



LEVEL 3 MARKING SCHEME

SUMMER 2022

**LEVEL 3
FOOD SCIENCE AND NUTRITION
UNIT 1: MEETING NUTRITIONAL NEEDS OF
SPECIFIC GROUPS
4563UB0-1**

INTRODUCTION

This marking scheme was used by WJEC for the 2022 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

LEVEL 3 FOOD SCIENCE AND NUTRITION

UNIT 1: MEETING NUTRITIONAL NEEDS OF SPECIFIC GROUPS

SUMMER 2022 MARK SCHEME

Section A

	Answer	Marks
1.	State three Food Hygiene regulations that relate to wearing a chef's uniform. Award 1 mark for each correct regulation stated from the following (maximum 3 marks) Answers could include: • Uniform should be changed into, at place of work. • Uniform must not be worn in public places. • Jacket, apron and necktie should be changed at least once a day/be clean every day hat and trousers as soon as they become dirty. • Uniform should be washed before being worn again. • Jewellery (accept a plain wedding ring) must not be worn in the kitchen. • Heavy make-up, nail varnish and false nails should not be worn in the kitchen. • Strong scents should not be worn. • A hair net or beard net/snood should be worn/hair should not be sticking out of the net if hair is longer than the collar line or if chef has full beard. Credit any other valid response that relates to hygiene not safety.	[3]
2.(a)	Give two effects of micro-organisms on food. Award 1 mark for each correct effect stated from the following (maximum 2 marks) Answers could include: • Food poisoning • Food Spoilage • Fermentation Also accept specific signs E.g. Mould, aroma, colour, slimy, unpalatable, change in taste / flavour And positive effects eg. Yeast in bread, bacteria in yoghurt	[4] (2)
(b)	Name a microorganism responsible for each effect given above. Award 1 mark for each correct microorganism responsible for each stated effect from the following (maximum 2 marks) Food poisoning • Salmonella • Clostridium Perfringens • Staphylococcus aureus • Bacillus cereus • Campylobacter • E. coli • Listeria • Shigella • Viruses	(2)

	Answer	Marks
	Food Spoilage • Yeasts • Moulds • Aerobic bacteria • Anaerobic bacteria Accept Just Bacteria Credit any specific food spoilage bacteria E.g. Pseudomonas Bacillus	
3.	Define the meaning of the term Due diligence and give an example. Award 1 mark for correct definition. • Being able to prove that reasonable actions have been taken to avoid risk (health and safety) Doing everything that is reasonably possible to mitigate risk Accept alternative wording Award 1 mark for an example Examples could include: Records covering: • HACCP system • Cleaning schedule • Evidence that the workplace environment is compliant • How cross-contamination is prevented • Waste disposal • Pest control • Use of suppliers • Records of fridge and freezer temperatures • Labelling procedures • Evidence of staff training • Follow current laws • Keeping everything to the right standard Accept any other correct response.	[2]
4. (a)	Name one good food source of Riboflavin. Award 1 mark per response for (maximum 1 mark) Any one good food source from the following. • Fortified breakfast cereals • Milk and milk products • Eggs • Brown / wholemeal / granary bread • Mushrooms • Rice Accept any other correct response.	[1]

	Answer	Marks
(b)	State two functions of Riboflavin in the body. Award 1 mark per correct response Answers could include: Riboflavin is a precursor in a range of enzyme reactions that are involved in • Energy release (may refer to during respiration) • Energy release from food: Carbohydrate, Fat, Protein • (can credit two different examples from above) • The production of vitamin B6 • Fatty acid oxidation • Amino acid oxidation • Converting retinol into retinoic acid • Converting tryptophan into niacin • Aids metabolic functions Accept any other correct response.	[2]
5. (a)	Give two reasons why lipids are important in the diet. Award 1 mark per correct response. (maximum 2 marks) Answers could include: • Essential for normal growth and development of infants • Good source of ADEK • Assist in the absorption of fat-soluble vitamins (ADEK) in the small intestine • Good source of essential fatty acids (Omega 3) which are essential for the development of the brain, retina and cell membranes. • Insulation and warmth / Adipose tissue • Protection of vital organs • Concentrated source of energy • Provides an energy store Accept any other correct response.	[2]

	Answer	Marks
(b)	Describe the difference between sources of “visible” and “invisible” fats and oils. Award 1 mark for a basic description of the difference between sources of “visible” and “invisible” fats and oils. Award 2 marks for a good description of the difference between sources of “visible” and “invisible” fats and oils. Response will include at least one example Award 3 marks for a detailed description of the difference between sources of “visible” and “invisible” fats and oils. Response will include examples of both types. Answers could refer to: Visible - Sources of animal and plant fats and oils which are mostly visible to the naked eye are referred to as visible sources e.g. fat on bacon or chops, milk, butter, cheese, vegetable oils, Invisible - Where animal and or plant fats and oils have been incorporated into the ingredients of a food product and become less visible to the naked eye are then termed as invisible. e.g. Crisps, biscuits, pies, donuts, cheesecake, mayonnaise, ice-cream, cake	[3]
6.	Other than from food sources, outline how the body obtains Vitamin D. Award 1 mark A basic outline showing limited knowledge and understanding, basic reference has been made to action of sunlight. Award 2 marks A good outline showing good knowledge and understanding in which accurate reference has been made to one / two technical terms. Answers could include: - Most of the body's vitamin D is synthesised via the action of sunlight on skin during the summer months. (called the biogenesis of vitamin D – can credit just biogenesis) - Ultra violet light from the sun stimulates provitamin D (called 7-deydrocholesterol) which is just under the skin, to convert to cholecalciferol. - Cholecalciferol is then converted to 25-hydroxycholecalciferol in the liver, and further converted in the kidneys to 1,25-dihydroxycholecalciferol, which is the active form of the vitamin that the body uses to regulate - Calcium absorption (in the ileum) - Uptake of calcium in the bones - Amount of calcium ions in the body. - Vitamin D supplements	[2]

	Answer	Marks
7.	Assess the use of cholesterol-lowering food products in the diet. Award 1 mark for a basic assessment showing limited knowledge and understanding of the benefit from consuming cholesterol- lowering food products. Award 2-3 marks for a good assessment showing clear knowledge and understanding of the benefit from consuming cholesterol- lowering food products. May contains examples. Award 4 marks for a detailed assessment which shows in-depth knowledge and understanding of the benefit from consuming cholesterol- lowering food products. Response may be supported with examples. Answers could include: • During manufacture cholesterol-lowering food products e.g. vegetable fat spreads, yoghurts, yoghurt drinks will have had sterols and stanols added to them. • Sterols and stanols are natural substances found in plants. Reference to a branded product e.g. Benecol. • The added sterols and stanols help to prevent the absorption of cholesterol that is formed in the body from saturated fats. It is this action which makes them of benefit to people with known high blood cholesterol levels. • If cholesterol lowering products are consumed it is important to read the label carefully These products need to be eaten every day in the correct amounts, as having too much could be harmful. • These products are designed for people who already have high cholesterol, but it's not essential to eat plant sterols or stanols to help manage your cholesterol. • There are some groups of people these products are not suitable for, including children and pregnant or breastfeeding women. • Reduces a build-up of LDL (bad) cholesterol • Increases HDL production and raise levels of good cholesterol in the blood • Reduces risk of cardiovascular disease • Reduces the risk of heart attacks • Better than taking prescription drugs Healthy diets, less unsaturated fats in the diets, exercise N.B. Some may also refer to other ways of reducing cholesterol – and this can be given credit as it's assess question Accept any other correct response.	[4]

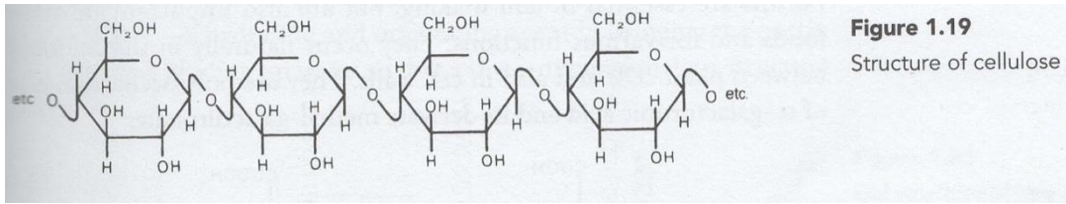
Section B

	Answer	Marks
1.	Bacteria require optimum conditions to grow and multiply. Explain how these conditions can be controlled to reduce bacterial growth during food production. Award 0 marks For a response that is not credit worthy or not attempted. Award 1-2 marks Response is limited showing little knowledge of optimum conditions required by bacteria /reduction methods during food production. answer may be superficial with little / no justified points raised. Award 3-4 marks Response shows some basic knowledge and understanding of optimum conditions required by bacteria /reduction methods during food production. Answer may be superficial with some / limited justified points raised. Award a maximum of 4 marks for a response that only refers to at least one area / optimum conditions and has no mention of temperatures. Award 5-6 marks A good response is given showing good knowledge and understanding of optimum conditions required by bacteria /reduction methods. There is good assessment of optimum conditions / reduction methods during food preparation and storage. covering three areas. At least 2 justified points relating to at least 2 different conditions or 3 mentioned more superficially. Reference to some temperatures and subject specific terminology is required e.g. Dormant. Award 7-8 marks A very good response is given showing very good knowledge and understanding of optimum conditions required by bacteria /reduction methods. during food production. Ways of applying knowledge is generally logical and adequately supported using examples. Response includes at least 3 justified points/ relating to at least 3 conditions or 4 more superficially. Good reference to temperatures, and subject specific terminology is included. Award 9 marks An excellent response is given showing excellent in depth knowledge and a full understanding of optimum conditions required by bacteria /reduction methods. during food production. Ways of applying knowledge is logical and well supported using accurate detailed examples. Response includes at least 4 justified points relating to at least 4 conditions or 5 plus more superficially. Sound and accurate reference to temperatures and accurate and appropriate use of subject specific terminology.	[9]

	Answer	Marks
	Answers may include reference to: Optimum condition for bacteria growth: Optimum temperature, the right level of moisture, Nutrients (food), Time, Suitable pH, correct level of oxygen aerobic bacteria need oxygen anaerobic bacteria do not. Reduction of optimum conditions during food production Temperature – Bacteria need warmth to multiply. The optimum temperature range for bacterial growth is between 5-63°C. This is known as the danger zone. If certain foods those considered to be high risk are kept within this temperature range for too long the rate at which bacteria will have been able to multiply will make them unsafe to consume. • Raw food should be cooked to at least a core temperature of 75°C • Cooked food to be eaten hot should be kept above 63°C. • Preheat hot holding equipment before you put any food in it. Putting food into cold equipment means it might not be kept hot enough to stop harmful bacteria growing. • Food must be cooked thoroughly and very hot (steaming) before hot holding or display begins. • Once prepared, food which is to be served chilled should be stored between 0-5°C to slow down any potential bacteria growth. • During batch production of food products, freezing of food which is to be served in the future to a temperature of below -18°C locks away the moisture required by bacteria to multiply. Moisture – Most bacteria require high moisture levels to multiply. Growing on foods with high moisture content. • Moisture content can be lowered during baking, baked products such as biscuits and crackers are less desirable to bacteria as moisture level has been lowered. • Foods that are dehydrated or freeze-dried can be stored for much longer as the moisture has been removed. (milk, fruit, vegetables, herbs) • Prevention of cross contamination of juices from one food to another can be achieved by correct storage (raw foods for example chicken) below foods which have already been cooked) Nutrients – Food provides energy and nutrients for bacteria to grow. High risk foods particularly protein foods such as chicken and dairy products are rich in nutrients and moisture and so promote bacterial growth. • High risk (perishable foods) should be stored correctly (0-5c) • Used within the shelf life of the product “use by date” on packaging Time – If provided with the optimum conditions for growth, bacteria can multiply to millions over a small time period. Asexual reproduction of bacteria in which a bacterium copies its DNA and divides into two, via binary fission. (This is when a bacterium divides in two every 20 minutes). • It is important that food is prepared as quickly as possible particularly high-risk foods (those which favour the growth of bacteria meat poultry, fish, seafood, eggs, milk cream and some cheeses). to reduce the amount of time it remains in the danger zone. • Food should be prepared as close to serving as possible • For dishes you have prepared or cooked, it is a good idea to use stickers, or another method of labelling, to keep track of when food should be used or thrown away. • Following the correct time procedure in relation to the display of buffet food.	

	Answer	Marks
	Suitable pH – Most bacteria reproduce best at a neutral pH level of 7. Acidic foods with a pH below 7, or alkaline foods with a pH above 7, may stop or slow down the rate of bacterial growth. • The use of vinegar in marinades on raw meat will lower the PH level • Products can be made more acid in pickling (onions, gherkins, hard boiled eggs) making of chutney, fermentation (vegetables) • Most pathogenic bacteria will not grow at a PH below 4.0 Oxygen Level- • Food can be vacuum packed, or gas flushed (modified atmosphere packaged MAP) to prevent oxygen supporting growth of aerobic bacteria. Credit any other valid response.	

	Answer	Marks
2. (a)	Describe the molecular structure of the following complex carbohydrates. Candidates should be rewarded for accurate diagrammatic representation of the molecular structure of the complex carbohydrates. Candidates can respond by diagrams, equation or by a written answer. Award 0 marks For a response that is not credit worthy or not attempted. Award 1 mark for a very simple response Eg. Starch is a polysaccharide (made up of long chains of glucose molecules) Award 2 marks per correct response for an accurate detailed description which shows clear understanding of the molecular structure. (x2) Eg. Starch is a polysaccharide made up of long chains of glucose molecules and consists of two components amylose and amylopectin. Candidates do not have to produce a diagram or give the equation to access full marks or give an example. Do not take marks off if the diagrams / equation are incorrect but the description is correct. Answers may refer to: (i) Starch Starch exists in two structural forms. The simplest form is amylose which is straight chain of α-glucose units. (Amylopectin is composed of many shorter chains of α-glucose with many branches). The basic chemical formula of the starch molecule is $(C_6H_{10}O_5)_n$. Starch is a polysaccharide comprising glucose monomers joined in α 1,4 linkages. The simplest form of starch is the linear polymer amylose; amylopectin is the branched form. Figure 1.14 Structure of amylose Reference: The science and Technology of foods: R K Proudlove Figure 1.15 Structure of amylopectin spiralled chains of glucose units (15-30 units) 'tree-like' appearance Reference: The science and Technology of foods: R K Proudlove	[4]

	Answer	Marks
	Award 0 marks for a response that is not credit worthy or not attempted. Award 1 mark for a basic response E.g. It is a polysaccharide and the molecular structure is straight lines (and not branched). Award 2 marks for a more detailed response E.g. It is a polysaccharide, the molecular structure is straight lines and is not branched. The bonds are arranged in a way that the bonds cannot easily be broken – cross linkage. (ii) Cellulose Cellulose is a very large molecule, It is a polymer of glucose, often made up of several thousands of monosaccharide units. The monosaccharide unit in cellulose is B-GLUCOSE The B-glucose units are joined together by B,1-4 glycosidic links. The glucose molecules do not branch and are arranged in long straight lines which makes them strong and firm.  Figure 1.19 Structure of cellulose Reference: The science and Technology of foods: R K Proudlove	

	Answer	Marks
2.(b)	Explain the role of dietary fibre (NSP) in the body. Award 0 marks For a response that is not credit worthy or not attempted. Award 1 mark Limited knowledge and understanding of the role of dietary fibre (NSP) in the body. Response explains 1-2 relevant points which could have been developed further. Award 2-3 marks Good knowledge and understanding of the role of dietary fibre (NSP) in the body. Reference has been made to soluble and insoluble fibre with some explanation as to roles. The response may not consistently in depth and detail, or not include examples. Award 4 marks Very good knowledge and understanding of the role of dietary fibre (NSP) in the body. The candidate covers the question thoroughly, Reference has been made to soluble and insoluble fibre with some clear explanation as to roles, supported with specific examples of food sources. Answers could include: Dietary fibre is the term used to describe substances in plant foods that cannot be completely digested by humans. The term soluble and insoluble fibre is often used in reference to these substances. • adds bulk to your diet and makes you feel full faster, helping to improve weight maintenance. • It helps to keep digestion system healthy and helps prevent constipation. • Soluble fibre dissolves in water to form a gel. This thickens and softens faeces (stools), enabling waste to move through the digestive tract more quickly and be eliminated more easily. • Soluble-it provides satiety as it is absorbed. • Insoluble fibre provides bulk to the faeces (stools) to help waste products be easily removed (eliminated) from the body. • Insoluble fibre cannot be digested • Dietary fibre in the diet can reduce risk of cardiovascular disease (heart disease and stroke) and type 2 diabetes • dietary fibre may help to protect against bowel cancer. this may be because fibre increases stool size, dilutes content and moves it faster through the gut so the amount of time waste products stay in contact with the bowel is reduced. • Can help prevent diverticulitis • Can help lower the glycemic index of foods • it has been suggested that a fibre rich diet can help increase the good bacteria in the gut. Some fibre types provide a food source for 'friendly' gut bacteria helping them to increase and produce substances which are thought to be protective such as short-chain fatty acids. Credit any acceptable sources for foods high in Dietary Fibre NSP. Credit any other valid response.	[4]

	Answer	Marks
3.	Discuss the types and function of dietary iron. Award 0 marks For a response that is not credit worthy or not attempted. Award 1-2 marks Responses will show basic knowledge and understanding of the function of iron. The explanation lacks detail and discussion and may make no reference to different types of dietary iron. Award 3-4marks A clear discussion which shows good knowledge and understanding of the types forms of dietary iron and its function or refers to different sources of iron. There may be inaccuracies or details missing in the response. At least 2 justified points or 3 plus mentioned superficially. N.B. different sources could be classed as types e.g. animal and plant Award 5-6 marks A full and well explained discussion which shows excellent knowledge and understanding of the two types of dietary iron and its function. Response covers the question thoroughly. At least 3 justified points or 5 plus mentioned superficially. Answers may include reference to: Types • Iron is a mineral • Dietary iron is found in two basic forms; either as haem iron from (animal sources red meat, eggs, fish, liver) or non-haem iron (from plant sources cereals, vegetables, pulses, beans, nuts, dark green leafy vegetables, dried fruit and iron fortified foods e.g. breakfast cereals and bread.). • Haem iron is the form of iron that the body can utilise most as it is easily absorbed in the small intestine. • The predominant form of iron in most diets is non-haem. • Vitamin C helps the body absorb iron from plant sources (non- haem) • Absorption of non-haem iron is affected by phytates in (cereals and pulses), dietary fibre tannins (in tea and coffee) and calcium which can bind onto non-haem iron and reduce its absorption. Function • Iron is an essential constituent of the blood pigment, haemoglobin • Needed for the transportation of oxygen in red blood cells • The utilisation of oxygen in cells • Functioning of enzyme systems especially those involved with respiration and oxidation. Credit any other valid responses.	[6]

	Answer	Marks
4.	Obesity continues to be a major health challenge, made worse by enforced lockdowns. Assess how the government's obesity strategy could help in tackling levels of obesity. N.B. Take care here – Responses are tending to be more general than specific – if what they suggest is something mentioned in a specific strategy, we need to give credit Award 0 marks For a response that is not credit worthy or not attempted. Award 1-3 marks A basic response has been given with superficial knowledge and assessment of how the government's obesity strategy could help in tackling levels of obesity. Response should refer to at least one strategy suggestion, may be mostly general ways of tackling obesity by the individual or the government. Award 4-6 marks A good response has been given with clear knowledge and assessment of how the government's obesity strategy could help in tackling levels of obesity. Response may refer to at least two strategy suggestions, balanced with general ways of tackling obesity. The response is largely well explained though there may be some imbalance in the assessments made. Award 7-8 marks An excellent response has been given showing in depth knowledge and assessment of how the government's obesity strategy could help in tackling levels of obesity. Response may refer to at least three strategies suggestions. The response is detailed and well explained and clearly relates to strategies and specific ways to tackle obesity. The candidate is likely to make links in assessment to other initiatives. • Answers may include reference to: "Obesity is one of the biggest health crises the country faces. Almost two-thirds (63%) of adults in England are overweight or living with obesity – and 1 in 3 children leave primary school overweight or obese, with obesity-related illnesses costing the NHS £6 billion a year. • The urgency of tackling the obesity time bomb has been brought to the fore by evidence of the link to an increased risk from COVID-19. • Living with excess weight puts people at greater risk of serious illness or death from COVID-19, with risk growing substantially as body mass index (BMI) increases. Nearly 8% of critically ill patients with COVID-19 in intensive care units have been morbidly obese, compared with 2.9% of the general population.	[8]

	Answer	Marks
	Strategies referred to could include: Better Health – PHE This plan is being launched alongside an exciting new <u>'Better Health'</u> campaign, led by Public Health England (PHE), which will call on people to embrace a healthier lifestyle and to lose weight if they need to, supported by a range of evidence-based tools and apps providing advice on how to reduce the waistline. Rather than focusing primarily on childhood obesity, the strategy represents a new focus on empowering adults to lose weight as well." Published 27 July 2020 From: <u>Department of Health and Social Care</u> Ban on TV and online adverts for food high in fat, sugar and salt (HFSS) before 9pm and holding a short consultation as soon as possible on how we introduce a total HFSS advertising restriction online. "Analysis published by Cancer Research UK from September 2019 shows that almost half (47.6%) of all food adverts shown over the month on ITV1, Channel 4, Channel 5 and Sky1 were for products high in fat, sugar and salt. This rises to almost 60% during the 6pm to 9pm slot – the time slot where children's viewing peaks. Evidence shows that exposure to HFSS advertising can affect what and when children eat, both in the short term and the longer term by shaping children's preferences at a young age. This is supported by the World Health Organization (WHO)." End of deals like 'buy one get one free' on unhealthy food high in salt, sugar and fat legislating to end the promotion of foods high in fat, sugar or salt (HFSS) by restricting volume promotions such as buy one get one free, and the placement of these foods in prominent locations intended to encourage purchasing, both online and in physical stores in England "In the UK we spend more buying food products on promotion than any other European country and a survey from 2018 shows that around 43% of all food and drink products located in prominent areas were for sugary foods and drinks, compared to just 1% for healthy items. Shops will be encouraged to promote healthier choices and offer more discounts on food like fruit and vegetables" Calories to be displayed on menus to help people make healthier choices when eating out – while alcoholic drinks could soon have to list hidden 'liquid calories' introducing legislation to require large out-of-home food businesses, including restaurants, cafes and takeaways with more than 250 employees, to add calorie labels to the food they sell - consulting on our intention to make companies provide calorie labelling on alcohol	

	Answer	Marks
	“calorie labelling – new laws will require large restaurants, cafes and takeaways with more than 250 employees to add calorie labels to the food they sell. Research shows eating out is becoming more common, particularly among families, with 75% of people visiting a restaurant, fast food eatery or getting a takeaway in the past week, compared to 69% in 2010. However, there is often a lack of information about the calorie content of these items and research suggests people consume around 200 more calories a day if they eat out compared to food prepared at home. This new measure will help people make healthier, informed choices as part of a balanced diet” “alcohol calorie labelling – a new consultation will be launched before the end of the year on plans to provide calorie labelling on alcohol. Alcohol consumption has been estimated to account for nearly 10% of the calorie intake of those who drink, with around 3.4 million adults consuming an additional days’ worth of calories each week – totalling an additional two months of food each year. But research shows the majority of the public (80%) is unaware of the calorie content of common drinks and many typically underestimate the true content. It is hoped alcohol labelling could lead to a reduction in consumption, improving people’s health and reducing their waistline” 5. Traffic Light Labelling publishing a 4-nation public consultation to gather views and evidence on our current ‘traffic light’ label to help people make healthy food choices “front-of-pack nutritional labelling – we will launch a consultation to gather views and evidence on our current ‘traffic light’ labelling system to learn more about how this is being used by consumers and industry, compared to international examples. Our ‘traffic light’ scheme is popular, with 90% of consumers agreeing it helps them make informed decisions when purchasing food. Research shows that people who look at front of pack nutritional labelling are shown to have healthier shopping baskets, fewer calories, less sugar, fat and salt content and higher fibre content” 6. NHS initiatives New campaign to help people lose weight, get active and eat better after COVID-19 ‘wake-up call’ a call to action for everyone who is overweight to take steps to move towards a healthier weight, with evidence-based tools and apps with advice on how to lose weight and keep it off • working to expand weight management services available through the NHS, so more people get the support they need to lose weight “expanding NHS services – weight management services will be expanded so more people get the support they need to lose weight. This will include more self-care apps and online tools for people with obesity-related conditions and accelerating the NHS Diabetes Prevention Programme. From next year doctors will be offered incentives to ensure people living with obesity is given support for weight loss and primary care staff will also have the opportunity to become ‘healthy weight coaches’ though training delivered by PHE. Separately, GPs will also be encouraged to prescribe exercise and more social activities to help people keep fit”	

	Answer	Marks
7.	Eatwell Guide Public Health England	
8.	5-a-day campaign	
9.	Sugar Tax initiative	
10.	“PHE’s new Better Health campaign will urge people to take stock of how they live their lives in the wake of the COVID-19 pandemic, promoting evidence-based tools and apps with advice on how to lose weight and keep it off. You can start by weighing and measuring yourself and checking your BMI through the NHS BMI tool. If you are overweight, you can start your weight loss journey with the free NHS 12-week weight loss plan app. The campaign aims to reach millions of people who need to lose weight, encouraging them to make behaviour changes to eat better and move more to prevent or delay the onset of serious diseases. This will be supported by a 12-week weight loss plan app that people who are living with obesity can use to develop healthier eating habits, get more active and lose weight. For more information go to www.nhs.uk/BetterHealth.”	
11.	The Public Health (Wales) Act 2017 required Welsh Government to produce an Obesity Prevention and Reduction strategy. Public Health Wales is supporting the Welsh Government in developing the first national obesity prevention and reduction strategy.	
12.	A consultation on the Welsh Government’s new plan to combat the greatest public health challenge facing Wales – obesity – has been launched by Health Minister Vaughan Gething. Called ‘Healthy Weight: Healthy Wales’, it outlines the actions to be taken to help people in Wales maintain a healthy weight. Healthy weight strategy (Healthy Weight Healthy Wales) Vision for 2030 and Beyond As part of our long-term ambitions • The people of Wales, and our future generations, to have the best start in life and live longer, better and happier lives. • Support making the healthier choice the easy choice and for people to feel enabled to make positive lifestyle choices to sustain or maintain a healthy weight.	
13.	Free school meals - Wales from September 2022 Learners may make reference to health ministers e.g. Vaughan Gethin, Eluned Morgan or celebrity chefs e.g. Jamie Oliver Learners may be credited for discussing how obesity can be tackled in addition to following / adhering to any specific strategies • Healthy eating • Exercise • Cooking at home from fresh Credit any other valid response.	

Section C

	Answer	Marks
1.	Read the case study and answer all questions in the spaces provided. Lizzie works for a healthcare charity based in a busy city. In her spare time, she enjoys running and cardio gym classes. During a recent visit to her parents she mentioned that she had been experiencing abdominal pain, bloating, bouts of diarrhoea and tiredness. Her father who has coeliac disease, suggested that she made an appointment with her GP. Lizzie has since been advised by the GP to trial eliminating foods containing gluten from her diet. Analyse Lizzie`s profile to determine her current and future nutritional needs if diagnosed as having coeliac disease.</p> <p><b>Award 0 marks</b> For a response that is not credit worthy or not attempted.</p> <p><b>Award 1-3 marks</b> Analysis is fairly accurate to determine some of Lizzie`s current and future needs and requirements. Response makes some reference to how Lizzie`s needs are affected by her life stage, occupation, potential coeliac diagnosis. There is reference to the existing diet. Evidence may contain some minor inaccuracies and have some descriptive elements. Simple bullet pointed list of does and don`ts Award 4-8 marks Candidate has analysed Lizzie`s information to accurately determine the most significant elements of her current and future nutritional needs and requirements. Response makes clear reference to how Lizzie`s needs are affected by her life stage, occupation, potential coeliac diagnosis. There is reference to the existing diet. All judgements and assessments are mainly valid with clear and mostly applied reasoning. Award 9-12 marks Candidate has analysed Lizzie`s information in detail to accurately determine current and future nutritional needs and requirements. Response makes clear in-depth reference to how Lizzie`s needs are affected by her life stage occupation, potential coeliac diagnosis. There is an evaluation of the existing diet identifying key issues. All judgements and assessments are valid with clear, detailed and applied reasoning. Must include both current and future needs. Responses may include reference to: • Age/gender/life stage/ occupation. Young Adult female, Childbearing age, sedentary worker. • Eating a healthy balanced diet and exercising regularly; some food products in current diet could be changed to whole meal varieties. (future may need to be removed) • Sedentary occupation: research links sitting for lengthy periods with a whole host of health problems. As well as increasing the risk of poor posture, flexibility, lower back and joint pain it is associated with the increased likelihood of high blood pressure, cardiovascular disease • Height and weight ratio Kcal / energy intake (Kcal intake of a woman aged 19-50 most occupations 1940 Kcal) • BMI/PAL: BMI=21.8 Normal range	[12]

	Answer	Marks
	• 50.4KG would be considered around average weight for a woman of her height (48.5 = average 57= upper 68 = obese for women of her height). • Takes part in cardiovascular exercise therefore needs to maintain a balanced diet; include adequate supply of protein and complex carbohydrates to maintain energy levels/ repair any potential muscle damage. • Fertility is likely to be better in women who have an adequate store of energy in the body. • Current diet provides protein from HBV/LBV sources. • Calcium Vitamin D important for good bone health as peak bone mass is on average reached by the ages of 30 -35 years. • Tiredness possible anaemia: Malabsorption of nutrients could be possible factor. Haem iron is easily sourced from red meat. Non-haem iron is obtained from sources such as eggs, cereal foods, green vegetables, nuts and pulses. If vitamin C is consumed from fruit, fruit juices and vegetables this will enhance the absorption of non-haem iron. • Ingredients and manufactured products containing gluten in her diet could be a potential cause of bloating, boats of diarrhoea. Important does not remove gluten from her diet until tests have been carried out for potential coeliac disease as this would make a diagnosis more difficult. • Dietary Fibre (NSP) being provided from range of vegetables, fruit, grains <u>Future</u> If coeliac disease is the cause of symptoms and goes undiagnosed: • At risk of nutrient deficiency_iron, vitamin B12 or folic acid deficiency • Anaemia • If thinking of starting a family in the future needs to include folate in her diet reduce alcohol intake and avoid excess intake of vitamin A. If diagnosed will need to follow a gluten free diet for small intestine to recover, symptoms to disappear and to allow normal nutrient absorption. • Include Vitamin C to aid in absorption of iron. Healthy gums • Zinc to help maintain immune system. • Dietary fibre will need to be provided by eating a range of vegetables, fruit, as grains will need to removed. <u>Pregnancy</u> If thinking of starting family in future • needs to include folate in diet in her diet • Continue to not include alcohol in her daily diet • avoid excess vit A If diagnosed as - Pre-menopausal Needs to ensure she eats adequate • Protein • Omega-3 fatty acids • Fiber • Calcium Credit any other valid response.	

	Answer	Marks
2.	Assess the potential impact of coeliac disease going undiagnosed on Lizzie's health and wellbeing. Responses should relate to impact on health and wellbeing. Award 0 marks For a response that is not credit worthy or not attempted. Award 1-3 marks Response shows a limited knowledge and understanding. Identification is fairly accurate in determining impact of coeliac disease going undiagnosed on Lizzie's health and wellbeing. Response makes some reference to the most obvious impact. Evidence may contain some minor inaccuracies and have some descriptive elements. Award 4-6 marks Response shows good knowledge and understanding. Identification is more accurate in determining impact of coeliac disease going undiagnosed on Lizzie's health and wellbeing. Response makes reference to the most significant impact. All judgements and assessments are mainly valid with clear and mostly applied reasoning. Award 7-8 marks Response shows excellent knowledge and understanding. Identification is accurately in determining impact of coeliac disease going undiagnosed on Lizzie's health and wellbeing. Response makes clear in-depth assessment identifying key issues. All judgements and assessments are valid with clear, detailed and applied reasoning. Responses may include reference to: Coeliac disease is an autoimmune condition, which occurs in people who become sensitive to gluten in their diet. The body's immune system causes damage to the villi lining the small intestine when gluten is eaten. If coeliac disease is not treated, not being able to digest food in the normal way owing to the damage to the lining of the small intestine causes a person with the condition to become malnourished and to display signs of nutrient deficiency. There are a range of other symptoms the type and severity of these symptoms vary from person to person, • any combination of iron, vitamin B12 or folic acid deficiency • anaemia • tiredness • sudden or unexpected weight loss (but not in all cases) • mouth ulcers • severe or occasional diarrhoea, excessive wind and/or constipation • persistent or unexplained nausea and vomiting • recurrent stomach pain, cramping or bloating • osteoporosis • skin rash (dermatitis herpetiformis) • tooth enamel problems • liver abnormalities • Risk of miscarriage or repeated miscarriages • neurological (nerve) problems such as ataxia (loss of coordination, poor balance) and peripheral neuropathy (numbness and tingling in the hands and feet)	[8]

	Answer	Marks
	• less able to produce antibodies to infections, so that vaccinations against flu and pneumococcal infections may be recommended. • depression • balance) and peripheral neuropathy (numbness and tingling in the hands and feet) • less able to produce antibodies to infections, so that vaccinations against flu and pneumococcal infections may be recommended. • Could affect her mental health and well- being – stressed, depression, anxiety etc. and may not want to socialise where there is food Once diagnosed a gluten free diet needs to be maintained for life to allow the small intestine to recover the symptoms to disappear and to allow normal nutrient absorption. www.coeliac.org.uk gutscharity.org.uk Credit can be given for dietary changes (as listed in 1.) If specific to assessment of impact of coeliac disease going undiagnosed on Lizzie's health and wellbeing or further explanation than in section 1.	

	Answer	Marks
3.	Suggest a new daily diet to take into account the elimination of foods containing gluten Award 0 marks For a response that is not credit worthy or not attempted. Award 1-2 marks A basic example daily diet for Lizzie has been made. Food choices demonstrate some knowledge of the nutritional needs of a young female adult who has been advised to remove gluten from her diet for a trial period. Award 3-4 marks A generally appropriate example daily diet for Lizzie has been made. All meal situations have been included and are appropriate. The food choices demonstrate clear knowledge of the nutritional needs of a young female adult who has been advised to remove gluten from her diet for a trial period. Menu is nutritionally balanced, and a range of food commodities are included. Award 5-6 marks A highly appropriate example daily diet for Lizzie has been made. All meal situations are included. The food choices demonstrate in-depth knowledge of the nutritional needs of a young female adult who has been advised to remove gluten from her diet for a trial period. Menu is nutritionally and aesthetically balanced and a wide range of food commodities are included. All suggestions should be appropriate to Lizzie`s needs and be balanced. Responses may include knowledge of: Avoidance of foods that contain gluten • wheat • rye • barley • oats • spelt • khorasan / oriental wheat A gluten free diet can include any naturally gluten free foods, such as: • meat • fish • fruit and vegetables • rice • potatoes, potato flour • lentils. Grains and alternatives: Amaranth: buckwheat, chestnut, corn (maize), millet, polenta (cornmeal), quinoa, rice, sago, sorghum, soya, tapioca, teff • Plain tofu • Cheese with no added ingredients • Fresh Milk, cream, plain yoghurt Manufactured gluten free products: e.g. pasta, breads, breakfast cereals, cakes, biscuits. Alcoholic and soft drinks which do not contain gluten: fruit juice, flavoured water, fizzy drinks, cider, wine, sherry spirits, port, liqueurs. Credit any other valid response. NB: Learners may merge 3 and 4 when answering this section – credit should be awarded as appropriate for each section.	[6]

	Answer	Marks
4.	Justify the daily diet you have suggested, in relation to fitness for purpose. Award 0 marks For a response that is not credit worthy or not attempted Award 1-3 marks A basic attempt to justify fitness for purpose of the suggested diet with limited reasoning for judgements made. Award 4-5 marks Some attempt to justify fitness for purpose of the suggested diet, with some reference to Lizzie's personal needs and dietary recommendations. Some reference to the function of nutrients. Judgements are generally well reasoned. Award 6-7 marks Good attempt to justify fitness for purpose of the suggested diet, with reference to Lizzie's personal needs and dietary recommendations. Some reference to the function of nutrients. Judgements are well reasoned. Award 8-10 marks In-depth attempt to justify fitness for purpose of the of the suggested diet. Sound reference has been made to Lizzie'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. Responses may include reference to: • Coeliac (gluten free diet) ingredients/products containing gluten need to be removed from diet • Should maintain and promote good health, • Take into account life stage • Energy balance to ensure healthy weight is maintained. • A protein source needs to be included in most meals. • Inclusion of adequate quantities of iron, folate, calcium zinc Vitamins D and C. • NSP to meet recommended levels/ increase satiety/feeling of fullness from non-gluten sources. • Fluid intake to prevent dehydration. • Satiety if reduces carbohydrates Credit any other valid response.	[10]

Allocation of assessment criteria

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.		3												3
2.				4										4
3.	2													2
4. (a)						1								1
(b)								2						2
5. (a)								2						2
(b)						3								3
6.					1	1								2
7.							2			2				4
Section B														
1.	4		1	4										9
2.					4	1		3						8
3.					1	1		2	1	1				6
4.							1		2	1	2	2		8
Section C														
1.								2	2	2	2	2	2	12
2.								1	1	2		2	2	8
3.						1						3	2	6
4.						1						5	4	10
Total AC	6	3	1	8	6	9	3	12	6	8	4	14	10	90
Total LO	18				18			30				24		90
% LO														90