



Pearson

Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE

In Design and Technology (5FT02)

Paper 1 Knowledge and understanding of Food
Technology

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Mark
1	D	1

Question Number	Answer	Mark
2	D	1

Question Number	Answer	Mark
3	C	1

Question Number	Answer	Mark
4	B	1

Question Number	Answer	Mark
5	C	1

Question Number	Answer	Mark
6	A	1

Question Number	Answer	Mark
7	A	1

Question Number	Answer	Mark
8	D	1

Question Number	Answer	Mark
9	A	1

Question Number	Answer	Mark
10	A	1

Question Number	Answer	Mark
11 (a)	Electric whisk/whisk/mixer (1)	To aerate mixture
	Stick/wand/hand blender/processor / beaker (1)	To mix and puree foods
	Citrus juicer	To remove/extract juice and pips (1)
	Griddle	To cook/fry/caramelize/brown meat/bread/vegetables/fruit (1)
	(4 X 1)	(4)
	Total marks	
		4

Question Number	Answer	Mark
11 (b) (i)	<p>One answer given from:</p> <ul style="list-style-type: none"> • Cow/sheep/goat (1) 	
	(1 X 1)	(1)
	Total marks	1

Question Number	Answer	Mark
11 (b) (ii)	<p>One answer given from:</p> <ul style="list-style-type: none"> • Soya/oat/coconut/rice/almond (1) 	
	(1 x 1)	(1)
	Total marks	1

Question Number	Answer	Mark
11 (c)	<p>One reason described from:</p> <ul style="list-style-type: none"> • Whole milk is higher in fat (3.8%) than skimmed milk (1) because it has had nothing added or removed during processing. (1) • Skimmed milk contains 0.1% fat as it has had the fat removed during processing (1) and therefore contains lower levels of the fat soluble vitamins (ADEK).(1) 	
	(1 X 2)	(2)
	Total marks	2

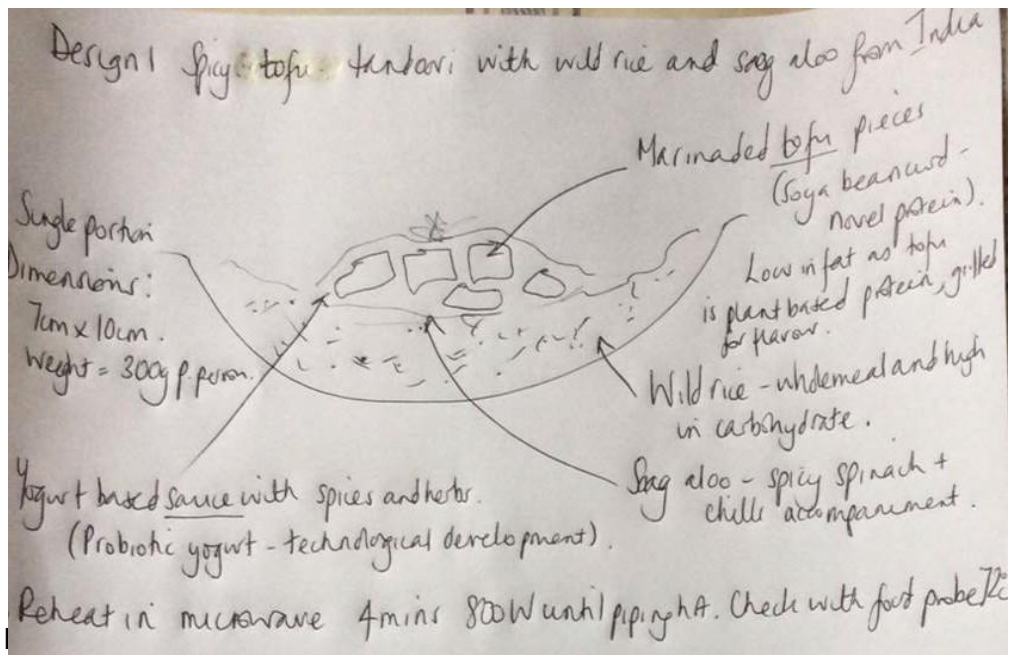
Question Number	Answer	Mark
11 (d)	<ul style="list-style-type: none"> • Date marks must be checked (1)so that milk can be used on a rotational basis. (1) • Fresh milk should be stored for up to 3 or 5 days in refrigerated(1) conditions at 1-4'C (1) • Milk should be kept in a clean, covered carton/container. (1) • Keep milk away from strong smelling foods. (1) • Processed milk should be treated as fresh milk once opened (1). • Keep for no longer than 3-5 days once opened (1) • Can be frozen below – 16 degrees C (1) for up to one month(1) <p style="text-align: right;">(3 X 1)</p>	(3)
	Total marks	3

Question Number	Answer	Mark
11 (e) (i) AND (ii)	<ul style="list-style-type: none"> • Sterilisation (1): Milk is heat treated to 120'C for 15 minutes (1) so that all microorganisms are destroyed (1) • UHT (Ultra Heat Treatment) (1): Heat treated to 132'C for 1 second (1) so that all microorganisms are destroyed (1). • Dehydration (1): Milk is heat treated to evaporate water to produce a powder (1) to prevent the growth of microorganisms (1). • Evaporation (1): The liquid content is reduced to an optimum level to prevent the growth of microorganisms (1). Milk is sterilised at 120'C for 10 minutes (1). • Condensation (1): Milk is evaporated, homogenised and sugar added (1) to prevent the growth of microorganisms (1). • Canning (1): Milk is sterilised(1) to prevent bacterial growth(1) 	(3)
	Total marks	3

Question Number	Answer	Mark
11 (f)	<p>Two descriptions from:</p> <ul style="list-style-type: none"> • Skimmed/semi-skimmed milk (1) to reduce saturated fat/cholesterol content which can contribute to clogging of arteries (1). • Replace bacon and/or sausages with low fat alternative (lean beef/chicken/Quorn/fish/soya) (1) to reduce overall fat content, but retaining protein content (1). • Replace meat with all or half vegetables (1) to increase fibre content/polyunsaturated fat, which can reduce absorption of fat in the intestine/bulk diet to reduce hunger (1). • Remove rind and fat from bacon (1) to reduce saturated fat content (1). • Cut down the portion size I bacon rasher/1 slice bread/no sausage/ 1 egg (1) to reduce the overall number of calories. • Grill bacon/sausages/bread/tomatoes/mushrooms (1) rather than fry to reduce fat content, as this is a dry method of cooking (1). Scramble/poach/par-boil eggs (1) rather than frying in oil/lard to reduce additional fat content from cooking method (1). • Choose wholemeal bread (1) to increase fibre content/aid digestion/bulk out diet and satisfy appetite (1). • Choose porridge/muesli/wholegrain cereals (1) instead of cooked breakfast to reduce total fat content and improve fibre content (1). • Add more fruit/vegetables (1) to improve vitamin C content.(1) <p style="text-align: right;">(2 X 2)</p>	(4)
	Total Marks	4
	Total Marks for Question 11	18

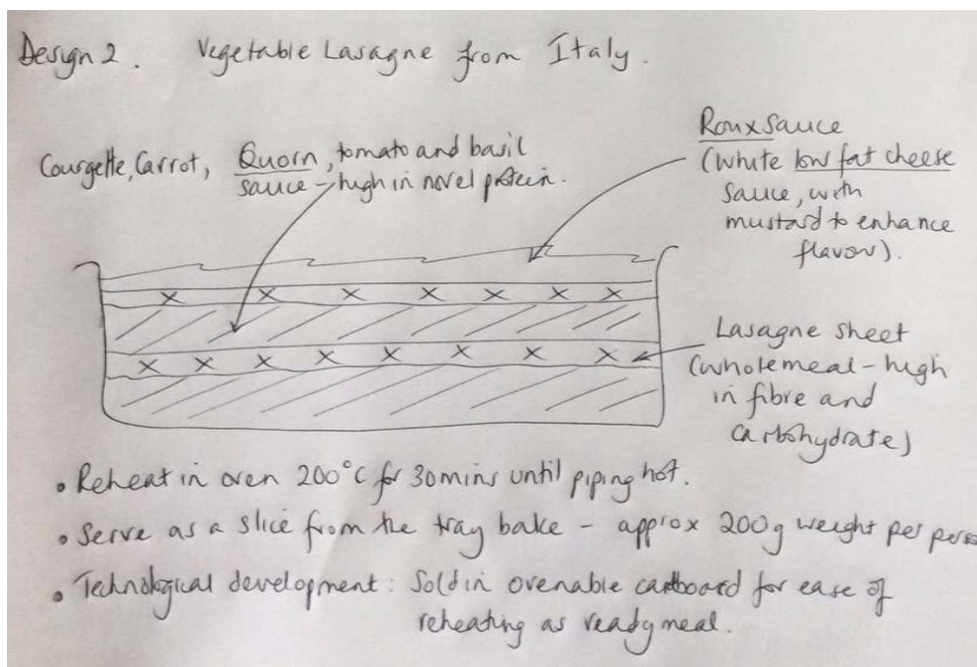
Question Number	Answer	Mark
12	<p>Design idea 1</p> <p>Candidates may answer any specification point in either graphical form or by annotation.</p> <ul style="list-style-type: none"> • Contain a novel protein food/meat analogue Soya/quorn/TVP/Tofu/Quinoa (1) • Be identified from a named country of origin France/Italy/China/Spain/India/Japan/UK etc (1) • Be high in carbohydrate Rice/potato/pasta/bread/couscous/bulgar wheat /noodles / lentils/Quinoa/ pearl barley. (1) • Be low in saturated fat High vegetable content/whole grains/ choice of cooking method (grill/poach/fry). Low fat ingredients/ reduced fat recipe/ sourcing low fat alternatives /use of other realistic types of fat e.g. olive oil, rapeseed etc. (1) • Be able to be reheated easily: May be reheated in oven/grill/ microwave/all ingredients have been previously cooked, so may be eaten cold. (1) • Contain one sauce making method Roux/béchamel/all in one/blended/gravy/veloute/ emulsified sauce (mayonnaise) (1) <i>Do not accept a flavoured sauce (e.g cheese sauce) – technique must be named.</i> • Be a single portion Indication of size/weight with measurements or equivalent. (1) Need a range of weights (200 – 400g) for example, cannot award 200g/300g for 2 marks. <ul style="list-style-type: none"> ○ Weight(1) ○ Size (1) • Contain one named technological development Clean label/smart food/modified starch/nutraceuticals/plant sterols/prebiotics/probiotics/sweetener/stabiliser/emulsifier/gelling agent/cook chill. (1) 	(8)

Example of candidate response:



Marks for design idea 2 can only be awarded where specification points are resolved differently from design idea 1.

Example of candidate response:



(8)

Total marks

16

Question Number	Answer	Mark
13 (a)	Credit one given from: <ul style="list-style-type: none"> • Short crust pastry/ rich short crust pastry/ pate sucree (1) 	(1)

Question Number	Answer	Mark
13 (b)	<ul style="list-style-type: none"> • The pastry case is baked blind (1) with no filling to ensure the case is dry and firm/hard. (1) • Baking blind (1) technique is used to pre-cook the case prior to adding the filling to improve the texture. (1) • Brushing pastry case with beaten egg (1) half way through cooking to prevent soggy base. (1) 	(2)

Question Number	Answer	Mark
13 (c)	Credit up to two marks for explaining each component: <ul style="list-style-type: none"> • Meringue foams are created by trapping/whisking air (1) as protein is stretched (1) and denatured in egg white (1) / egg white proteins start to coagulate at 60°C (1) until the egg white proteins harden and change from transparent to a solid white colour. (1) • Pastry: Enriching (1) and binding (1) pastry by adding additional protein/fat from an egg yolk. (1) • Lemon curd layer: Thickening/enriching sauces (1), due to the coagulation of egg yolk proteins. (1) The proteins of egg yolk start to coagulate at 70°C (1) and continue until the egg yolk is dry and hard. (1) <p>EITHER / OR</p> <ul style="list-style-type: none"> • Lemon curd layer: Emulsifying properties (1) allow oil and water to be mixed to an emulsion without separating. (1) • The proteins of egg yolk start to coagulate at 70°C (1) and continue until the egg yolk is dry and hard. (1) 	(4)

Question Number	Answer	Mark
13 (d)	<p>Credit any two given from:</p> <ul style="list-style-type: none">• Unique design (1)• Personalised message, image or decoration (1)• Fresh (1)• High quality (1)• Made to order (1)• Specific shape/size/dimensions/colour (1)• Caters for special diets (1)• No waste (1)• Handmade (1)• Less ingredients, so cheaper (1)• Easy to adapt/change recipe to meet consumer requirements/specification(1) <p style="text-align: right;">(2 X 1)</p>	(2)

Question Number	Answer	Mark
13 (e) (i)	Luxury: <ul style="list-style-type: none"> Layered product (1) with many different colours/textures and flavours (1) Piped meringue (1) to give a pleasing decoration (1) Single portion (1) to aid serving (1) Crimped pastry edge (1) to give good presentation (1) Caramelised meringue (1) to give golden brown colour (1) <p style="text-align: right;">(1 X 2)</p>	(2)
13 (e) (ii)	Moral: <ul style="list-style-type: none"> Free range eggs (1) from chickens that have been well looked after (1) UK flour/butter/lard for pastry (1) to support local farmers (1) Recycled packaging (1) to ensure sustainability (1) Large family-size dessert (1) to allow serving to be according to appetite to reduce wastage and landfill (1) Clean labels (1) identify all ingredients and additives <p style="text-align: right;">(1 X 2)</p>	(2)
13 (f)	Evaluation to address the following issues: <ul style="list-style-type: none"> Internet: 24/7, delivered to door, reduces petrol / saves time and labour / needs wifi access, no cash, can't choose own produce or date marks, loyalty points, good for remote access, returning from holiday, delivery charge, choose delivery option, click and collect, use favourites option to reorder goods. Supermarkets: 7 days a week, click and collect, delivery options, self select food, check date marks and quality of food, loyalty points, take advantage of offers in store, buy more than need due to offers recipe inspiration. 	(6)
Total marks		19
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1 - 2	Candidate identifies the area(s) of comparison with no development OR identifies and develops one area. Shows limited understanding of the comparison. Writing communicates ideas using everyday language but the response lacks clarity and organisation. The student spells, punctuates and uses the rules of grammar with limited accuracy.
Level 2	3 - 4	Candidate identifies some areas of comparison with associated development showing some understanding of the comparison. Writing communicates ideas using D&T terms accurately and showing some direction and control in the organising of material. The student uses some of the rules of grammar appropriately and spells and punctuates with some accuracy, although some spelling errors may still be found.
Level 3	5 - 6	Candidate identifies a range of areas of comparison with associated developments showing a detailed understanding of the comparison. Writing communicates ideas effectively, using a range of appropriately selected D&T terms and organising information clearly and coherently. The student spells, punctuates and uses the rules of grammar with considerable accuracy.

Question Number	Answer	Mark
14 (a)	Credit any two given from: <ul style="list-style-type: none"> • Protein (1) • Carbohydrate (1),(accept sugar (1), starch (1) do not accept fibre) • Fat. (1) <p style="text-align: right;">(2 X 1)</p>	(2)

Question Number	Answer	Mark
14 (b)	Credit any one given from: <ul style="list-style-type: none"> • Vitamin B (1) • Thiamine (1) • Niacin (1) • Riboflavin. (1) <p style="text-align: right;">(1 X 1)</p>	(1)

Question Number	Answer	Mark
14 (c)	<ul style="list-style-type: none"> • Age / Life stage: (1) – Our need for energy can depend on our life stage. Children and teenagers need more energy due to their high metabolic rate. During childhood, periods of rapid growth and development place a greater requirement for energy / to allow the body to perform these functions / older people find their metabolism slows down and their physical activity levels reduce, leading to a decreased need for energy. (1) • Pregnancy and lactation: (1) – pregnant women need more energy due to support the growing fetuses and produce milk for their babies. During pregnancy, an expectant mother must consider herself and her unborn baby’s needs, to allow for healthy growth and development of the baby, as well as her own health. (1) • Gender: male or female: (1) - Male adult needs more energy due to males generally having a higher metabolic rate. Men and women have different needs for energy because of their different body structure, build, and weight and activity levels. (1) • Size or body weight: (1) - a person smaller in size has a larger surface area per unit volume. Thus, the rate of heat loss is high.(1) 	(6)

- Occupation: (1) - Occupation – an active person requires high energy due to the person does more physical work.

People in different occupations use different amounts of energy. For example, 8 hours of active work might use 1800kcal. 8 hours sitting at a desk might use 900kcal.
(1)

- Lifestyle: (1) – An active person requires higher energy than a passive person (1)
- Amount of Exercise and other physical activity: (1) - It is important to have exercise in your daily life at all ages. This helps to keep us fit and active with a healthy body and mind / every time you move, you use energy / the more strenuous the activity, the more energy you use. (1)
- Climate: (1)– people living in cold countries need more energy to maintain body temperature.(1)
- Genetics : (1) – genetics disposition in certain person may decide different metabolic rate.(1)
- Health: (1) – In sufficient secretion of thyroxine hormone may cause a lower metabolic rate.(1)

(3 X 2)

Question Number	Answer	Mark
14 (d)	<ul style="list-style-type: none"> • Nutritional content of foods / relevance to healthy eating guidelines (1), allows consumers to choose foods for specific nutritional characteristics, e.g. low in fat (1). • The Eat Well Plate (1), produced by the FSA, is a good example of how manufacturers are trying to promote healthy eating / through colour coding and healthy eating statements. e.g. 'Part of your 5 a day' (1). • Tabulated nutritional values (1) allow consumers to compare the values against EAR values and by product comparisons (1). • Traffic light coding (RAG) (1) against EAR values / shows consumers the main nutritional content (1). • Reference Nutrients Intake (RNI) (1) indicates the desirable amount of nutrient intake per day (1). • Recommended Daily Allowance (RDA) (1) indicates the desirable amount of nutrient intake per day (1). • Allergy advice (1) to identify list of allergens for special diets/avoid health risks (1). <p style="text-align: right;">(2 X 1)</p>	(2)

Question Number	Answer	Mark
14 (e) QWC	<p>Indicative content</p> <p>Discussion to address the following issues:</p> <ul style="list-style-type: none"> • Industrial machinery used for large scale production of food, has a far greater size and capacity than domestic equipment. • Industrial machinery can operate at high speed, ensuring a fast/efficient/quick production process to meet consumer demand. • Machinery is fully automated and operated by computers (CIM/CAM) to allow fine controls linked to safety, quality and hygiene throughout the production process. • Machinery is powered by electricity to aid large scale production of food. • The safety of these pieces of equipment is regularly checked, as part of the HACCP risk assessment, and annually inspected. • Metal detectors (1)/Scanners(1)/Senors(1) use dto monitor quality and safety (1). • The operating, maintenance and energy costs of industrial equipment are far greater than domestic equipment. • Machinery is generally made from stainless steel, to prevent contamination, eliminate corrosion and aid cleaning. • Machinery must be robust, strong, and easy to clean and maintain to ensure food safety. • Stainless steel is non-corrosive and can withstand high and low temperatures to aid the production of cooked and chilled foods. • Rapid heating and cooling systems allow temperatures to be achieved instantly to aid food safety. • Time and temperature controls operate with various alarm systems. This can help to prevent cross- contamination and the reduced quality of the end product. • Wet and dry ingredients are stored separately until mixing and combining to prevent cross- contamination and food spoilage. • Weighing scales are calibrated and checked to ensure accurate measurement and weighing of ingredients. • Conveyor belts and pipes allow movement of ingredients around the factory. 	(6)
Total marks		17

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1 - 2	Candidate identifies the issues with no development OR identifies and develops one area. Shows limited understanding of the issues. Writing communicates ideas using everyday language but the response lacks clarity and organisation. The candidate spells,
Level 2	3 - 4	Candidate identifies some issues with associated developments showing
		D&T terms accurately and showing some direction and control in the organising of material. The candidate uses some of the rules of grammar appropriately and spells and punctuates with some accuracy, although some spelling errors may still be found.
Level 3	5 - 6	Candidate identifies a range of issues with associated developments showing a detailed understanding of the issues concerning safety and quality. Writing communicates ideas effectively, using a range of appropriately selected D&T terms and organising information clearly and coherently. The candidate spells, punctuates and uses the rules of grammar with considerable accuracy.

