

APPLIED



WJEC Level 3 Applied
Certificate and Diploma in

FOOD SCIENCE AND NUTRITION

REGULATED BY OFQUAL
DESIGNATED BY QUALIFICATIONS WALES

SAMPLE ASSESSMENT MATERIALS - EXTERNAL

Teaching from 2015
For award from 2017





**WJEC LEVEL 3 QUALIFICATIONS IN FOOD SCIENCE
AND NUTRITION:
LEVEL 3 CERTIFICATE FOOD SCIENCE AND
NUTRITION
LEVEL 3 DIPLOMA FOOD SCIENCE AND NUTRITION**

SAMPLE EXTERNAL ASSESSMENT

**UNIT 1: MEETING NUTRITIONAL NEEDS OF
SPECIFIC GROUPS**

For certification from 2017

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Candidate Name	Centre Number	Candidate Number

LEVEL 3 Food Science and Nutrition

Unit 1: Meeting Nutritional Needs of Specific Groups

AM/PM xxxday xx

June 20**

1 hour 30 minutes plus 15 minutes reading time

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
Section A	22	
Section B		
1	6	
2	6	
3	6	
4	8	
Section C		
1	20	
2	10	
3	12	
Total	90	

Instructions to candidates

Answer **all** questions.

Write your answers in the spaces provided in this booklet.

Use black ink or black ball-point pen. Do not use pencil or gel pen. Do not use correction fluid.

Information for candidates

The total for the paper is 90 marks.

The number of marks is given in brackets at the end of each question or part question

Answer **all** questions.

Section A

1. (a) State **two** causes of food contamination. [2]

- (i)
-
- (ii)
-

(b) Explain **two** ways food handlers can ensure food preparation areas are kept clean and hygienic. [4]

- (i)
-
-
-
- (ii)
-
-
-

2. Explain what is meant by a “high risk food”. [2]

-
-
-
-

3. (a) Describe **one** dietary function of Protein. [1]

-
-

(b) State **one** difference between proteins with HBV and LBV. [1]

-
-

4. Explain the difference between soluble and insoluble Non Starch Polyunsaccharides. [2]

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.....
.....
.....

5. State **two** functions of fat in the diet. [2]

(i)

.....

(ii)

.....

6. State **two** reasons why foods are *fortified*. [2]

(i)

.....

(ii)

.....

7. In 2013 there were 833 hospital admissions for children suffering from rickets. In 2003 there were only 190. (*Daily Mail January 2014*).

(a) State the nutrient that is lacking to cause this condition. [1]

.....

.....

(b) State **one** visible symptom of this deficiency. [1]

.....

.....

8. Explain why an adequate water intake is essential in the daily diet. [2]

.....

.....

.....

.....

9. Define the following terms:

[2]

(i) Dietary reference values (DRV).

.....
.....

(ii) Basal Metabolic Rate (BMR).

.....
.....

Section C

Read the case study and answer all questions in the answer book provided.

Rhiannon has just joined the latest health promotion initiative at her local leisure centre. During her induction the personal trainer obtains the following personal details.

Name	Rhiannon
Age	18
Weight	65kg
Height	1.65m
Medical Conditions	Anaemic
Activity Levels	Works in shop Walks one mile to work five times per week Sedentary leisure time
Food/Drink Likes	Lager, cider, wine, french fries, beans, all fish and meats, chocolate, crisps
Food/Drink Dislikes	Vegetables
Approximate Daily Kcal Intake	2700 weekdays 4000 on weekends
Example Daily Diet	7 am – 2 slices of toast with jam 12 pm – bacon, lettuce and tomato baguette, can of fizzy cola, 1 packet of crisps, 1 chocolate bar 3 pm – bar of chocolate and cup of tea (2 sugars, semi-skimmed milk) 8 pm – meat feast pizza (12”), french fries, glass of red wine 9 pm – large glass of red wine Weekends - increased alcohol consumption

The personal trainer uses this information to produce a training programme for Rhiannon. The training programme for the first three weeks is as follows:

TRAINING PROGRAMME

Name	Rhiannon
Monday, Wednesday, Friday	6 pm gym for 45 minutes following introductory training programme provided, moderate intensity
Tuesday, Thursday	Spend 10 minutes walking to work at moderate intensity Spend 10 minutes walking from work at moderate intensity Walk 10 minutes moderate intensity at lunch time
Saturday	Afternoon - 45 minutes walking, moderate intensity
Sunday	Rest day
Always	Avoid using lifts, walk up and down stairs

1. Analyse Rhiannon’s profile to determine her current and future nutritional needs. [20]
2. Produce a 3-day dietary programme for Rhiannon with 1 day being at the weekend. [10]
3. Justify your dietary plan in relation to fitness for purpose. [12]



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SAMPLE EXTERNAL ASSESSMENT

**UNIT 1: MEETING NUTRITIONAL NEEDS OF
SPECIFIC GROUPS**

MARK SCHEME

In addition to a mark scheme, examiners will be supported by marking conferences and exemplar material.

Question	Answer	Marks
1. (a)	<p>Section A</p> <p>State two causes of food contamination.</p> <p>Award 1 mark for each type of food contamination identified.</p> <ul style="list-style-type: none"> • Answers may include reference to: Microbial • Physical • Chemical. 	2
(b)	<p>Explain two ways food handlers can ensure food preparation areas are kept clean and hygienic.</p> <p>Award 1 mark for a simple explanation. E.g. All food and hand contact surfaces should be sanitised.</p> <p>Award 2 marks for detailed explanation. E.g. Keep work surfaces clean by wiping down with sanitiser to avoid any spread of bacteria.</p> <p>Answers may include reference to:</p> <ul style="list-style-type: none"> • Work surfaces wiped down regularly • Dishes washed as go along • Use colour coded chopping boards • Dispose of rubbish/waste • Fridge/freezers kept at correct temperatures • No pets in area/rodent free • No outdoor clothing to be worn • Correct uniform/clothing worn • No unauthorised personnel. 	
2.	<p>Explain what is meant by a “high risk food”.</p> <p>Award 1 mark for a simple explanation. E.g. Food most likely to cause food poisoning.</p> <p>Award 2 marks for a more detailed explanation. E.g. Food most likely to cause food poisoning, because it is potentially a good source for supporting growth of pathogenic bacteria.</p>	2

Question	Answer	Marks
3. (a)	<p>Describe one dietary function of Protein.</p> <p>Award 1 mark for one correct response.</p> <p>Answers may include reference to:</p> <ul style="list-style-type: none"> • Secondary source of energy • Cellular growth • Cellular maintenance • Cellular repair 	1
(b)	<p>State one difference between proteins with HBV and LBV.</p> <p>Award 1 mark for a clear difference stated. The difference must be explicit for the mark to be awarded.</p> <p>E.g. HBV has the full complement of essential amino acids whereas LBV is lacking in one or more essential amino acids.</p>	1
4.	<p>Explain the difference between soluble and insoluble Non Starch Polysaccharides.</p> <p>Award 1 mark for a difference implied.</p> <p>E.g. Insoluble absorbs water and increases bulk. Soluble: slows down digestion.</p> <p>Award 2 marks for a clear and explicit difference.</p> <p>E.g. Insoluble makes you full because it increases bulk whereas soluble keeps you fuller for longer because it slows down digestion without having to eat the bulk.</p>	2
5.	<p>State two functions of fat in the diet.</p> <p>Award 1 mark correct per response.</p> <p>Answers may include reference to:</p> <ul style="list-style-type: none"> • Provides warmth • Provides insulation for body/vital organs (liver, kidneys) • Source of energy • A source of fat soluble vitamins. 	2

Question	Answer	Marks
6.	<p>State two reasons why foods are <i>fortified</i>.</p> <p>Award 1 mark per correct reason given.</p> <p>Answers may include reference to:</p> <ul style="list-style-type: none"> • To improve nutritive value that may be reduced during processing e.g. flour • To ensure nutritional needs of the consumer are met e.g. Vitamins A+D in margarine • To ensure pregnant women have folic acid e.g. breakfast cereals. 	2
7. (a)	<p>In 2013 there were 833 hospital admissions for children suffering from rickets. In 2003 there were only 190. Daily Mail January 2014.</p> <p>State the nutrient that is lacking to cause this condition.</p> <p>Award 1 mark for Vitamin D or calcium.</p>	1
(b)	<p>State one visible symptom of this deficiency.</p> <p>Award 1 mark for a correct answer.</p> <p>Answers may include reference to:</p> <ul style="list-style-type: none"> • Skeletal deformities • Pigeon chested • Bendy or bowed legs • Fragile bones 	1
8.	<p>Explain why an adequate water intake is essential in the daily diet.</p> <p>Award 1 mark for a simple explanation. E.g. Prevents dehydration.</p> <p>Award 2 marks for a detailed explanation E.g. It prevents headaches by keeping the body fully hydrated.</p> <p>Answers may include reference to:</p> <ul style="list-style-type: none"> • Prevents dehydration/allows for hydration • Supports function of NSP/dietary fibre, prevents constipation • Prevents headaches • Benefits of having fluorinated water • Sodium. 	2

Question	Answer	Marks
9.	<p>Define the following terms:</p> <p>Award 1 mark per correct response.</p> <p>DRV: Dietary Reference Values are estimates of the amount of energy and nutrients needed by different groups of people.</p> <p>BMR: Basal Metabolic Rate is the energy required for essential bodily functions whilst at rest.</p>	2

Question	Answer	Marks
1.	<p>Section B</p> <p>Analyse the food safety risks involved when preparing meals for groups of customers in a large hotel.</p> <p>Award 0-2 marks</p> <p>A basic response is given analysing food safety risks. One or two hazards may be listed with limited explanation. Response is likely to be general and focus on hazards rather than risks.</p> <p>Award 3-4marks</p> <p>A clear response is given analysing food safety risks. Hazards, causes and risks are referred to and there is some reference to needs of groups and a large hotel.</p> <p>Award 5-6</p> <p>A detailed response is given analysing food safety risks with specific relation to a large hotel. Response includes hazards, causes and risks and relates to needs of groups.</p> <p>Answers may include reference to the following and how they inter-relate with preparation of food:</p> <ul style="list-style-type: none"> • Food poisoning • Food decay • Food allergies • Cooking for large numbers • Hot-holding • Serving • Specific groups • Causes • Occurrences • Prevention 	6

Question	Answer	Mark
2.	<p>Assess how different life stages affect the nutritional needs of an individual.</p> <p>Award 0-2 marks</p> <p>A basic response has been given on how different life stages can affect nutritional needs. A simple list with no justification or one point with assessment having some reasoning. Evidence may be related to one life stage only.</p> <p>Award 3-4 marks</p> <p>A clear response has been given on how different life stages can affect nutritional needs. Two or three points have been raised and discussed and assessment is reasoned. Evidence considers more than one life stage.</p> <p>Award 5-6 marks</p> <p>A detailed response has been given on how different life stages can affect nutritional needs. A range of life stages have been identified and differences discussed. Assessment has detailed reasoning.</p> <p>Learners may refer to: infants, childhood, adolescents, adulthood, post/pre-menopausal, later adulthood.</p> <p>Answers may include reference to:</p> <ul style="list-style-type: none"> • Infants: protein, calcium, iron, vitamins, no salt/sugar, broad balance of foods • Childhood: Protein, fat, carbohydrates, calcium, iron, vitamins and minerals: broad balance of foods • Adolescents: higher protein requirements, iron (especially girls) Calcium needs are higher, all vitamin needs are higher • Adults: maintain and repair body tissues not for growth, lower energy needs and from starchy carbohydrates • Pregnancy: extra folic acid, protein, low fat/salt, calcium, post-pregnancy – extra energy rich foods if breast feeding • Menopausal: extra calcium • Later adulthood; lower calorie intake, calcium, protein – maintain the body, extra dietary fibre/NSP. 	6

Question	Answer	Mark
3.	<p>Adam is 10 years of age and has decided he wants to become a lacto-vegetarian. His parents are concerned that this decision could have a detrimental effect on his health.</p> <p>This is what Adam has suggested would be a suitable daily diet. Evaluate this suggested diet and give advice to his parents on how Adam's dietary needs can be met.</p> <p>Award 0-2 marks</p> <p>A simple evaluation of Adam's sample diet is evident and a list of foods that lacto-vegetarians can eat has been identified.</p> <p>Award 3-4 marks</p> <p>A clear understanding of the needs of a lacto-vegetarian is evident. There is a reasoned evaluation of the sample diet with 2-3 points discussed and other foods that could be included.</p> <p>Award 5-6 marks</p> <p>An in-depth understanding of the needs of a lacto-vegetarian is evident and the dietary implications of this change have been evaluated with clear and well-reasoned conclusions. There is reference to a number of points related to the sample diet and other foods that may be included. There is also reference to Adam's age.</p> <p>Answers may include reference to:</p> <ul style="list-style-type: none"> • Definition of a lacto-vegetarian person who does not eat meat, fish, poultry but will eat animal produce e.g. dairy foods. the need for protein: Adam is still growing, not yet hit puberty • Protein and Vitamin B 12 is often lacking in the diet of a lacto-vegetarian: need to introduce dishes containing beans, quorn and lentils, green leafy vegetables • Sample diet contains large number of carbohydrates: reference to energy balance • Sample diet does not meet 5 a day requirements • Sample diet may lack fibre (NSP), change white bread to wholemeal • Sample diet high fat intake: low fat cheese, low fat crisps • Sample diet high proportion of processed foods • Sample diet good calcium intake: child is drinking milk, eating ice cream 	6

Question	Answer	Mark
4.	<p>Assess how food production methods impact on the nutritional value of food products.</p> <p>Award 0-3 marks</p> <p>A basic assessment of how food production methods impact on nutritional value. Responses may be focused on one aspect of production methods. Response may resemble a list with limited reasoned conclusions.</p> <p>Award 4-6 marks</p> <p>A clear assessment of how food production methods can impact on nutritional value is produced. At least two aspects of food production methods discussed with examples of specific foods mentioned. Assessment is reasoned.</p> <p>Award 7-8 marks</p> <p>An in-depth assessment of how food production methods can impact on nutritional value is produced. All food production methods are discussed, some in detail with clearly defined examples given. Assessment is clear and well-reasoned.</p> <p>Answers may include reference to:</p> <p>Cooking methods</p> <ul style="list-style-type: none"> • Loss of water soluble nutrients particularly: leaching of vitamin C from boiling, can be reduced by steaming, roasting, microwave • Fat soluble vitamins A and D lost during shallow and deep frying • Increase in salt levels as a result of using stock cubes, butter etc. could be replaced by use of herbs, unsalted butter • Fat content is increased when frying foods • Preparing vegetables too far in advance • Use of a pressure cooker to protect nutrients • Correct cooking times for vegetables adhered to <p>Storage</p> <ul style="list-style-type: none"> • Vacuum packaging (MAP) maintains nutritional content, prevents loss of nutrients • Chilling, loss of vitamin C, ascorbic and oxidase • Hot holding cooked vegetables, loss of vitamin C increases with length of time 25 % lost in 15 minutes (hot holding) 	8

Question	Answer	Mark
4. (cont.)	<p>Preservation</p> <ul style="list-style-type: none"> • Pasteurisation can reduce Vitamin C content of milk • Canning: some loss of vitamin C in fruit and Vegetables • Drying destruction of some vitamin C and B • Freezing – preserves nutrients • Jam – increased sugar content • UHT – destroys nutrients <p>Fortification</p> <ul style="list-style-type: none"> • Addition of folic acid B12, calcium added to bread and breakfast cereals. • Omega 3 added to margarine and Vitamin A + D. 	

Question	Answer	Mark
1.	<p>Section C</p> <p>Rhiannon has just joined the latest health promotion initiative at her local leisure centre. During her induction the personal trainer obtains the following personal details.</p> <p>Analyse Rhiannon’s profile and evaluate her current and future specific nutritional needs.</p> <p>Award 0-6 marks</p> <p>Analysis is fairly accurate to determine some of Rhiannon’s current and future needs and requirements. Response makes some reference to how Rhiannon’s needs are affected by her circumstances. There is reference to the existing diet. Evidence may contain some minor inaccuracies and have some descriptive elements.</p> <p>Award 7-12 marks</p> <p>Analyses Rhiannon’s information to accurately determine the most significant elements of her current and nutritional needs and requirements. Response makes clear reference to how Rhiannon’s needs are affected by her circumstances. There is reference to the existing diet, with an attempt to evaluate its fitness for purpose. All judgements and assessments are mainly valid with clear and mostly applied reasoning.</p> <p>Award 13-20 marks</p> <p>Analyses Rhiannon’s information to accurately determine all of her current and nutritional needs and requirements. Response makes clear in-depth reference to how Rhiannon’s needs are affected by her circumstances. There is an evaluation of the existing diet identifying key issues. All judgements and assessments are valid with clear, detailed and applied reasoning.</p> <p>Responses may include reference to:</p> <ul style="list-style-type: none"> • Height and weight ratio • Sedentary leisure time • Possibly sedentary job • Large increase in alcohol consumption on weekend • Anaemic • Five a day? • Processed foods • High carbohydrate • Times of meals • Increased energy needs with new training programme • Change in activity levels 	20

Question	Answer	Mark
2.	<p>Produce a 3 day dietary programme for Rhiannon with 1 day being on the weekend.</p> <p>Award 0-3 marks</p> <p>A basic 3 day programme for Rhiannon has been produced. Plan demonstrates some knowledge of the nutritional needs of an 18 year-old girl and her circumstances in chosen meal types and makes some reference to how these needs change on a weekend.</p> <p>Award 4-7 marks</p> <p>A 3 day programme for Rhiannon has been planned in some detail. All meal situations are included. The plan demonstrates clear knowledge of the nutritional needs of an 18 year-old girl and her circumstances. Menu is nutritionally balanced and a range of food commodities are included. How Rhiannon's needs change on a weekend has been clearly addressed.</p> <p>Award 8-10 marks</p> <p>An in-depth 3 day programme to meet Rhiannon's specific needs has been produced. The plan demonstrates in-depth knowledge of the nutritional needs of an 18 year-old girl and her circumstances. Menu is nutritionally and aesthetically balanced and a wide range of food commodities are included. How Rhiannon's needs change on a weekend has been addressed in detail.</p>	10
3.	<p>Justify your dietary plan in relation to fitness for purpose.</p> <p>Award 0-3 marks</p> <p>Basic attempt to justify fitness of purpose of the plan, limited reasoning for judgements made.</p> <p>Award 4-8 marks</p> <p>Some attempt to justify fitness of purpose for the plan with some reference to Rhiannon's personal needs and accepted guidelines. Some reference to the role of nutrients. Judgements are generally well reasoned.</p> <p>Award 9-12 marks</p> <p>In-depth attempt to justify fitness for purpose of the plan. Sound reference has been made to Rhiannon's specific nutritional and personal needs. Accurate and well-reasoned reference has been made to the function of nutrients in the body and judgements are clear with detailed accurate reasoning.</p>	12

Allocation of Assessment Criteria to Questions

Question Number	LO1				LO2			LO3				LO4		Total
	AC1.1	AC1.2	AC1.3	AC1.4	AC2.1	AC2.2	AC2.3	AC3.1	AC3.2	AC3.3	AC3.4	AC4.1	AC4.2	
Section A														
1. (a)				2										4
(b)			4											2
2.				2										2
3. (a)								1						1
(b)					1									1
4.					2									2
5.								2						2
6.							2							2
7. (i)									2					2
8.								2						2
9. (i)													2	2
Section B														
1.				6										6
2.										6				6
3.												6		6
4.							8							8
Section C														
1.										7	7	3	3	20
2.						5							5	10
3.								3				9		12
Total AC			4	10	3	5	10	8	2	13	7	18	10	90
Total LO	14				18			30				28		90
%LO														90