



**General Certificate of Education**

**Home Economics  
5561/6561**

**HEC6**

**Mark Scheme**

*2007 examination - June series*

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## HEC6

### Question 1

(a) Soluble fibre = 1 mark

e.g. oats, fruit, vegetables, pulses = 1 mark for any one example.

Insoluble = 1 mark

e.g. wholegrain cereals/wholegrain bread = 1 mark

(4 marks)

(b) Health benefits are:

- Prevents constipation
- Prevents diverticular disease
- Prevents colo-rectal cancer
- Lowers (blood) cholesterol levels (soluble fibre)
- Controls (blood) glucose levels
- Aids weight reducing diets – fibre is filling.

Any 5 points. 1 mark for each point made.

(5 marks)

(c)(i) An average of 18 grams = 1 mark.

(ii) They have a small body size = 1

Could make their diet bulky/filling = 1

Making it difficult to fulfil their energy / nutrient needs = 1

(3 marks)

(d) **Cereal A** – although made from whole grains and therefore relatively high in nsp, it has the third highest sugar content and the third highest energy value as well as having a high sodium content, none of which fit in with the Healthy Eating Guidelines (HEG). The use of the word “goodness” suggests that it is very nutritious.

**Cereal B** – suggests that it would be a useful product for people counting calories/looking after their heart, as it is described as 99% fat free. Unfortunately, this image is damaged by its relatively high sugar and sodium content and low (the lowest) nsp content. It also has the second highest energy content.

**Cereal C** - no claim is made which is just as well since this cereal has the highest energy value and the highest sugar and fat content. The fibre content is the second lowest of the cereals. The sodium content is low. This would not be a good choice of cereal if you were aiming to achieve the HEGs.

**Cereal D** – Overall this is the healthiest of the cereals and therefore the claim of “100% good for you” is acceptable. It has the lowest energy value and the highest fibre content.

The fat content is very low and along with the minimal sugar and sodium content makes this a cereal which best fits the HEGs.

**Cereal E** – Although this cereal makes no claims it does not meet the HEGs in that it has a very high sugar content and a high fat content. However, its nsp and sodium content both meet the HEGs.

### **Criteria bands (12 marks)**

**A typical good answer (10 – 12 marks)** will link the majority of the information on the chart to the healthy eating guidelines of:

- Eat less sugar
- Eat less sodium (salt)
- Eat less fat
- Eat more nsp
- Energy should be derived mainly from starchy carbohydrates

Exceptional candidates may refer to the “rule of thumb nutrition guide to food labels” which states that for 100g portions:

	<b>A lot</b>	<b>A little</b>
<b>Total fat</b>	<b>20g</b>	<b>3g</b>
<b>Saturated fat</b>	<b>5g</b>	<b>1g</b>
<b>Sugar</b>	<b>10g</b>	<b>2g</b>
<b>Sodium</b>	<b>0.5g</b>	<b>0.1g</b>

**A typical average answer (5 – 9 marks)** will discuss some of the cereals and link some of the information to at least 3 of the HEGs.

**A typical weak answer (1 – 4 marks)** will struggle to discuss the data, but will address up to 2 of the HEGs.

### **Question 2**

(a) (i) **Overweight** is when an individual weighs 10% more than the recommended weight (for their height) = 1 mark.

Using the Body Mass Index is a more effective way of measuring weight in terms of normal, overweight, etc. The BMI divides a person’s weight by their height(m)<sup>2</sup> = 1 mark.

A BMI in the range 25-30 indicates that an individual is overweight = 1 mark.

(ii) **Obese** – an individual with a BMI of 30+ is said to be obese = 1 mark.

Obesity is the accumulation of excessive amounts of fat in the adipose tissue = 1 mark.

20% more than recommended weight for their height = 1 mark.

(b) **Reasons for the increase in obesity:**

- A past and present intake of dietary energy which is greater than expenditure.
- Increased consumption of ready meals and fast foods high in fat
- Trend from set meals to snacking/grazing
- Decreased levels of exercise (labour saving equipment/increased car ownership/sedentary jobs/computer games)
- Easy availability of foods(vending machines)
- Increased wealth/cheaper food/larger portion sizes
- Impact of advertising

**Effect of obesity on health:**

- Morbid obesity is associated with an increase (12 fold) in mortality
- Linked to CHD
- Linked to strokes
- Linked to type 2 diabetes
- Linked to high blood pressure
- Linked to some types of cancer
- Linked to gallstones
- Linked to osteoarthritis (knees)
- Reduced mobility

**Criteria bands (12 marks)**

**A typical good answer (10 – 12 marks)** will involve a minimum of 3 reasons for the increase in obesity followed by an in depth discussion of the effects (at least 5) of obesity on health.

**A typical average answer (5 – 9 marks)** will refer to at least 2 reasons for the increase in obesity. Candidates at this level should be able to discuss at least 3 effects of obesity on health.

**A typical weak answer (1 – 4 marks)** will give cursory consideration to the causes of obesity and may attempt to discuss 1 or 2 effects on health.

- (c) **Nutritional criteria for a successful weight reducing regime:**
- Achieving an energy imbalance should be achieved by either reducing kcal intake or increasing levels of exercise or both
  - Adipose tissue rather than lean tissue must be lost
  - All of the nutrients must still be present in this diet
  - Dietary modifications must be palatable (unlike cabbage soup diet!)
  - The regime must be individually planned
  - Regime should be seen as a long term modification and not a “quick fix”
  - Meals should not be unrealistically small
  - A meal pattern which avoids long periods without food is advisable
  - A diet which promotes satiety, e.g. foods which require chewing, is best
  - Don't be over ambitious

Any 7 points clearly explained (7 marks)

### Question 3

- (a) (i) Dietary reference values = 1  
are values for healthy people = 1  
which cover a range of consumption levels = 1  
for energy = 1  
and most nutrients = 1  
For use with population groups/not individuals = 1

Any 2 points (2 marks)

- (ii) Reference nutrient intake = 1  
the amount sufficient for 97% of the population = 1

(2 marks)

- (iii) Estimated average requirement = 1  
enough for 50% of the population = 1

(2 marks)

(Total 6 marks)

(b) **Nutritional requirements of elderly people:**

- Candidates should appreciate that the general dietary guidelines for healthy eating apply
- reduced intake of fat (especially sat. fat)
- reduced intake of sodium and sugar
- increase nsp intake
- to prevent constipation.
- Energy needs decrease – less physical activity and BMR slows down
- Vit. D supplement
- Plus food sources to ensure calcium absorption – reduce brittle bone disease and osteoporosis
- Nutrient dense foods are best to accommodate small appetites.
- Adequate amounts of water – older people can become dehydrated without feeling thirsty
- Enough iron (haem) to prevent anaemia
- Enough vitamin C eaten at the same meal as iron to ensure effective absorption
- Enough vitamin B12 to prevent pernicious anaemia
- Starchy foods for slow release energy and higher satiety
- Enough protein to maintain and repair body cells

Any 9 relevant points which are explained

(9 marks)

**Criteria bands (9 marks)**

**A typical good answer (7-9 marks)** will demonstrate a detailed knowledge of the nutritional requirements of elderly people. At the top end will mention HEG and address possible nutrient deficiencies. Identifies and explains up to 6 nutrients.

**A typical average answer (4-6 marks)** – a good understanding of nutritional requirements. Will identify up to 5 nutrients with reasons.

**A typical weak answer (1-3 marks)** Minimal understanding. Will make brief reference to 2 or 3 nutrients without fully appreciating why they are significant in diet of elderly people.

(c) **Problems relating to poor nutrition:**

- Loss of appetite related to loneliness/depression or long term medication can lead to malnutrition

- Dehydration due to either lack of water/sodium may result in kidney problems or mental confusion
- Shopping difficulties may lead to overlong storage of fruit and vegetables with subsequent vitamin loss
- Constipation and other digestive disorders, possibly related to medication
- Bone disorders such as osteomalacia and osteoporosis
- Coronary heart disease and stroke
- Depression
- Mouth problems and swallowing difficulties

### Criteria bands (10 marks)

**A typical good answer (7-10 marks)** – candidates at the top end of this band will demonstrate a detailed knowledge and understanding of 6 or more problems related to poor nutrition in the elderly and give sound resolutions.

**A typical average answer (4-6 marks)** – candidates will have a good understanding of at least 3 problems relating to poor nutrition in the elderly. At the top end of this band, candidates will have offered workable solutions to most of the problems they identify.

**A typical poor answer (1-3 marks)** – candidates will be able to identify 1 or 2 problems the elderly may face if their nutrition is poor. They will offer minimal or no solutions.

### Question 4

(a)

#### Trends shown by the data and reasons for these trends:

- Increased consumption fresh fruit year on year, possibly reflecting the positive effect of the HEGs (antioxidants etc) and the decrease in price of many fruits, particularly bananas. Wide range of fruits available in supermarkets. Provision of free fruit in schools in poor areas.
- Increased consumption of processed fruit, possibly reflecting the convenience of ready prepared fruits such as fresh fruit salad, freshly prepared pineapple, as well as dried, canned and frozen fruits.
- General, but relatively small, decrease in the consumption of fresh green vegetables reflecting possible lack of time people may have to prepare them or their lack of popularity.
- A general, but relatively small, increase in the consumption of other fresh vegetables. This will include ready washed and prepared salads which offer a good degree of convenience to the consumer. Will also account for carrots, swedes, turnips, etc.
- Overall the trend is for an increased consumption of both fresh green and other fresh vegetables as compared with processed vegetables (exc. potatoes) which have shown a decrease in consumption. Possible reasons are that many of the two categories of fresh vegetables can be purchased in a ready prepared state, e.g. ready washed, ready sliced, i.e. minimally processed and still relatively high in vitamins and nsp.



- Decrease in fully processed vegetables, e.g. canned, dried reflects a possible desire to eat more healthily.
- Potato consumption has decreased over the period given possibly reflecting the popularity of other staple foods in the UK diet, such as rice, pasta and various types of bread.

**Criteria bands (10 marks)**

**A typical good answer (7-10 marks)** – candidates will have commented on the majority of the data, identifying and explaining the trends using recalled knowledge as part of their reasoning. Responses will be detailed and well justified.

**A typical average answer (4-6 marks)** – candidates will have identified at least 3 of the trends and given sound and detailed reasons for at least 2 of them.

**A typical poor answer (1-3 marks)** – candidates will make a cursory attempt to describe the trends evident in the data. Reasons will tend to be general and may not relate to a specific trend.

(b)

**Contribution of fruit and vegetables to UK diet:**

- Vitamin C
- Folates
- Non-haem iron
- Calcium
- Antioxidants
- Beta-carotene
- Dietary fibre
- Low fat (unsat)
- Complex starches
- Intrinsic sugar/fructose
- Variety in colour/texture/shape

1 mark for each of the above if supported with examples (8 marks)

**Criteria bands (8 marks)**

**A typical good answer (4-8 marks)** – will identify between 4-6 nutrients and give named examples of fruit and vegetables supplying them. May refer to colour/texture/shape/variety.

**A typical poor answer (1-3 marks)** – Will make brief reference to 2 or 3 nutrients and possibly a couple of examples of fruit and vegetables.

(c) **How to reduce loss of nutrients when preparing and cooking vegetables:**

- Avoid peeling = 1
- Loss of nsp and vitamins = 1
- Avoid soaking in water = 1
- Loss of water sol. vits. Such as C = 1
- Avoid chopping = 1
- Releases oxidase = 1
- Which destroys vit. C = 1
- Cook in small amount of water = 1
- Short cooking time = 1
- To reduce loss of vit. C = 1

**Criteria bands (7 marks)**

**Good quality answer (5-7 marks)** – candidate demonstrates a sound knowledge and understanding of the instability of vitamin C under certain conditions; e.g. water soluble and easily destroyed by high temps. May mention destructive effect of alkalines such as bicarbonate of soda. Candidates at the top end of this band may suggest suitable methods of preparation and cooking to retain the nutrients in fruit and vegetables.

**Poor quality answer (1-4 marks)** – candidate will have a superficial knowledge and understanding of the instability of vitamin C. May write about vitamins in general without naming vitamin C. May refer to its' solubility.