

GCSE

**Design and Technology:
Food Technology**

Unit 1 Written Paper
Mark scheme

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Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

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**2016 DESIGN AND TECHNOLOGY:
FOOD TECHNOLOGY
MARK SCHEME**

This mark scheme is intended as a guide to the type of answer expected but is not intended to be exhaustive or prescriptive. If candidates offer other answers which are equally valid **they must be given full credit**.

Responses are to be assessed according to the **quality** of the work rather than the number of points included, outcomes will closely relate to the assessment objectives and grade descriptors for this specification. The following level descriptors are intended to be a guide when assessing the quality of a candidate's response.

High

Candidates will recall, select and communicate detailed knowledge and show thorough understanding. Responses will include detailed factual explanations and frequent extended answers.

There will be application of relevant knowledge and examples will be given, with responses showing clarity of understanding.

Responses will show precision and accuracy in the ability to plan, review, analyse and evaluate evidence, making reasoned judgements and presenting substantial conclusions.

Work will show accuracy and use a range of specialist terminology correctly.

Intermediate

Candidates will recall, select and communicate sound knowledge and understanding. This will often be presented as a factual list of responses which include some explanation and extended answers.

There will be some application of knowledge and appropriate examples will be given, with responses showing a grasp of most issues. Some aspects may lack clarity.

Responses will show the ability to plan, review, analyse and evaluate evidence and will draw appropriate conclusions.

Work will include the occasional inaccuracy and use some specialist terminology correctly.

Low

Candidates will recall, select and communicate limited knowledge and understanding. This will often be presented as a factual list of responses with little explanation.

There may be some application of basic knowledge and appropriate examples given but responses are likely to show a confused grasp of the issues.

Responses will show basic planning skills, simplistic reviews of evidence and will draw basic conclusions.

Work will include inaccuracies and use generic rather than specialist terminology.

Section A

Question 1 is about designing new products.

Context: High protein main meal products from a variety of cultures.

1 Protein foods are an important part of a balanced diet.

1 (a) (i) Give one example of an animal protein food.

[1 mark]

Any one from: meat (beef ,lamb, pork...), poultry (chicken, turkey, duck..), cheese (all types), eggs, milk, fish (salmon, cod, haddock ...). Also credit mince, animal names e.g. cow, sheep and if protein source is given in the title of a food product e.g. beef lasagne

1 (a) (ii) Give one example of a vegetable protein food.

[1 mark]

Any one from: pulses, peas, beans, lentils, nuts, tofu, soya, quinoa, myco proteins, meat analogues.

N.B. 'Quorn' is a brand name not a food BUT this can be credited.

Do not credit generic terms 'vegetables';

1 (a) (iii) Why are protein foods an important part of a balanced diet?

[4 marks]

Credit may be given for any of the following facts given: (4 x 1 mark)

- Used for growth
- Particularly good for young children, teenagers, pregnant women as periods of rapid growth and development.
- Used for bone development
- Used for muscle strength/development.
- Used to repair or renew cells/body tissues
- Particularly useful after illness or injury
- Energy /Secondary source of energy/ 10-15% of daily energy comes from protein.
- Helps with body maintenance and metabolism
- Helps with hormones production/production of white blood cells/ enzymes for digestion.
- Provides amino acids / 11 essential and non-essential
- Essential amino acids cannot be made by body so must be provided by proteins in food.
- High Biological value/animal proteins easily available :
- Low biological/vegetable based proteins good for vegetarians
- Eat well advice recommends protein foods in several areas/ particularly non-dairy protein.
- Lack of protein may result in slow growth, digestive upsets
- Lack of protein may result in muscle weakness/wastage e.g. Kwashiorkor
- Other relevant responses.

Do **not** credit examples of protein foods as credit for these was given earlier in question.

1 (b) Design brief

A frozen food manufacturer wants to extend their range of vegetarian meals.

Design criteria

The successful product will:

- **use high protein ingredients suitable for vegetarians**
- **be a savoury main meal product suitable for freezing**
- **be based upon dishes from different cultures**
- **include a flavoured sauce.**

1 (b) (i) On the next page, use notes and sketches to present two design ideas. Use annotation to show how each design idea meets the design criteria. Do not include any packaging in your design ideas.

[12 marks]

The candidate has a thorough understanding of designing products and provides clear evidence of meeting all the design criteria. The products designed will show clear and detailed annotation of both design ideas. Communication of design and additional design information will be effective and accurate at higher levels.	10-12 marks
The candidate shows good knowledge and there will be clarity and understanding that design ideas must match most design criteria. Most of the design criteria have been addressed within the annotation, one of the design ideas may be in greater detail. Sketch may be omitted. Response will include some specialist terminology	7-9 marks
The candidate shows knowledge of the topic but there is less clarity of understanding. Annotation will relate to two or more design criteria. There may be an inappropriate product chosen or only one idea given. Answer will use generic and simplistic terminology.	4-6 marks
The candidate shows some knowledge of the topic but there is less clarity of understanding. Annotation is lacking and may be generic in nature or limited to only one design criteria. There may be inappropriate products chosen. Answer will use generic and simplistic terminology.	1-3 marks
No answer worthy of credit	0 marks

Indicative content:

Design idea should be annotated to show how the design meets the given design criteria.

Design criteria guidance:

use high protein ingredients suitable for vegetarians

Protein food must be clearly identified by annotation e.g. Protein is found in Milk, cheese, eggs, gelatine, soya beans, pulses-peas, beans, lentils, TVP, Quorn, nuts. (Food can be suitable for a lacto veg i.e. include dairy and egg products) *Term used is vegetarian NOT VEGAN

DO NOT accept any animal flesh i.e. meat offal, game or fish as other criteria indicate vegetarian sources only are appropriate.

be a savoury main meal product suitable for freezing

Must be a main meal product, i.e. savoury based, may have accompaniments such as vegetables, rice, pasta or sauce served alongside it.

Annotation must indicate suitability for freezing. Check product idea is suitable for freezing. Some dishes with high water content may not be e.g. some sauces. *Both aspects must be present for award of credit.

be based upon dishes from one or more cultures

Dishes may be based on one or more cultures.

Suitable dishes will use multicultural ingredient, method, traditional dish e.g. curry, lasagne, bolognese, moussaka, stroganoff, goulash, stews, sweet and sour, pizza with a sauce topping, chilli. To be awarded credit, must be related to specific named country e.g. India, Italy, Spain, USA, Mexico, Britain etc.

Or a specific culture e.g. Jewish, Muslim, Hindu, Halal

include a flavoured sauce.

Inclusion of a named sauce. Must give flavour of sauce. e.g. tomato, bolognese, curry, cheese, tartar, sweet and sour, soy flavoured sauces all acceptable.

Do not accept: red sauce, white sauce, brown sauce

Additional credit may be given for the quality of communication skills i.e. clarity of design idea, identification of other design criteria e.g. sensory attributes, dimensions, nutritional profiling, production techniques, serving details, portion sizes, functions of ingredients identified, specialist equipment. It is expected that at least two aspects of additional information are included within the annotation.

1 (b) Select one design idea for development.

I have chosen to develop design idea number

Candidates will indicate which design idea they have chosen to develop further by ticking a box. There are no marks for this.

1 (b) (ii) Describe control checks used to make sure your chosen food product is hygienically prepared.

[4 marks]

Any correct response 4 x 1 mark taken from list given.

Responses should relate to food hygiene not personal safety

- Prevention of contamination/cross contamination
- clean clothing/aprons
- wearing protective wear e.g. correct footwear for hygiene
- short nails
- hair tied back/use of beard net

- blue plasters for cuts
- check no illness/coughs/colds
- appropriate hygiene training
- check food handler hands are clean or thoroughly washed do not accept just 'washed'
- clean environment surfaces/floors,
- regularly sanitised/ use of antibacterial cleansers
- reasons why checks are made e.g. prevention of cross contamination
- hygienic storage e.g. regular routine for cleaning, stock rotation
- preparation and cooking of food e.g. use of colour coded chopping boards
- Prevention of biological/physical/chemical contamination/ individual examples can be credited e.g. cleaning of food probe after use to prevent cross contamination (Not just use of food probe which is food safety not hygiene)
- Other relevant responses.

1 (b) (iii) Describe control checks used to make sure your chosen food product has a good quality sauce.

[4 marks]

Any correct response 4 x 1 mark

*Responses that give generic answers e.g. 'looks goods' 'appealing' / or stages in making a sauce without relating these to quality outcomes can only be awarded 2 marks maximum.

Responses indicate: Ingredients are

- are in date/ fresh ingredients for maximum quality
- bought from reputable suppliers
- visually checked
- in correct storage/packaging
- correct weight.
- correct quantities/proportion
- use of standard components for consistency

During the making:

- check sufficient stirring to prevent lumps
- sauce is heated sufficient/temperature control
- (may include temps e.g. 60C absorbs liquid, 80Cthicken, 100c gelatinisation)
- Tested/tasted for best aesthetic/sensory outcomes
- safe for consumption
- gelatinisation has taken place/thickening
- viscosity checks /no lumps
- good colour, not burnt
- good flavour not bland
- glossy appearance not dull
- consistency of production techniques
- any other relevant correct response.

1 (c) The design criteria on page 4 states that the product must be ‘suitable for freezing’.

1 (c) (i) Describe how your chosen food product will be prepared and packaged for the freezer.

[4 marks]

The candidate shows good knowledge and understanding of preparing and packaging for the freezer. Correct responses may cover both preparing and packaging and may be several factual responses or some extended responses. Response will include some specialist terminology.	3-4 marks
The candidate shows some knowledge and understanding of preparing and packaging for the freezer. Correct responses will cover only preparing or packaging May include factual responses or an extended response. Response may include some specialist terminology.	1-2 marks
No answer worthy of credit	0 marks

Preparing food for the freezer:

- check quick cooling of product before freezing
- chilled to below 5C
- checking/ monitoring temperature of freezer.
- -18C domestic freezer
- switch onto ‘fast freeze ‘or specialist programmes for initial blast freezing.
- weight check
- portion control
- ensure container filled but with room for expansion.
- any other relevant response.
-

Packaging food for the freezer:

- check type of packaging material suitable for freezer
- e.g. Plastics, oven able paperboard, cling film
- condition of packaging e.g. tamperproof, airtight
- accurate details of labelling needed
- use waterproof pen to ensure label does not wipe off.
- record of batch numbers
- i.e. date, product name, date marks
- any other relevant correct response.

1 (c) (ii) Explain how freezing may affect the quality of your chosen food product.

[4 marks]

The candidate shows good knowledge and understanding of freezing. Answers may be a mixture of facts and extended answers and include several correct responses. Response will include some specialist terminology.	3-4 marks
The candidate shows some knowledge of the freezing but there is less clarity of understanding. Response will include one or two simple correct facts or one extended answer showing some understanding. Answer will use generic and simplistic terminology.	1-2 mark
No answer worthy of credit	0 marks

Indicative content:

- shelf life of product is extended / food can be used out of season
- bacteria in the food usually cause deterioration of the food
- freezing the water content of food
- food with large water content can be damaged by freezing/ and structures will collapse on thawing
- example may be given e.g. Sauces have high moisture content and are colloids
- food poisoning bacteria in the food become inactive /will not multiply
- bacteria are not destroyed /but are dormant
- bacteria will become active on thawing
- thawing may damage the structure of the food e.g some high water content sauces will separate on thawing synerisis occurs
- thawing often causes loss of sensory attributes e.g. colour, flavour, texture/Examples may be given e.g. texture may be drier
- sometimes loss of nutritional value
- main methods of freezing: blast, plate or cryogenic may be mentioned
- commercial freezing /fast ensures small ice crystals form
- slow freezing forms large ice crystals that damage food cell walls and rupture upon defrosting
- if not packaged correctly foods may have freezer burn which appears as greyish white marks e.g. remove herb garnishes before freezing

TOTAL FOR QUESTION 1 – 34 MARKS

Section B

Question 2 is about product analysis.

2 A design team carry out analysis on an existing product.

Information is given about a sponge pudding dessert.

2 (a) (i) Using the information on the opposite page, identify one feature that makes this sponge pudding unsuitable for large families with children.

Give a reason for your answer.

[2 marks]

Feature 1 mark.

Reason 1 mark.

Feature	Reason
Single portion	Family sized portions may be better. Have to buy several /more portions Could become costly if many needed
High in calories/fat/carbs/sugar	Not very healthy. e.g. childrens teeth may suffer from high sugar, unhealthy levels of fat, calories.

2 (a) (ii) Using the information on the opposite page, identify two features that make this product suitable for people with busy lifestyles. Give a reason for each feature chosen.

[4 marks]

Features 2 x 1 mark

Reasons 2 x 1 mark

Answers may be accepted across columns e.g. microwave and quick/saving time

Feature	Reason
Light spongy texture, inverted syrup topping	Appearance looks inviting, sensory appeal
Cooked in microwave	Quick- saves time
Budget/economical/cheap product	Easily available ingredients/equipment Makes this potentially a low cost, low skill budget product easy to manufacture making it cost effective for a large family possibly on limited income.
Can be frozen	Less shopping time, stored until ready for use
Ready made	Convenient, saves time
Simple instructions given for cooking	Easy for children to prepare themselves /low skill
High in carbohydrates and fat	High in energy for busy family members
Traditional pudding	Popular with all ages and family members
Any other relevant answers	

2(b) (i) Why do manufacturers carry out product analysis when designing new food products?

[3 marks]

Any of following responses: 3 x 1 mark each

Why carried out:

- Purpose to gain information about products similar to those being developed.
- To identify similar products already on the market/on sale/improve on competitors products.
- To identify best practice/desirable properties wanted for new product
- To aid compilation of design criteria
- To check product against design criteria/specifications
- To save time /do not always start from fresh but base new product on an existing one.
- Other relevant responses e.g. role of manufacturers/designers
- Examples of aspects investigated – to be credited in 2(b)(ii) not credited here.

2 (b) (ii) Describe how to carry out product analysis. In your answer include examples of questions that may be asked.

Quality of Written Communication will be assessed in this question.

[8 marks]

<p>The candidate has excellent knowledge of how product analysis is carried out. Response covers a wide range of investigative aspects i.e. methods, identify several questions, recording and/or evaluation/use of results Accurate, reasoned answers and extended answers will be given within a structured discussion Well-structured answer with appropriate use of specialist terminology and few grammatical errors.</p>	6-8 marks
<p>The candidate has good knowledge of how product analysis is carried out. Response covers a range of different investigative aspects. A range of correct answers and some extended answers may be given. There will be some explanations given and may include several examples of questions asked, to support knowledge shown but may have occasional inaccuracies and omissions. Well-structured answer with correct use of specialist terminology and some grammatical errors.</p>	3-5 marks
<p>This candidate shows some knowledge of product analysis. Response will cover a limited range of investigative aspects. Response will use simplistic factual answers Correct answers may be given but relevant details may be lacking e.g. does not cover how and evaluating results. Answer may be wholly a list of questions that could be asked during product analysis or have no answer worthy of credit. Poorly structured answer. May use some specialist terminology and have grammatical errors.</p>	0-2 marks

Indicative content:

How to carry out:

- Deconstruction/ disassembly of product
- May compare similar/existing products but from different manufacturers
- Aspects analysed related to sensory properties: appearance/shape/size/aroma/flavour /texture/colour/finish
- Aspects analysed related to consumer needs: Intended target group/ choice of ingredients/dietary suitability/nutritional aspects/ portion sizes/costs
- Aspects analysed related to production methods: cooking times/ storage/ shelf life, packaging/ labelling
- Products to be assessed against a potential specification
- Range of people may test to check preferences and non-bias
- Results will be recorded /on computer

- Can be carried out at varying stages of the design process e.g. research, development
- Use of primary/secondary research data
- Use of qualitative/quantative data
- Market research/surveys/questionnaires carried out
- Blind trials carried out
- Sensory testing carried out/ taste testing/ may give details of fair testing techniques
- Communicated to others in the team
- Results will be evaluated/ presentation of results e.g. profiles
- Development/improvements discussed/implemented
- Good aspects incorporated into potential new products
- Poor aspects eliminated in potential new products
- Other relevant responses

Examples of questions may be included: Expected that at least 2 questions included for award of credit. E.g.

- Who is the product aimed at?
- Does it meet the nutritional needs of the target group?
- Is the product for a special dietary need?
- Is the product for a specified age group?
- Is the product for a specific economic group/e.g. economy/luxury target group?
- Is the product for a specific cultural need?
- Is the product for those with allergies or medical needs?
- What type of packaging is used?
- How is the product stored?
- How is the product cooked?
- How many does it serve?
- Do you like /dislike the product?
- Where can product be improved?
- Other relevant responses
- Does the product have any special moral, ethical or environmental claims e.g. fair trade, farm assured, organic, etc.
- What nutrients are in the product and what % of GDAs does it contain?
- Does the product have any health benefits e.g. high in fibre, low in salt, sugar, kcals, fat etc.?

TOTAL FOR QUESTION 2 – 17 MARKS

Question 3 is about prototype development.

A bakery is testing a new fruit scone product and uses the following basic recipe.

3 (a) Using the recipe given above, list four design criteria that the bakery could use to help them to evaluate the success of this fruit scone.

An example is given below.

[4 marks]

DESIGN CRITERIA

Example. The scone should be an even, golden colour.

Any 4 creditable responses: 4 x 1 mark

Responses may relate to finish, texture, flavour, appearance or intended use but NOT repeat the example given.

- name shape e.g. round, square, triangular
- may give desired appropriate size or dimensions,
- cut with cutter/for consistency
- glazed/shiny/attractive top
- dusted with flour, egg wash, milk, sprinkled with sugar, decorate with fruit pieces
- any other relevant response
- Light, soft, airy texture
- well risen, uses a raising agent
- named ingredient e.g. .type of fat. Flour, fat, sugar
- named flavour e.g. fruit, cherry, sultanas, apricot, raspberry, cranberry, mixed fruits
- quality.. e.g. even distribution of fruit, glaze
- consistency of attributes
- suitability for a specific target/consumer group
- any other relevant response.

3 (b) Explain how the basic ingredients and method given on page 12 can be developed to meet the following consumer preferences.

[8 marks]

The candidate shows thorough understanding of the development and provides detailed evidence. Response will include correct responses in both aspects some of which will be extended answers. Specialist terminology is used appropriately.	6-8 marks
The candidate shows some knowledge and understanding of development. Answers may be a mixture of facts and extended answers and include two or three correct responses and may only have correct answers in one aspect. Response may include some specialist terminology.	3- 5 marks
The candidate shows limited knowledge of development with less clarity of understanding. Response will include one or two simple correct facts or answer is not worthy of credit. Correct answers may only be in one aspect. Answer will use generic and simplistic terminology.	0-2 marks

Indicative content:

Responses in all areas should relate to the list of ingredients or the method as given in 3 (a)
This is not awarded 2 x 4 marks but marks must consider overall quality of response.

A light, well risen scone with a good colour.

- addition of raising agent
- e.g. extra baking powder/ SR flour/ bicarbonate of soda
- adding air by sieving flour into the bowl
- rub fat in lightly with fingertips to keep air in mixture
- not coating sides with beaten egg when glazing.(egg prevents rise)
- even coating of egg so colour is not patchy
- cooking at the correct time/temperature/shelf position as given
- using correct proportion of ingredients ..too much milk will make scone heavy
- buttermilk can increase acidity/efficiency of raising agent.
- too much raising agent could cause collapse /over rising
- mix thoroughly so raising agent is evenly mixed in.
- any other relevant responses.

A range of savoury products.

- remove sweet ingredients i.e. sugar /fruit
- responses may suggest additional savoury ingredients to be added to the basic recipe: e.g. Savoury flavours: bacon bits, ham, cheeses, peppers,
- make into a scone based pizza/calzone with tomato, cheese and toppings.

- may identify different shapes of scone often used for savoury scones e.g. scone round, square/triangle
- use of savoury scone as a topping for casseroles e.g. cobbler
- e.g. spicy flavours: chilli, chorizo, cayenne pepper, mixed herbs, curry powder, sweet and sour, mustard, paprika, herbs
- any other relevant responses.

3 (c) Scones are often served with jam and whipped double cream.

Explain how this product could be adapted for consumers wanting a healthier option.

[6 marks]

The candidate shows thorough understanding of the development and provides detailed evidence. Response will include correct responses in that cover the whole product (scone and topping) some of which will be extended answers. Specialist terminology is used appropriately.	5-6 marks
The candidate shows some knowledge and understanding of development. Answers may be a mixture of facts and extended answers. Correct responses and may only relate to the whole product or just the scone or the topping . Response may include some specialist terminology.	3- 4marks
The candidate shows limited knowledge of development Response will include one or two simple correct facts or one extended answer showing some understanding. Correct answers may only be in one aspect. Answer will use generic and simplistic terminology.	1-2 marks
No answer worthy of credit	0 marks

Indicative content:

Scone adaptations:

- Increase fibre content/Use wholemeal flour or mixture of flour/seed/oat topping
- Use polyunsaturated fat/low fat alternative
- Vegetable oil/fat instead of animal based fat
- Use sweetener instead of sugar for sweet scones
- Make scones smaller in size
- Add fresh fruit to scone mixture to add vitamins
- Add seeds e.g. pumpkin seeds
- Add other dried fruits
- Use semi/skimmed milk to reduce fat content

Cream adaptations:

- Serve with yoghurt instead of cream
- Soya cream instead of cream
- Use low fat crème fraiche/ whipping cream in place of double cream
- Use fat free or 0% fat, reduced fat product

*Do not accept single cream as this will not whip/ thicken

Jam adaptations:

- Fresh fruit instead of sugar rich jam
- Low sugar jam
- Reduce quantity of jam used per scone.
- Fresh fruit puree
- Jam made with reduced sugar content e.g. diabetic jam
- Other relevant responses

TOTAL FOR QUESTION 3 – 18 MARK

Question 4 is about bread products and production.

4 (a) Explain why breads from other countries are becoming more popular in Britain [6 marks]

The candidate shows thorough understanding of the market trends and provides detailed evidence. Response will include correct responses some of which will be extended answers and may give examples of bread products/countries Specialist terminology is used appropriately.	5-6 marks
The candidate shows some knowledge and understanding of market trends. Answers may be a mixture of facts and extended answers, include two or three correct responses and may have examples Response may include some specialist terminology.	3- 4marks
The candidate shows limited knowledge of market trends but there is less clarity of understanding. Response will include one or two simple correct facts or one extended answer showing some understanding. Answer will use generic and simplistic terminology.	1-2 marks
No answer worthy of credit	0 marks

Indicative content:

- Increased travel
- Media influence e.g. TV cookery programmes raising awareness
- Consumer like to try new flavours/more adventurous
- New technologies
- Multi-cultural society
- Greater awareness of other cultures
- Traditional equipment is now widely available
- Traditional ingredients more widely available
- Wider range available from manufacturers
- More sales outlets available selling breads from other countries.
- May give examples of foreign bread products and relevant countries.
- Other relevant answers

4 (b) Successful bread making depends on using the correct ingredients and methods.

Why are each of the following important in bread making?

[8 marks]

*This question is marked as 4 x 2 marks

Strong flour:

- Adds bulk
- High gluten/protein content
- Higher gluten than other flours
- Helps give a risen shape/structure
- gives a strong elastic /stretchy mixture

Salt:

- Adds flavour/ seasoning
- Preservative
- Controls action of yeast
- Strengthens the gluten

Vitamin C tablets:

- Speeds up reaction of yeast
 - Known as a 'bread improver'/Used in Chorley wood process
 - Improves texture
 - Often used in large scale production to cut production time
- *Does not add nutritive value as any Vit c is destroyed by heat..

Kneading:

- Helps distribute yeast
- Gives an even texture
- Aids gluten development
- Gluten development helps structure formation/stretching dough
- Gives smoother finish to dough
- Makes a softer dough

4 (c) In bread making yeast is used as a raising agent.

Even if the correct amount of yeast is used, sometimes the bread does not rise.

Explain why this may happen.

[6 marks]

The candidate shows thorough understanding of the topic and analyses cause and effect and provides detailed explanation of all conditions needed for yeast to work. Response will include three or more conditions correct responses most of which will be extended answers and show clarity of reasoning. Specialist terminology is used appropriately.	5-6 marks
The candidate shows some knowledge and understanding of the topic and provides some correct analysis of cause and effect. Explanation may cover only two conditions for yeast to work. Answers may be a mixture of facts and extended answers. Correct answers may only come from two aspects. Response may include some specialist terminology.	3-4 marks
The candidate shows limited knowledge of the topic but there is less clarity of understanding. May only cover one or two conditions for yeast to work. Response will include one or two simple correct facts or generic responses. Answer will use simplistic terminology.	1–2 marks
No answer worthy of credit.	0 marks

Indicative content:

Generic responses may include:

- Yeast requires certain conditions to work.
- May list conditions warmth, food, moisture and time
- If conditions are not met yeast won't work and bread won't rise.

Explanations may include:

- Requires warmth -Too high a temperature kills the yeast action
- Requires moisture- insufficient liquid may be added
- Requires food- sugar and flour usually provide this.
- Requires time- dough may not be given enough time to work
- Insufficient time/temp for CO₂ to be produced by yeast.
- Proving inadequate means dough will not rise and be heavy in texture.
- Over kneading /over proving causes collapse of structure
- Yeast may be stale/out of date and therefore not work.
- May be wrong type of yeast used: fast action, fresh yeast, dried yeast
- Incorrect ingredients e.g. low gluten content flour so no elasticity/structure formed.
- PH conditions/Excess contact with salt/ acids/ alkalis prevents yeast working
- Incorrect use of bread maker e.g. setting wrong programme, not following manufacturer's instructions.
- Faulty equipment e.g. bread maker, oven.

TOTAL FOR QUESTION 4 – 20 MARKS

Question 5 is about the use of materials and components in food production.

5 Eggs are used in a wide variety of dishes and have many functions.

5 (a) Complete the table below by:

- choosing the function from the following list that matches each definition:

Aeration Binding Coagulation Coating Emulsification Glazing

- giving an example of a dish where each function is used.

An example has been completed for you.

[8 marks]

No marks given for the example. *Function and example are marked separately and do not require both to be correct for award of credit.

Function	Definition	Example
Enriching Example given - do not credit if repeated.	Adding nutrient content to the dish	Béchamel sauces.
Coagulation	When eggs are heated they change colour, thicken and become firm.	Custards, cakes, cooked eggs, quiches or other relevant dish
Emulsification	When eggs stop oil and water from separating	Mayonnaise , salad dressings, cakes, or other relevant dish
Aeration	When eggs allow air to be trapped in the mixture	Cakes, meringues swiss rolls, soufflés or other relevant dish
Glazing	When eggs are used to add a glossy finish.	Pies, breads, scones, pastry products or other relevant dish

5 (b) Eggs are used to enrich dishes by adding nutritive value.

Name two micronutrients (vitamins and minerals) found in eggs.

State why each micronutrient is needed by the body.

[4 marks]

2 x 1 mark for names (technical names not required these are only included below for reference purposes).

2 x 1 mark for correct function of nutrient

*Calcium is mainly present in shell only therefore not acceptable

Vitamin A/ Carotene/ Retinol

- Healthy eyesight
- for mucus membranes moist and free from infection
- healthy skin tissue
- normal growth of children particularly teeth and bones

Vitamin D/ Cholecalciferol

- formation of teeth and bones
- promotes digestion /absorption of calcium and phosphorous
- helps prevent rickets/growth retardation/osteoporosis

Vitamin E

- aids fertility

Vitamin K

- healthy blood
- Coagulation of blood e.g. helps after injury.

Vitamin B's Riboflavin B2 thiamine /Niacin/ nicotinic acid/Cobalamin B12

- release of energy/particularly from amino acids and fats(B2.12)
- normal growth e.g. skin, tongue (B2)
- Maintenance nervous system.
- Helps prevent Beri Beri
- Helps in pregnancy *nicotinic)

Iron

- healthy blood
- haemoglobin/oxygen in blood
- helps prevent anaemia

The following are not necessary for GCSE but some candidates may correctly include these.

Phosphorous

- maintenance of normal bones and teeth
- function of cell membranes
- energy metabolism

Iodine

- production of thyroid hormones, functioning of thyroid gland
- energy metabolism
- normal skin and nervous system function

Selenium

- protects cells against oxidative damage
- aids immune system
- thyroid gland functioning
- maintenance of hair and nails

5 (c) A café identifies the following problems. Explain what may have caused each problem.

[3x3 marks]

3 x 1 mark for each section.

Fishcakes fall apart when cooked.

- No coating used e.g. breadcrumbs
- No binding agent used e.g. egg to hold breadcrumbs in place.
- Mixture is too dry
- Over handling during cooking
- Temperature not hot enough to seal coating
- Incorrect proportions of ingredients
- Potatoes not thoroughly mashed so lumps mean uneven cooking/texture.

A batch of baked egg custards are burnt on top but the filling is not set.

- Poor quality control checks
- Incorrect oven temp/ Oven temp too high so burns top before letting filling set
- Oven temp too low- coagulation not possible for filling.
- Proportions of egg to milk is incorrect / meaning insufficient protein for setting or coagulation
- Too much or too little filling/ pastry too thick to prevent heat transferring to filling
- Too short oven time
- Incorrect shelf in oven
- Inaccurate portion control for batch /scaling up incorrect

Chocolate muffin cakes have a close, dry texture.

- Oven temperature not checked before use
- Oven is too hot
- Baked on too high shelf in the oven
- Insufficient raising agent
- Under aerated- raising agent not evenly mixed.
- Mixture is too wet or too stiff
- Over beating of mixture- beaten for too long so raising agent activates before cooked
- Proportion of cocoa is too high –drying
- Cooked for too long
- Cake mixture over mixed. Muffins take little mixing time.
- Poor portion control/measuring of ingredients

TOTAL FOR QUESTION 5 – 21 MARKS

Question 6 is about technological developments.

6 (a) Describe how computers can be used when designing a label for a food product.

[4 marks]

4 x 1 mark for any of the following points:

- Use of CAD
- DTP for images of the product.
- Can make nets of the packaging
- Checks on accuracy of size and shape of label.
- Can research current legislation for labelling
- Use nutritional analysis programmes to identify the nutrient content
- Makes labels professional
- Labelling e.g. list of ingredients can be changed quickly/ if batch changed or adapted later.
- Printers can be attached for printing out label/images etc.
- Modelling of packaging with the labelling on
- Bar codes
- Logo production

6 (b) Discuss the advantages and disadvantages of using computers during large scale production of food products.

[6 marks]

The candidate shows good knowledge of the use of computers and responses. Response will include several correct facts or extended answers showing some understanding and may refer to scaling up process. Will include correct responses for both advantages and disadvantages, one aspect may be stronger. Answer will use specialist terminology.	5-6 marks
The candidate shows some knowledge of the use of computers and responses. Response will include correct facts or extended answers showing some understanding and may refer to scaling up process. May include correct responses from only one aspect. Answer may use some specialist terminology.	3-4 marks
The candidate shows some knowledge of the use of computers but there is less clarity of understanding. Response will include simple correct facts and may include only advantages or disadvantages. Answer will use generic or simplistic terminology.	1-2 marks
No answer worthy of credit.	0 marks

Indicative content:

Advantages:

- Saves time/quick
- CAM /accuracy for large scale
- Greater accuracy and consistency e.g. nutrient analysis
- Scaling up costs/quantities
- Avoids human error
- Can do jobs that humans cannot e.g. deal with larger/smaller numbers
- Reliability.
- Carry out and monitor critical controls
- Workers do not have to carry out more dangerous tasks. Safety not compromised.
- Quality assurance checks e.g. PH, shelf life, weight checks, metal detections, viscosity, package seals
- Design ideas can be varied and recipe ingredients adapted easily
- Need less staff on workforce/can save money in long term
- Can produce greater output/larger scale
- Can help predict/ set profit margin before production begins
- E.g. avoiding mistakes in pricing
- Products more consistent /exactly the same.

Disadvantages:

- Can be expensive to set
- Less work for people
- Expensive if it breaks down.
- Needs skilled workers e.g. computer programmers, ICT engineers
- Training needs for staff
- Skilled workers will cost more in terms of pay
- Specialist equipment
- E.g. Programmes needed e.g. spread sheet

TOTAL FOR QUESTION 6 – 10 MARKS