It is needed to make connective tissue, helping cuts and wounds to repair if children fall.	Fresh orange juice, fresh fruit
Calcium, phosphorus and vitamin D	Childhood is an important age for bone and teeth development. These minerals work together to help children to build and maintain strong bones and teeth.	Milk, breakfast cereals

2. The Sun's ultra violet rays are a source of vitamin D so if the child does not play outside they may not get enough vitamin D.

3. Eating sweet foods will contribute to obesity and tooth decay.

4.

Source	How to include
Rice	With stir fries, risottos, rice with sauces e.g. curry, rice pudding, rice cakes
Pasta	Macaroni cheese, spaghetti bolognese, lasagnes, pasta bake, pasta in soup
Potatoes	Baked potato, leek and potato soup, mashed potato toppings, oven baked wedges, potato scones, potato croquettes
Bread	Toast, bread pudding, breadcrumb toppings/coatings, croutons for soup, sandwiches/toasties/Paninis
Flour	Baked products e.g. bread, cakes, biscuits

## Page 57

1. a) Packed lunches must include two macro-nutrients, i.e. protein, fat and carbohydrates, and three micro-nutrients, i.e. vitamins, minerals (NB the names of the vitamins/minerals must be given).
- b) Your answers will depend on the choice of packed lunch.

2. • Eat foods that are a good source of iron, e.g. red meat, especially liver, kidney, corned beef, red meat.
- Consume green leafy vegetables.
  - Eat pulses.
  - Eat products that are fortified with iron, e.g. breakfast cereals, flour and bread.

- Have 5 portions/400g fruit and vegetables daily.
- Avoid snacking/grazing on foods instead of having a balanced diet.

Any foods listed that are good sources of iron or vitamin C are acceptable.

**Iron**

- Iron is a component of haemoglobin, the substance that forms red blood cells.
- Haemoglobin helps to transport oxygen around the body to every cell to help reduce the feeling of tiredness.
- Iron is required to prevent anaemia.
- As blood volume expands throughout the teenage girl's growth, more iron is needed to prevent tiredness and anaemia.
- When menstruation starts, girls may need more iron to prevent anaemia.

**Vitamin C**

- It aids the absorption of iron to help prevent anaemia.
- It helps heal cuts and wounds, especially if the teenager plays a lot of sports.
- It is an antioxidant so helps prevent cancers and heart disease in later life.
- It helps protect the immune system.

**Page 58**

1. If more energy is consumed than is used, adults will gain weight. This could lead to obesity.
2. Some examples are wholegrain cereals, e.g. oats, wholemeal bread, bran, rice, pasta, potatoes, flour, couscous
3.
  - Vitamins A, C and E are antioxidant vitamins.
  - Antioxidants form a defence system against these free radicals which damage cells and tissues, resulting in an increased risk of heart disease and cancers for adults.

**Page 59**

**1.**

Lack of motivation	An elderly person living alone may lack the motivation to prepare nutritious food and may snack on high fat and sugar foods.
Loss of sense of taste	Many elderly people tend to lose their sense of taste so salt intake may increase.
Budget	A limited budget may affect or limit food choice, e.g. purchase of fruit and vegetables.
Difficulty eating	Elderly people may have difficulty chewing so avoid crisp foods.
Portion size	Elderly people may not have a large appetite so would need smaller portions of nutritionally dense foods.
Health	Elderly people may be disabled/ have poor health, which may affect their ability to go shopping for food or to cook.

**2.** Some examples include:

- Eat wholemeal products, e.g. wholemeal bread.
- Eat plenty of fruit and vegetables.
- Have vegetables in soups.
- Have vegetables in casseroles.
- Make fruit pies/crumbles.
- Make fresh fruit salad.
- Have porridge in the morning.

**3.** Osteoporosis – the elderly may not eat enough calcium rich foods/take sufficient exercise/get outside in the sun.

Anaemia – the elderly may not eat enough iron rich foods/may not be able to afford foods such as red meat or green vegetables/ may snack instead of preparing a balanced meal for themselves.

**Page 61**

1. Slight increase of the following nutrients:  
Protein  
Calcium  
Iron  
Phosphorous  
Vitamin B complex especially folic acid –  
Vitamin C  
Vitamin D
2. The baby's bones are supplied with calcium provided by the mother's diet. It is important that calcium intake is maintained to ensure that calcium is not

taken from the mother's bones and teeth, which could result in osteoporosis in later life and tooth decay.

3. Folic acid is needed for the development of the brain and nervous system in the foetus. This reduces the risk of babies being born with neural tube defects such as spina bifida.
4. Some examples include:  
Brown rice, fruit, vegetables, wholegrain breakfast cereals, wholemeal bread, oats, wholemeal flour used in baking, e.g. pizza bases, pastry, fresh fruit, vegetables and pulses – peas, beans, lentils, etc.

**Page 62**

1.

Lentil soup	Good	The lentils provide protein which will help the person who is feeling unwell repair any damaged tissues. The vegetables/lentils in the soup will provide them with dietary fibre to prevent constipation. The iron will aid red blood cell production and prevent tiredness.
Chicken casserole	Good	The chicken is low in fat which prevents the person who is feeling unwell gaining weight. The chicken provides protein which will help them repair any damaged tissues. It is easy to digest and so will not cause indigestion. The vegetables in the casserole will provide the convalescent with dietary fibre to prevent constipation.
Boiled potatoes	Good	If the skins are left on the potatoes, they will provide the person who is feeling unwell with dietary fibre to prevent constipation. The potatoes will provide the convalescent with a slow release of energy to prevent tiredness. They are cooked with no added fat/are low in fat which prevents the convalescent gaining weight.
Broccoli	Good	The broccoli will provide the person who is feeling unwell with dietary fibre to prevent constipation. It will also provide folic acid/iron/vitamin C to prevent anaemia.

2. Some suggestions include:
  - Change the fried fish to poached or grilled to reduce fat.
  - Change the cauliflower to a more colourful vegetable, e.g. carrots, peas or broccoli to supply vitamin C.
  - Change chips to a baked potato or potato wedges cooked in the oven to reduce fat.
  - Use a garnish such as tomato or parsley to add colour.
  - The apple sponge pudding could be changed to a baked apple filled with raspberries.
  - Yoghurt could be served with the dessert to provide calcium.

**Page 64**

1. Religious/ethnic – some religions eat vegetarian foods as part of the religious beliefs or their culture.  
Moral – some people do not like the thought of animals being killed for food.  
Health – some people believe that animal products are not very healthy, e.g. may be high in fat.  
Personal taste – some people dislike the taste or texture of animal flesh.
2. Vitamin B12
3. The range investigated could include textured vegetable protein (TVP), tofu and their products.

**Chapter 4**

**Page 73**

This set of questions relates to all three topics at the start of chapter 4.

1.
  - Limit sugary drinks and snacks.
  - Only have fast food and take aways as an occasional treat as they may be high in fat.
  - Do not give sweets as a reward.
  - Avoid snacking between meals.
  - Snack on fruit and vegetables rather than foods that are high in fat and sugar.
  - Total complex carbohydrates/foods containing dietary fibre will be filling, thus reducing the desire to snack on fatty or sugary foods.
  - Ensure plenty of regular exercise is taken.
  - Parents should show a good example by eating a balanced varied diet themselves.
2. Lack of exercise – watching TV, playing computer games mean that little energy is used, better transport systems/more use of cars instead of walking.  
Family lifestyle – some families may inherit poor eating habits in childhood that are often carried into adulthood.

Family income – lack of money to buy fresh/good quality food may result in obesity, lack of money means that people cannot afford leisure activities, e.g. gym membership. Families with higher incomes may own more than one car.

Age – older people may be less active and may also eat more snack foods that are high in fat and sugar, resulting in weight gain and obesity.

Internet shopping – people do not have to use energy to physically go and shop.

Lack of knowledge – people may not have the skills required for food preparation.

3.
  - Cut down on fat and sugar intake.
  - Eat plenty of fresh fruit and vegetables to provide bulk in diet without providing a lot of calories.
  - Establish a good eating pattern of three meals per day.
  - Try not to miss a meal as hunger may increase the likelihood of unhealthy snacking.
  - Avoid eating between meals – if hungry have a piece of fruit.
  - Avoid frying as a method of cooking – choose to grill foods instead.
  - Do not go on a crash diet as steady weight loss is much healthier.
  - Establish a regular pattern of exercise.
4. Increased risk of:
  - High blood pressure (HBP) due to the heart being put under a lot of strain from carrying the extra weight. This can result in an increased risk of a stroke or heart disease.
  - Type 2 Diabetes is when a person's blood sugar level becomes too high which in turn increases the risk of heart disease, strokes and high blood pressure (HBP).
  - Cancers of the oesophagus, breast, bowel, kidney and possibly some other types of cancer.
  - Strain on joints, e.g. hip and knee, which may result in wear and tear and arthritis.

5. It is important to balance the amount of energy you eat with the amount you use. This is called energy balance.

6.

Dietary guideline	Explanation
Reduce sugar intake	High sugar intake can lead to being overweight and HBP, which increases the risk of coronary heart disease. High sugar intake can be linked to type 2 diabetes and this increases the risk of coronary heart disease.
Reduce total or saturated fat intake	This can cause the level of cholesterol in the blood to increase, leading to coronary heart disease.
Include more polyunsaturated fats instead of saturated fats	Omega 3, an essential fatty acid, is thought to help prevent cholesterol building up in the blood, so reducing the risk of coronary heart disease. It also reduces the risk of blood clots forming, lowering the risk of a heart attack.
Reduce salt intake	If there is too much salt in the diet, this can cause HBP which can lead to coronary heart disease.
Eat a good supply of dietary fibre	Fibre will help reduce the amount of cholesterol in the blood, so reducing the risk of coronary heart disease. High-fibre foods are filling and so prevent people snacking on fatty foods which may increase cholesterol levels and increase the risk of coronary heart disease.
Eat plenty of fruit and vegetables	Fruit and vegetables are good sources of antioxidant vitamins – the ACE vitamins. ACE vitamins slow down the rate at which LDL cholesterol is deposited on the artery walls, so helping to prevent coronary heart disease.
Have alcohol in moderation	High alcohol intake can cause HBP which may increase the risk of coronary heart disease.

7. Smoking causes the blood to thicken, so increasing the risk of blood clots. Nicotine causes the heart to work faster and this increases the risk of HBP and CHD. The oxygen in the blood is reduced so the heart has to work harder, causing HBP and increases the risk of CHD.

8. Omega-3 is thought to help prevent cholesterol building up in the blood, so reducing the risk of CHD. It also reduces the risk of blood clots forming, lowering the risk of a heart attack.

9.

Advice	Explanation
Do not smoke	Nicotine causes the heart to work faster and this increases the risk of HBP. The oxygen in the blood is reduced so the heart has to work harder, causing HBP.
Take regular exercise	Regular exercise reduces stress which may cause HBP.
Reduce stress levels	High stress levels can cause high blood pressure due to the increase in adrenalin.

### Page 75

This is a research task so no answers required.

### Page 76

1. Osteoporosis means 'porous bones' and is also known as brittle bone disease. In osteoporosis bones lose some calcium.

2.

Causes	Explanation
High dietary fibre and phytic acid intake	High intake of these could hinder the absorption of calcium and increase the risk of osteoporosis.
High fat/saturated fat intake	A high intake may lead to poor calcium absorption, increasing the risk of osteoporosis.
Lack of calcium-rich food	Calcium helps form and maintain strong bones to achieve peak bone mass to help prevent osteoporosis in later life.
Lack of Vitamin D food sources and sunlight	Vitamin D helps the absorption of calcium to help reach peak bone mass and will prevent osteoporosis in later life.
Lack of foods containing phosphorus	Along with calcium, phosphorus forms calcium phosphate which give bones their strength so a lack may increase the risk of osteoporosis in later life.
High salt/sodium intake	A high salt intake will cause calcium loss from the bones which may increase the risk of osteoporosis in later life.
Smoking	Nicotine causes bone loss which may increase the risk of osteoporosis in later life.
Not taking regular exercise	Exercise increases bone strength and thickness which may reduce the risk of osteoporosis in later life.
High NSP/dietary fibre and phytic acid intake	High intake of these could hinder the absorption of calcium and increase the risk of osteoporosis.

3.

Calcium	Vitamin D	Phosphorous
Milk, cheese, yoghurt	Cod liver oil	Milk, cheese, yoghurt
Fortified white flour	Oily fish	Bread and cereal products
Green leafy vegetables	Liver	Meat and meat products
Tinned fish, e.g. sardines, salmon	Egg yolk	Fish
Dried fruit, nuts, cereals	Fortified foods such as margarine and breakfast cereals	Nuts

**Page 77**

- Haemoglobin is found in the blood and carries oxygen to all parts of the body to be used for energy.
- You feel weak, constantly tired and short of breath.
  - You may have less resistance to infection.
  - You may feel the cold more.
  - Wounds may take longer to heal.

3. Vegans

- They do not eat red meat which is a good source of iron.
- They do not eat eggs which also have iron in the yolk.

Teenage boys

- Their blood volume may be expanding.
- They may snack on fatty, sugary foods rather than having a balanced meal.

Elderly people

- They may not cook balanced meals for themselves/may have snacks instead.
- They may find iron-rich foods, e.g. red meat expensive to buy.
- They may find iron-rich foods, e.g. red meat difficult to chew
- They may drink a lot of tea which contains tannin. This stops the absorption of iron.

4. • Eat good sources of iron rich foods, e.g. red meat in various dishes such as lasagne.
- Include egg dishes, e.g. scrambled eggs.
- Include pulses, e.g. lentil soup.
- Snack on dried fruit.
- Eat fruit rich in vitamin C as this helps the body to absorb the iron.
- Have vegetables in soups and casseroles as a source of vitamin C.

### Page 78

1. Wholegrain breakfast cereals, porridge, oats, brown rice, wholemeal bread, bran, fruit, vegetables.
2. • A diet high in fat and red meat.
- A diet low in fibre, fruit and vegetables.
- Obesity.
- High alcohol intake.
- A lack of exercise.
3. Foods high in dietary fibre should be included to prevent constipation which can be a problem for pregnant women. They also reduce the risk of further bowel-related illnesses such as diverticular disease and bowel cancer. Good sources of fibre are: fruit, vegetables wholegrains or wholemeal products, e.g. vegetable stir-fry with brown rice, fruit salad and vegetable soup.

### Page 79

1. • Effective brushing is essential for healthy teeth and gums. Brush a minimum of twice a day.
- Use a mouthwash.
- Use a fluoride toothpaste to strengthen the enamel of teeth.
- Visit the dentist at least twice a year to have your teeth checked.
- Toothbrushes should be in good condition and renewed every three months.
- Use dental floss to clean between teeth to prevent a build-up of food wedged

between the teeth, which if not removed, will infect the gums.

2. • Avoid sugary and sticky snacks/drinks between meals, e.g. biscuits and juice.
- Use fresh or dried fruit as sweetening agents on breakfast cereals, in baking and also as a snack food.
- Avoid eating sweet foods just before going to bed.
- Don't miss breakfast as more sweets may be eaten as snacks.
- Eat fresh fruit and vegetables as snacks.
- Don't be influenced by adverts for sweet foods.
3. • Not giving children sweets as a treat when they have hurt themselves or been upset. This will encourage a sweet tooth in later life.
- Cut down on sugary food and drink, especially between meals as the sugar stays on the teeth.
- Good food sources of calcium, phosphorous and vitamin D must be eaten to give teeth their hardness.
- Foods that contain vitamin C will help keep gums healthy which helps the teeth from decaying.
- Crunchy foods such as carrots, celery and apples should be eaten to help keep teeth clean and strengthen gums.
- Encourage the child to clean their teeth after every meal or at least twice a day.

### Page 81

1. Celery, cereals containing gluten, crustaceans, eggs, fish, lupin, milk, molluscs, mustard, nuts, peanuts, sesame seeds, soya, sulphides (sulphur dioxide)
2. Caused when the body's immune system reacts strongly to a particular substance
3. Can cause breathing difficulties and can lead to anaphylactic shock

# Food Product Development

## Chapter 5

### Page 92

1.

Dish	Property	How it works
Cheese and onion flan	Coagulation	Eggs coagulate on heating and change from a fluid state to a more solid state. The egg filling will coagulate and thicken or set the flan filling.
Pavlova	Aeration	When egg is whisked with sugar during the making of a pavlova, a large volume of air is trapped in a honeycomb-like mesh. This is due to the protein in the egg stretching and trapping air bubbles, making it lighter.
Tuna fish cakes	Coagulation/ binding	The egg proteins coagulate when heated and bind or hold combinations of ingredients in the fish cakes together.

2. If the scrambled eggs are heated for too long or at too high a temperature, they become tough and liquid appears because the proteins within the egg shrink and the liquid is squeezed out. If they are cooked slowly this is avoided.

### Page 93

1. Gelatinisation happens in sauce making when starch and water are heated. The water is absorbed through the walls of the starch granules which then swell and burst and thicken the liquid.
2. Cheese sauce, white sauce, custard sauce, cornflour sauce, any other dish thickened with cornflour, e.g. chicken masala, soups e.g. chicken and sweetcorn.

3. In bread making, fermentation happens when the dough is set aside to prove (rise). Under the right conditions, the yeast produces carbon dioxide and alcohol – this allows flavour, texture and volume to develop. When the dough is cooked, steam is produced by the liquid, the gluten is stretched by the bubbles of CO<sub>2</sub> gas produced by the yeast and the bread rises and sets.

4. Bread, cakes, biscuits scones, pastry, toast.

### Page 95

1. Sugar dissolves in water. When sugar (sucrose) and water are boiled, the water is driven off. Eventually a thick sticky syrup is formed. Once cooled, this forms very fine crystals.
2. When making jam, boiled sweets, tablet and toffee.
3. The sugar mixture should not be stirred while the sugar is dissolving or boiling. If the mixture is disturbed by stirring, then crystals will start to form on the surface of the spoon and a crunchy mixture with large crystals may result.
4. When sugar is heated in a liquid, it begins to caramelise and turn brown due to the heat. Sugar helps to colour products such as the top of a cake by caramelising in the heat of the oven.

### Page 96

1. Fats have a 'shortening' effect on pastry. This gives the mixture a crumbly, 'short' texture which is created by the fat coating the flour particles during rubbing in. When water is added to shortcrust pastry, the uncoated flour particles absorb the water and for this type of pastry the less water added, the 'shorter' the pastry with a 'melt in the mouth' texture.

2. Creaming

Fat and caster sugar are creamed together. Air is trapped in the mixture in tiny bubbles which makes the mixture lighter and helps the cake to rise.

Rubbing in

Fat is rubbed into the flour and coats the flour particles. This forms a waterproof barrier but also traps air as the mixture is lifted and rubbed in with the fingertips.

3. To prevent the mixture becoming oily.

**Page 97**

1. Liquid helps cake mixtures to rise by producing steam in the heat of the oven and is also needed by the raising agents to help them work.
2. a) The colour.  
Milk used as a glaze for scones, bread will help brown the top.
- b) The flavour.  
Bread, mashed potatoes.
- c) The nutritional value.  
Mashed potatoes, custard, sauces.

**Page 99**

1.
  - A longer cooking time.
  - A darker colour.
  - A sugary, crunchy crust on cakes.
  - A very soft mixture during baking which will then become hard when cool.
  - A sweeter result.
  - Cake sinking in the middle as the gluten has been over-softened so that it collapses.
  - Fruit sinking in a fruit cake as the structure will collapse.

2.

	Effect – reducing fat in a product	Effect – increasing fat in a product
Flavour	Less flavour	A richer flavour
Texture	The texture is not so soft and moist. The texture of pastry is hard and tough.	The pastry is very crumbly and easily broken. A greasy texture in cakes and pastry.
Colour	The colour is paler.	The colour is darker.
Shelf life	Baked items do not keep so well and become stale more quickly.	Cakes containing fat will keep for longer.

3. a) Scones which have had too much liquid added.  
Scone dough being too soft and spreading, thus losing shape during cooking.
- b) Pastry which has had too little water added.  
Shortcrust pastry is easily broken and crumbly.
- c) A fruit cake that has had too much liquid added.  
Fruit sinking in a fruit cake if the mixture is too wet.

**Chapter 6****Page 109**

1. a) Concept generation
  - Development of new ideas.
  - Any gaps in the market are identified.
  - Market analysis is used to trial out existing products to find out what makes them popular.
  - Changes that could be made to existing products are identified.
  - Cost, portion size, flavour, appearance, texture and preparation are considered at this point.
- b) Prototype production
  - Examples or specimens of what the product will look like are made.
  - Ensuring the product will meet the needs of the target group.
  - Any required changes are made to the prototype.
- c) Product testing
  - The prototypes are trialled with a range of consumers through the use of tasting panels to get their opinion.
  - The manufacturer can then make changes to the product or make refinements to the product.
- d) Product launch
  - This is an important stage as the product is now on sale.

- Market monitoring – the product is finally launched into the national market place and sales figures are checked very carefully.
  - A range of promotional techniques need to be used to help promote the sales of the product, e.g. instore tasting, special offers, TV adverts.
2. To disassemble means to take a product apart. Manufacturers and Trading Standards Officers use it.
  3.
    - They can assess an existing product, especially if there has been a drop in sales, and can make changes to the product so increasing sales.
    - They may wish to produce a ‘new or improved’ version of a product so disassembly will give them ideas to produce a product that will sell.
    - Ensure quality and that the product remains at its best during storage, purchase and use so customers can be assured of a consistent product.
    - They can investigate how the proportion and variety of ingredients will affect the cost and nutritional value of the product which could affect sales.
  4. To check that manufacturers are meeting legal requirements and packaging claims.

**Page 115**

1. In food poisoning the bacteria multiply in the food before it is eaten. With food-borne diseases, only a few bacteria need to be eaten and they then multiply in the stomach and intestine.
- 2.

Condition	Explanation
Warmth	5°C–63°C is the danger zone – this is the best temperature range for bacterial growth. The best (optimum) temperature for growth is 37°C (body temperature).
Food	Bacteria will multiply in high-risk foods – these are foods that can be eaten without further cooking and are perishable, i.e. require refrigerated storage.

Moisture	Bacteria can multiply in moisture in foods. When a dried food has moisture added to it, e.g. custard powder, it must then be treated as a high risk food.
Time	Given the correct conditions, bacteria can divide in two every ten minutes.
pH level	In general, bacteria cannot grow in conditions that are too acidic. A pH of 7 is neutral. Most bacteria will grow well at pH 7.
Oxygen	Aerobic bacteria require oxygen to grow. Anaerobic bacteria can grow without the presence of oxygen.

3. 82°C
4.
  - Intensive methods of food production increases the risk of contamination and cross-contamination after an infection occurs.
  - The increasing length of the food production chain with more people handling the food.
  - More people are choosing ready to eat meals, take aways or eating outside the home.
  - Chilled and frozen food that has been purchased but not transported home quickly in a cool bag/box can cause food poisoning as it is in the danger zone for too long.
  - More disposable income means more people are purchasing high risk foods such as meat and dairy products.
  - Foods being prepared in the home and not cooled quickly enough increases the risk of food poisoning.
  - Not reheating foods correctly to the core temperature of 82°C results in bacteria not being destroyed.
  - Barbecuing increases the risk of food poisoning as foods are often overcooked on the outside but uncooked in the centre.
  - Inadequate thawing of poultry increases the risk as the core temperature of the food is not always high enough to kill bacteria.

- Poor storage and preparation can lead to cross-contamination from raw to cooked foods.
  - Foods being left uncovered can lead to contamination by flies or animals.
  - A greater number of meals for large celebrations are being prepared too far in advance and there is often insufficient cold storage.
5. • Wash hands after going to the toilet and before and after touching raw food; cover any cuts/boils with a blue waterproof plaster – this will prevent bacterial contamination of the food.
- Tie hair back to prevent it landing on the food.
  - Wear clean protective clothing.
6. **Cross contamination- Action points**
- Clean and disinfect work surfaces, chopping boards and equipment thoroughly before starting to prepare food and after using them to prepare raw food.
  - Use different equipment (including chopping boards and knives) for raw meat/poultry and ready-to-eat food Wash your hands before preparing food.
  - Wash your hands thoroughly after touching raw food.
  - Keep raw and ready-to-eat food apart at all times
  - Store raw food below ready-to-eat food in the fridge. If possible, use separate fridges for raw and ready-to-eat food.
  - Provide separate working areas, storage facilities, clothing and staff for the handling of ready-to-eat food

#### **Cleaning -Action Points**

- Staff must wash and dry their hands thoroughly before handling food.
- Clean and disinfect food areas and equipment between different tasks, especially after handling raw food.
- Clear and clean as you go. Clear away used equipment, spilt food etc. as you

work and clean work surfaces thoroughly.

- Use cleaning and disinfection products that are suitable for the job, and follow the manufacturer's instructions.
- Empty food waste bins often. Bins must have a lid which is foot operated.

#### **Chilling -Action Points**

- Check chilled food on delivery to make sure it is the correct temperature
- Put food that needs to be kept chilled in the fridge straight away.
- Cool cooked food as quickly as possible and then put it in the fridge.
- Keep chilled food out of the fridge for the shortest time possible during preparation.
- Check regularly that the fridge and display units are the correct temperature .

#### **Cooking- Action Points**

- When cooking or reheating food, always check that it is steaming hot all the way through.

It is especially important to make sure that poultry, pork, rolled joints and products made from minced meat, such as burgers and sausages are cooked thoroughly . This is because there could be bacteria in the middle of these types of product and the temperature may not be hot enough to kill them

7. **Critical control points** – controls have to be applied to prevent, eliminate or reduce to an acceptable level any food safety hazards, which could result in food poisoning.

A **control point** is when a hazard does not carry a food poisoning risk, meaning good hygiene practices at this stage should be sufficient to ensure food safety.

8. Food should be safer to eat so there is less risk of food poisoning.

The product's quality is consistent, thus encouraging consumers to buy.

## Chapter 7

### Page 123

1.
  - Before the development of a new product.
  - Throughout the development of a new product.
  - After the launch of a new product.
2. Market research is often carried out on existing products to evaluate their popularity, especially if there has been a drop in sales.
3. A **questionnaire** is a series of questions which is usually aimed at a specific target group to find out information. It must be handed out to a large number of people. The best type of questions to use are 'closed' questions as they give a range of possible answers, making it easier to collate, present and analyse the results.

In a **survey** you will find out information you need from a source such as a supermarket, food outlet, etc. An example could be going to a variety of supermarkets or food outlets to find out about how many varieties of cheese are sold. Information is recorded, collated and a summary of the findings is presented.

An interview is conducted to find a suitable person, e.g. a supermarket manager, who is able to give accurate and useful information. This type of research can take the form of more open-ended questions to allow more information to be collected from the person being interviewed.

### Page 128

1. Sensory testing helps food manufacturers to find out about the following:
  - The acceptability of a new product to the consumer.
  - How their product compares against that of a competitor's product.
  - How shelf life reacts through testing of the product at various recommended storage points.
  - Quality control to ensure consistent standards across batches.
  - How the eating quality is affected if changes are made to an existing product, e.g. reducing the level of salt.
  - What makes a product popular with consumers.
  - If the product is still acceptable when making changes to reduce the cost.

2.

Procedure	Explanation
Always check that everyone taking part is able to taste the product.	Some people may have allergies or dietary conditions preventing them from carrying out the tasting.
Do not allow people who are unwell (colds, upset stomachs) to taste.	They may spread infection and they will not be able to taste the food properly.
Ensure good hygiene. Everyone must use clean spoons and separate dishes.	This prevents the spread of infection between people tasting the food.
Serve all food samples in the same way (i.e. same plate, portion size and temperature).	This ensures the food is compared fairly.
Label the foods with random letters or numbers.	To prevent people being able to identify the samples.
Only allow tasters to test up to a maximum of six samples at a time.	The taste buds become less effective the more you taste.

Have water available to sip between tastings or a dry biscuit.	This clears the palate and makes tastings more effective.
Complete the tasting charts after each person tastes the food.	The taster will forget his/her opinion if all the tasting is done at once.
Use separate booths with the same lighting.	This ensures the tasters do not influence each other and the level of light does not affect the look of the food.

### 3. Ranking test

In this test the tasters are asked to rank a range of similar food products in order of preference.

#### Rating test

This test allows people to show how much they like or dislike several aspects of a variety of similar food products. Foods may be given a score between 1 and 5.

4. In this test, tasters are given three samples of similar products, two of which are the same and they are asked to identify the odd one out.
5.
  - To compare their own products with other competitors' brands to find out why other brands are more popular and have larger sales figures.
  - To find out how they need to improve their own product.
  - To allow detailed descriptions of a variety of aspects of a food product to be gathered.

2.
  - Celebrities may influence food choice as consumers may want to copy them.
  - Cartoon characters/jingles may make the food seem more 'fun' to choose.
  - If the advert is targeted at a certain group they could be persuaded to choose the food.
  - Funny, catchy adverts may encourage consumers to buy the food.
  - If the advertising promotes the health benefits of a product then this could influence consumer's choice.
3.
  - Consumers will always have access to a range of foods.
  - Saves consumers time when busy.
  - Allows consumers time to compare prices from the comfort of their own home.
  - The food is delivered straight to the door and delivery times can be selected which are convenient to the shopper.
  - Saves the hassle of standing in a queue and having to load and unload the shopping at the checkout and at home.
  - Useful method of shopping for people who are housebound, disabled or have just had a baby.
4. Some religions have dietary rules which may influence food choice as certain foods may be forbidden or can only be eaten on particular occasions, e.g.

## Contemporary Food Issues

### Chapter 8

#### Page 138

1. Your answers could link to the following:
  - Advert appropriate for a certain group.
  - The use of celebrities, cartoon characters or jingles to promote food products.
  - The use of humorous, catchy and easily remembered phrases/adverts.
  - Lots of useful information given.
2.
  - **Hindu** – The cow is considered a sacred animal and pigs are deemed unclean so Hindus will not eat beef or pork.
  - **Muslim** – Animals have to be ritually slaughtered by a process known as Halal.
  - **Jewish** – Jewish people only eat Kosher meats.

## Chapter 9

### Page 147

1. • There is a range of fresh, local and healthy produce which is more nutritious.
  - There are fewer food miles as the produce is local and so is more environmentally friendly.
  - The amount of packaging used is reduced so there is less to dispose of.
  - There are more organic and less intensively produced foods available, which is better for health/animal welfare.
2. • Consumers may be concerned about the effect on the environment – a lot of fuel is used which produces carbon dioxide, adding to global warming.
  - Food may not be so fresh and may have lost some of its nutritional content due to the longer distance travelled.
  - Food may be more expensive to buy due to the cost of fuel during transportation.
3. • Foods will taste better when in season as it will have been grown in the right soils and climate conditions to ensure quality.
  - Foods in season will be fresher for consumers to choose, as there will have been less transportation and storage time involved.
  - Foods bought in season will be cheaper for consumers as no special conditions such as heated greenhouses are involved so costs less to produce.
  - Some consumers will want to choose foods in season as no food miles/ carbon dioxide emissions are involved which may damage the environment.

### Page 148

1. • People think they taste better.
  - Some consumers believe them to be more nutritious than non-organic foods.
  - Consumers believe they are free from chemicals or pesticide residues and therefore better for our health, e.g. fewer side effects or allergies.

- They cause less harm to the environment and animal welfare is improved.
2. • Organic foods tend to be expensive and are therefore not available to low-income groups.
    - No nutritional benefit is gained so the extra money spent is a waste.
    - The appearance may be less attractive; especially when it comes to vegetables, so many consumers will not buy them.
    - Fruit and vegetables may not keep for so long due to the lack of pesticides or preservatives so this could result in more waste.



The Soil Association checks whether the required standards for organic food production is met.

The logo on food packaging allows consumers to be able to select foods that have been grown without artificial fertilisers.

It can help those consumers select foods that have been made without man-made chemicals, which may be harmful to health.

This would be good for people with allergies.

### Page 149

1. To improve the wages and working conditions of workers in third world countries who produce the goods. Shoppers know that disadvantaged producers and workers in developing countries are getting a better deal; receiving a fair price for their products.
2. Consumers may choose Fair Trade products because:
  - The quality of foods can be better because Fair Traders consider the environment.

- The Fair Trade label is clearly marked on food products so consumers know it has been produced under Fair Trade conditions.
- There is a range of food products for consumers to choose from – bananas, coffee, chocolate, tea.
- Fair Trade products can be obtained from a variety of sources, e.g. Fairtrade stores, supermarkets, catalogues and websites. This gives consumers a choice of where to purchase them.

Consumers may not choose Fair Trade products because:

- As Fair Trade products may be transported from far off countries, some consumers are concerned about food miles so may not choose Fair Trade.
  - There may be a limited selection of Fair Trade products in certain shops.
  - Some products can be expensive so consumers may not choose them.
3. • Some shops stock a limited range of Fair Trade products so the consumer has less choice.
- Some Fair Trade products tend to be expensive and some consumers may not be able to afford them.

### Page 154

1.

	Packaging	Reason
Soup	Plastic container	Will prevent the soup spilling in the fridge.
	Zip-sealed plastic bag	Rigid so gives protection/strong. Can be sealed.
Cooked chicken	Tin foil/cling film/plastic bag	Will <b>mould</b> around the shape of the chicken/flexible/ will take up less room in a fridge. Prevents chicken drying out.
	Tin foil container with lid	Strong and rigid. Gives protection. Good barrier to moisture.

Apple pie	Tin foil/cling film/plastic bag  Plastic box	Will mould to the shape of the pie/flexible. Good barrier to moisture. Will be air tight/strong.
-----------	--	--

2. • Gives useful information so consumers can make an informed choice.
- States how to store and use food safely.
  - The food is easily recognised by its packaging.
  - Helps keep the food undamaged while carrying home.
  - More hygienic – protects the food from bacteria and people cannot touch it.
  - Improves food safety through the use of tamper proof packaging.
  - Easier to transport home and store.
  - Packaged in convenient sizes and/or weights.
  - Attractive and colourful to encourage consumers to buy.
3. Glass, some plastics, paper and cardboard, metal – aluminium and steel tins, tin foil.
4. • Refills for some products are now on sale, saving on packaging.
- Loose products use less packaging, e.g. fruit, bakery goods.
  - Not using plastic bags to put items like bananas in.
5. It is used to encourage people to recycle and dispose of items in a bin to protect the environment. It is used most often on snack foods such as crisps and cans of drink.
6. If packaging is biodegradable it means that it will easily break down in the soil or the atmosphere.

### Page 156

1. There is a range of fresh, local produce which is more nutritious. There are fewer food miles as the produce is local and so is more environmentally friendly. The amount of packaging used is reduced so there is less to dispose of.

There are more organic and less intensively produced foods available, which is better for health/animal welfare.

2. Fruit, vegetables and herbs are fresher.
  - More nutritious – no loss of vitamin C due to storage.
  - Cheaper to grow your own than buy from a supermarket.
  - Could be a hobby – healthy exercise, fresh air, reduces stress
  - Fewer pesticides and fertilisers could have health benefits
  - “Feel good factor” for the consumer about reducing air miles / Sense of achievement
3.
  - Some consumers may choose factory farmed products because foods produced this way can be cheaper.
  - Some consumers may not choose factory farmed products because they are concerned about animal welfare due to the conditions they are kept in.
  - It is possible animal diseases could be spread which can be passed on to humans.
  - Because antibiotics, pesticides and growth hormones are used, they may find their way into the human food chain.

### Page 157

1. Genetic modification is done by transferring genes between plants and animals. Genes can be transferred from one plant to another, from a plant to an animal or from an animal to a plant, to produce certain changes and improvements
2. **Nutritional value may be improved e.g.**
  - Increased Vitamin C and E in fruit and vegetables
  - Produce leaner meat that is lower in saturated fat.
  - Protein could be increased in the rice and maize grown in poorer countries of the world.

Can help to **preserve** food e.g.:

- Longer shelf for fruits and vegetables which reduces waste.
- Controlling crop diseases so reducing loss

Gives consumers more **choice** e.g.

- Improved quality, flavour, appearance and texture e.g. tomatoes, potatoes

3. No one knows the long-term effects on the human body.

Foods are not always clearly labelled as containing GM ingredients so consumers may be unaware.

Strict vegetarians would object to eating foods which contain animal genes.

Muslims, Sikhs and Hindus have ethical and religious objections to consuming

foods which contain genes from animals

Some consumers are concerned about the

effect on the environment – genetically

modified plants and animals could affect

wildlife and animal welfare.

## Chapter 10

### Page 164

1. Additives are natural or synthetic substances which are added in small quantities to foods during manufacture. They are added to foods for a particular purpose.
2.
  - Gives foods a longer shelf-life by preventing them from spoiling so the consumer does not have to shop so frequently.
  - Reduces food wastage as contamination by bacteria is reduced.
  - The appearance, taste and smell of the food is improved.
  - An increased variety of foods are available, e.g. many new lower fat products would not be available without the use of additives.
  - Nutrients such as vitamins, e.g. vitamin C are now being added to products to make them more nutritious.

3.

	Advantage	Disadvantage
Colourings	These replace the colour in foods which may be lost during processing, so improving the appearance and making it more acceptable to consumers. Improves the natural colour of certain foods to make them more attractive.	Some colourings may cause allergic reactions or irritate sufferers of asthma or eczema. Hyperactivity and behaviour problems in children can also be caused by some colourings.
Sweeteners	They are added to products to reduce the sugar and calorie content and so would be helpful to people who are trying to lose weight.	The long-term effects on health are unknown.
Flavourings	These are added in small amounts to improve the taste and smell, e.g. vanilla could be added to ice cream. Used to produce artificial flavours in foods where 'real' flavours may add to the cost for the consumer.	Some people may be allergic to monosodium glutamate (MSG) which can be added to make flavours in some food stronger.

4. In case the baby had an allergic reaction to any of the additives.

### Page 166

1. Cook/chill products are cooked in the factory and then chilled in blast chillers to remove the heat quickly and to prevent the growth of bacteria.
2. Products must be used within the 'use by' date or bacteria may multiply, resulting in food poisoning.
3. It should be thoroughly reheated to 82°C to destroy bacteria and prevent food poisoning.
4.
  - Foods are usually easy to use, prepare, cook/reheat in a microwave and so can save busy people time.
  - Cook-chill foods are produced in individual portion sizes and so are useful for people living on their own or on shift work.
  - There is a wide selection from which to choose, e.g. ethnic, vegetarian, so giving variety in the diet.
  - There are a variety of price ranges, eg. supermarkets' basic or value through to finest ranges to suit various budgets.
  - Many cook-chill meals can be frozen at home, which saves on shopping time and is good for emergencies.

- Someone with little or no cooking skills or who has difficulty preparing and cooking meals, e.g. the elderly can use them as they only require reheating.
- Chilling does not affect food quality, colour, flavour, texture, nutritional value, making the product more acceptable to the consumer.
- They can work out cheaper than buying individual ingredients to make the same dish; good for students and people living on their own.

### Page 168

1.
  - UHT products have a longer shelf life which allows them to be stored for longer.
  - They are convenient to store as they do not need to be refrigerated unless opened. Once opened they have to be treated as fresh foods.
  - They are handy to have in the store cupboard in case of emergencies.
2. MAP is used in ready-prepared salads, cook-chill meals, fresh pasta, meat and poultry, bacon, snack products like crisps and baked products like rolls and cakes.
3.
  - The type of gas inside packaging is changed to improve shelf life.
  - MAP replaces most of the oxygen in packs with carbon dioxide and nitrogen.

- The growth of bacteria and micro-organisms are slowed down because the oxygen has been removed.
- 4.
- The use of natural gases appeals more to consumers so they may choose MAP foods.
  - Shelf life of food is improved as the oxygen content is reduced so food lasts longer.
  - Better quality food has to be used so the consumer knows that the product is of good quality.
  - The consumer can see the product through the packaging before buying it.
  - MAP is water resistant and does not allow the gas to escape so improving storage of food and preventing it from drying out.
  - Consumers must be aware of the correct storage conditions to follow after opening to prevent the foods spoiling and being wasted.
  - The amount of packaging used may be an environmental concern for some consumers who may not choose MAP products.

**Page 169**

1. a) Functional foods contain ingredients that have health promoting properties. Functional foods could improve health and reduce the risks of certain diseases when taken as part of a balanced diet and healthy lifestyle. Some foods, e.g. breakfast cereals and bread are a reasonably inexpensive source of additional minerals and vitamins in the diet.
- b) Allows consumers to take greater control of their health through choosing functional foods for specific health benefits. If there is a family history of heart disease, using a functional spreading fat (which contains plant sterols) could help control cholesterol within the family.
- c) • Functional foods would have to be eaten in a fairly large quantity and for a long time to result in any improvement to health.

- Functional foods can be quite expensive which may prevent low income consumers from being able to buy them.

2.

Elderly	May miss out on essential nutrients which could be supplied by functional foods if they can't cook due to health reasons/tiredness.
Someone with a history of heart disease/high cholesterol	May reduce the risk if taking, e.g. a functional spreading fat, cholesterol reducing drink.
Someone who has limited time to cook	May miss out on essential nutrients which could be supplied by functional foods.

**Page 172**

1. The nutritional value is good because:
- It is low in fat and contains no animal or saturated fats which help prevent CHD.
  - It provides a good source of NSP to help prevent bowel disorders.
  - It is low in calories – therefore good for consumers who are on a diet.
  - It is a good source of protein and as it may be used as a replacement for meat, it is more nutritious for vegetarians.
- 2.
- It does not contain Vitamin B12, so vegetarians who use this product would have to gain their Vitamin B12 intake elsewhere.
  - Some products may contain egg white which would make them unsuitable for vegans – read the label.
- 3.
- TVP is a very good source of HBV protein.
  - It contains some fibre and is low in fat.
  - Most TVP is fortified with amounts of iron, thiamine, riboflavin and vitamin B12.
  - It needs no special storage conditions so can be stored in a cupboard for several months as it is dried.

- It is quick to cook.
  - It is less expensive than meat.
  - Can be mixed with minced meat to bulk out the product and keep the cost down.
4. Bulk sweeteners, e.g. sorbitol can be used in jams for diabetics. Intense sweeteners, e.g. saccharin and aspartame, which can be used in soft drinks, canned foods, sweeteners for tea and coffee.

## Chapter 11

### Page 180

1. Products and services must be:
  - of satisfactory quality – last for the time you would expect it to and be free of any defects
  - fit for purpose – fit for the use described
  - as described – match the description on packaging or the description of the service offered.
2. The Trading Standards Officer looks after the interests of consumers and traders by enforcing fair trading laws and investigating consumer complaints. This includes checking:
  - factories, shops, pubs and markets for accurate weights and measures in food products and drinks.
  - advertisements or product descriptions to make sure they are accurately described.
  - food labelling is accurate with regard to the composition of the product.
  - traders do not falsely describe either by word, writing or any products or services they are selling.
3.
  - It carries out research/ tests into the safety and effectiveness of products
  - Fights for the rights of consumers
  - Offers information and advice about which products to buy/ health related topics through its own magazine “Which”

- Carry out investigations into a range of services related to the food industry so helping consumers make informed choices

### Page 182

1.
  - Investigates consumer complaints of poor hygiene or other problems with food businesses.
  - Investigates consumer complaints of unsatisfactory food or food that is unfit for human consumption.
  - Inspects local food businesses to check that food hygiene regulations are being followed by:
    - entering food premises on a routine check or to investigate complaints
    - identifying potential hazards in the food chain and carry out a risk assessment
    - inspecting food to see if it is safe and retain, seize or condemn food
    - taking away food samples to be tested and making videos to record what they see
    - giving food businesses time to carry out any improvements needed
    - closing down any food premises immediately that are a major threat to consumers’ health
    - providing advice for businesses and consumers on good food hygiene and complying with the legal standards for food safety.
2. It is responsible for food safety, food standards, nutrition, food labelling and meat inspection in Scotland
3.
  - FSS provides information on healthy eating which helps consumers make healthy choices
  - Gives advice about the nutrient content of foods and dietary issues to allow consumers to make an informed choice
  - Improves food safety throughout the food chain by giving advice about food handling in the home and to food

businesses so consumers are not at risk from food poisoning

- Provides information on food safety which helps the consumer make informed choices when eating outside the home eg the Food Hygiene Rating awarded to food premises
- Helps promote accurate and clear food labelling so helping consumers make informed/ healthier choices The label is colour-coded red, amber and green, and highlights 'percentage reference intakes' to show how much fat, saturated fat, salt, sugar and energy is in a product

- Agree licensing of meat processing companies and for hygiene controls on meat and meat products to ensure meat is safe for consumption

## Chapter 12

### Page 190

#### 1. Voluntary

This information is supplied voluntarily by manufacturers to give consumers a little more information about the product.

#### Statutory

This information has to be on the label. It is a legal requirement.

#### 2.

Nutritional information	Helps consumers to make healthier food choices by showing a breakdown of the nutritional information – usually gives the proportion of protein, fat, carbohydrate, vitamins and minerals and the energy values in the product.
Traffic-light symbols	Traffic-light labels indicate whether food has high (red), medium (amber) or low (green) amounts of fat, saturated fat, sugars and salt. Assists consumers in making healthier food choices.
Guideline Daily Amount	GDA's are a guide to what people can consume each day for a healthy, balanced diet as it shows the number of calories and amount of sugars, fat, saturates (saturated fat) and salt per portion of food in grams. This is also expressed as a percentage of the Guideline Daily Amount. Helps consumers to make healthier food choices.
Barcodes	They speed up payment at the point of sale. There is less chance of being wrongly charged. Consumers can self-scan products at the checkout.
Microwave labelling system	Ensures people using different ovens cook foods properly. This also ensures foods are heated thoroughly to reduce the risk of food poisoning.
Vegetarian symbol	Vegetarians are reassured the ingredients in the product are suitable for them.
Organic symbol	Consumers are reassured that the food has been produced to standards which keep the production more 'natural', so they are better for your health, e.g. fewer side effects or allergies. Artificial chemical fertilisers are not used. Pesticides are severely restricted. Animal welfare is important and farm animals have a 'free-range life'.
Allergy advice	Consumers will know if the food contains allergens so they can avoid choosing it.

Note: You may have included other symbols than the ones listed here.

3. Reference intakes on a food label show the percentage of how much fat, saturated fat, salt, sugar and energy is in a portion or unit of food
4.
  - The microwave symbol shows the oven has been labelled in compliance with the scheme.
  - The power output box shows the power output in watts. The higher the number, the faster the food will be heated and the shorter the cooking time.
  - The heating category box shows a letter. This is the heating category based on the oven's ability to heat small food packs.