TECHNOLOGY AND LIVING (FASHION, CLOTHING AND TEXTILES)

PAPER 1

(Sample Paper)

Time allowed: 1½ hours
This paper must be answered in English

1. This paper consists of THREE sections, A, B and C. Section A carries 15 marks. Section B carries 25 marks. Section C carries 30 marks.

2. Attempt ALL questions. Write your answers in the answer book provided.

3. Answers should be presented in an orderly way.

4. Tables and diagrams should be included wherever appropriate.

5. Graph paper and supplementary answer sheets will be supplied on request. Write your candidate number on each sheet, and fasten them with a string inside the answer book.
SECTION A – Multiple Choice Questions

This section carries 15 marks. Answer ALL questions in this section.

1. Which of the following seams adds strength to the joining part and stops fraying?
   A. plain seam
   B. cup seam
   C. lap seam
   D. french seam

2. Calendering is a mechanical finishing process which used to
   (1) smooth the surface.
   (2) provide various surface effects.
   (3) lift the fibres from the fabric to form a soft fibrous surface.
   A. (1) and (2) only
   B. (1) and (3) only
   C. (2) and (3) only
   D. (1), (2) and (3)

3. Which of the following are design elements
   (1) line and direction
   (2) contrast and harmony
   (3) shape and size
   A. (1) and (2) only
   B. (1) and (3) only
   C. (2) and (3) only
   D. (1), (2) and (3)

4. Cool colours are colours that associated with
   (1) peace
   (2) passion
   (3) sky
   A. (1) and (2) only
   B. (1) and (3) only
   C. (2) and (3) only
   D. (1), (2) and (3)

5. Which of the following pairs of colours is an example of complementary colours?
   A. blue-violet
   B. yellow-violet
   C. red-orange
   D. blue-green
6. Which of the following are the advantages of working on a dress stand before you begin designing?

(1) It helps generate ideas three-dimensionally.
(2) It allows visualizing the drape of different fabrics.
(3) It permits pinning and creating drapes from different angles.

A. (1) and (2) only  
B. (1) and (3) only  
C. (2) and (3) only  
D. (1), (2) and (3)

7. Study the following drawing.

What type of drawing does this belong to?

A. fashion illustration  
B. production sketch  
C. rough sketch  
D. design sheet

8. Which of the following fabrics is suitable for making evening gown?

A. satin  
B. flannel  
C. garbardine  
D. silk tweed
9. Which principle of design is demonstrated by the top shown in following picture?

A. proportion  
B. repetition 
C. rhythm  
D. graduation

10. Study the diagram shown below.

What type of knit is demonstrated in the diagram?

A. single jersey  
B. jacquard 
C. interlock  
D. warp knitting

11. Which of the following fibres is a synthetic fibre?

A. polyester  
B. viscose rayon 
C. flax  
D. wool

12. Which of the following correctly shows the percentage of water regain of the fibres in ascending order?

A. nylon, cotton, silk, acetate rayon  
B. acetate rayon, nylon, silk, cotton 
C. nylon, acetate rayon, cotton, silk  
D. nylon, silk, acetate rayon, cotton
Questions 13 and 14 refer to the following table which shows the burning tests results of some fibre samples.

<table>
<thead>
<tr>
<th>Fibre sample</th>
<th>Burning</th>
<th>Flame</th>
<th>Smell</th>
<th>Ash / Residue</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Burns easily and quickly</td>
<td>Yellow</td>
<td>Burning paper</td>
<td>Grey ash</td>
</tr>
<tr>
<td>Q</td>
<td>Burn easily and quickly</td>
<td>Yellow</td>
<td>Burning paper</td>
<td>Light grey ash</td>
</tr>
<tr>
<td>R</td>
<td>Fuses and shrinks away from flame</td>
<td>Black</td>
<td>Vinegar</td>
<td>Melt to a hard shiny black bead</td>
</tr>
<tr>
<td>S</td>
<td>Fuses and shrinks away from flame</td>
<td>Luminous red</td>
<td>Slightly sweetish</td>
<td>Hard round brittle black bead</td>
</tr>
</tbody>
</table>

13. Which of the following combinations correctly shows the identity of the fibre samples?

A. cotton viscose acetate
B. linen cotton acetate
C. viscose linen polyester
D. cotton linen polyester

14. Which of the following correctly describes the chemical property of fibre S?

A. It can be degraded by acids and alkalis.
B. It turns yellow when exposed to chlorine bleach.
C. It can be permanently shaped by heat.
D. It can be damaged by alkalis but not acids.

15. Which of the following descriptions about dyeing is incorrect?

A. Dye is water soluble.
B. Pigment diffuses into the fibre.
C. Dye migrates from the dye liquor to the fibre.
D. Both dye and pigment can be used for printing.
SECTION B – Design Questions

This section carries 25 marks. Answer ALL questions in this section.

1. You are going to join a uniform design competition organized by the school. You are required to design a winter blazer for multifunctional purposes.

   (a) Sketch a suitable design with annotations on how the design features used can fulfill the requirements. (5 marks)

   (b) Suggest TWO suitable fabrics for the design. Explain your choice. (4 marks)

   (c) Suggest with reasons, THREE physical tests for evaluating the serviceability of the fabric. (6 marks)

   Total: 15 marks

2. A pop singer is going to hold a concert at the Hong Kong Stadium in July.

   (a) Design and sketch TWO different garments for her to wear with the given top when performing the types of songs, one for romantic songs and one for rock and roll songs. Label the design features. (5 marks)

   (b) Draw TWO suitable accessories to complete a total look for each outfit. (2 marks)

   (c) Suggest TWO different fabrics and are suitable for making the given top in (a). Justify your choice of fabric. (3 marks)

   Total: 10 marks
SECTION C – Structured Questions

This section carries 30 marks. Answer ALL questions in this section.

1. Recently, many fathers work across border in China every week. Discuss the implications for each member of the family in this situation.
   - the father (3 marks)
   - the mother (3 marks)
   - the child (3 marks)
   Total: 9 marks

2. (a) Viscose is called ‘artificial silk’. Compare the difference between the properties of the fabrics produced from silk and viscose filaments. (4 marks)

   (b) Suggest a fabric finish to:
       (i) make silk fabric water proof. (1 mark)
       (ii) reduce creasing and shrinkage of viscose fabric. (1 mark)

   (c) Suggest with a reason, a suitable fabric structure for making the following items.
       (i) silk scarves (2 marks)
       (ii) a tight-fit one-piece printed dress made from viscose lycra ®. (2 marks)
   Total: 10 marks

3. The first stage of the design process involves thorough research.

   (a) Suggest FOUR ways that you can get your inspiration from. (4 marks)

   (b) Explain the use of mood board in fashion designing. (3 marks)

   (c) The fabrics and colours for a design will depend largely on the season your collection is aimed at. Illustrate this statement with suitable examples. (4 marks)
   Total: 11 marks

END OF PAPER
1. This paper consists of THREE sections, A, B and C. Each section carries 40 marks.

2. Attempt TWO sections only. Write your answers in the answer book provided.

3. Answers should be presented in an orderly way.

4. Tables and diagrams should be included wherever appropriate.

5. Graph paper and supplementary answer sheets will be supplied on request. Write your candidate number on each sheet, and fasten them with a string inside the answer book.
SECTION A  
Culture and Fashion Design

Answer ALL questions in this section.

Short Questions:
1. Explain how fashion trends are affected by the following factors. Illustrate your answer with suitable example.
   (a) life styles  
   (b) economic background  

   

   Total: 6 marks

2. Compare the career prospects of working as a designer for haute couture market and ready-to-wear market.  

   Total: 4 marks

Data analysis questions:
3. Study the following two pictures of wedding dresses.

   Photograph I  
   Photograph II  

   (a) Give TWO different design features used in each of the wedding dress shown.  

   (b) Compare the silhouette of the two wedding dresses.  

   (c) (i) State the colour scheme used in each of the above wedding dresses.  

   (ii) Explain how the cultural beliefs affect the choice of colours in these two wedding dresses.  

   (d) For the wedding dress shown in photograph II, suggest TWO accessories that carry symbolic meaning. Explain your answer.  

   Total: 15 marks

Essay Question:
5. Discuss the impact of Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA) on the opportunities of fashion designers in Hong Kong.  

   Total: 15 marks
SECTION B  
Textiles and Textile Technology

Answer ALL questions in this section.

Short Questions:
1. (a) What is the advantage of blending the following fibres?
   (i) polyester/cotton   (1 mark)
   (ii) wool/acrylic     (1 mark)

   (b) Describe TWO ways to produce blended fabric.     (2 marks)

   (c) How does the level of twist affect the yarn properties?  (2 marks)

   Total: 6 marks

2. (a) Suggest a suitable printing method to achieve the following effects.
   (i) coloured pattern printed on a white fabric   (1 mark)
   (ii) fine and light coloured lines printed on a dark coloured fabric.  (1 mark)

   (b) Why permanent pleating cannot be done on cellulosic fabric? Which fabric is more suitable for this treatment?   (2 marks)

   Total: 4 marks

Data analysis questions:
3. An experiment to find out the property of cotton and polyester fabrics was carried out by four groups of students. The diagram below shows how the water contact angle ($\theta$) is measured.

   ![Water contact angle diagram]

   The results are shown in the following table.

<table>
<thead>
<tr>
<th>Water contact angle (°)</th>
<th>Cotton fabric</th>
<th>Polyester fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>12</td>
<td>50</td>
</tr>
<tr>
<td>Group 2</td>
<td>10</td>
<td>53</td>
</tr>
<tr>
<td>Group 3</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td>Group 4</td>
<td>13</td>
<td>51</td>
</tr>
</tbody>
</table>

   (a) Find the average water contact angle for cotton fabric and polyester fabric respectively.   (2 marks)

   (b) What does the water contact angle of a fabric represent?  (1 mark)

   (c) Comparing the results of the cotton and polyester fabrics, what conclusion can be drawn?   (2 marks)

   (d) If the experiment was repeated with rayon fabric, how would the results of rayon fabric differ from that of the polyester fabric?  (2 marks)

   (e) Suggest a fabric finish to increase the contact angle of polyester fabric.  (1 mark)

   Total: 8 marks
4. The figure below shows the worldwide fibre production share in 1982 and 2002.

(a) (i) With reference to the above information, which fibre type has the greatest relative percentage change? Show your calculation. (2 marks)

(ii) List TWO advantages of using the fibre mentioned in (a) (i) (2 marks)

(b) Cellulosic fibre share has declined from 21% in 1982 to 6% in 2002. What are the possible reasons resulted in this decline? (3 marks)

Total: 7 marks

Essay Question:
5. Using an outdoor activewear with layering system as an example, discuss the use of various high-performance textiles. (15 marks)

Total: 15 marks
SECTION C  Apparel Industry
Answer ALL questions in this section.

Short Questions:
1. (a) What is mass customization?   (1 mark)
   (b) What are the advantages of this mode of manufacturing?   (2 marks)

   Total: 3 marks

2. Many garment producers have transited their business from the mode of Original Equipment Manufacturing to Original Design Manufacturing.
   (a) What are the differences between these modes?   (4 marks)
   (b) What are the benefits that attract companies to have this move?   (3 marks)

   Total: 7 marks

Data analysis questions:
3. John is a designer and owner of a boutique which sells Tee-shirts to teenager market. The following shows the sales figures of his products launched since April in this summer season.

<table>
<thead>
<tr>
<th>Style of T-shirt</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>105</td>
<td>217</td>
<td>182</td>
<td>50</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>210</td>
<td>360</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>85</td>
<td>170</td>
<td>165</td>
<td>111</td>
<td>70</td>
<td>0</td>
</tr>
</tbody>
</table>

   (a) Which style is the best seller?   (1 mark)
   (b) Which style has the longest product life cycle?   (1 mark)
   (c) Use style A as an example, match the months with the corresponding stages of product life cycle.   (4 marks)
   (d) Some styles go out of the market before summer holiday. Suggest TWO different strategies to John for this situation.   (2 marks)

   Total: 8 marks
4. Study the table below.

<table>
<thead>
<tr>
<th>Area</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women’s Day wear</td>
<td>Haute couture, ready-to-wear, mass market</td>
</tr>
<tr>
<td>Women's Evening wear</td>
<td>Haute couture, ready-to-wear, mass market</td>
</tr>
<tr>
<td>Men's Day wear</td>
<td>Tailoring, ready-to-wear, mass market</td>
</tr>
<tr>
<td>Teenage wear</td>
<td>Ready-to-wear, mass market</td>
</tr>
</tbody>
</table>

(a) Compare the haute couture market and ready-to-wear market and state their advantages and disadvantages. (3 marks)

(b) Explain why haute couture is more commonly found in the area of women’s evening wear. (2 marks)

(c) Suggest why fashion industry relies more on mass market sales. (2 marks)

Total: 7 marks

Essay Question:
5. Since 1990s, many Hong Kong Apparel companies have moved the production department to Mainland China and maintained the merchandising department in Hong Kong to coordinate the trading activities. Besides, many companies have not sourced apparels in Hong Kong but adopted the Outward Processing Arrangement (OPA). Discuss the impact of this globalization process to Hong Kong apparel industry. (15 marks)

Total: 15 marks
1. This paper consists of THREE sections, A, B and C. Section A carries 15 marks. Section B carries 25 marks. Section C carries 30 marks.

2. Attempt ALL questions. Write your answers in the answer book provided.

3. Answers should be presented in an orderly way.

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SECTION A – Multiple Choice Questions

This section carries 15 marks. Answer ALL questions in this section.

1. Which of the following are the combinations of symptoms of diverticular disease?
   
   (1) abdominal cramps
   (2) severe constipation
   (3) rapid weight loss

   A. (1) and (2) only
   B. (1) and (3) only
   C. (2) and (3) only
   D. (1), (2) and (3)

2. Two slices of cheese contain a total of 6.3 gram of protein. The recommended daily intake (RDI) of protein for a 15-year-old girl is 57 grams. What percentage of her RDI would the girl consume if she ate one slice of cheese?

   A. 0.05%
   B. 11.0%
   C. 0.11%
   D. 5.52%

3. Which of the following processes involves dextrinisation?

   A. boiling milk and flour to make custard
   B. beating egg-whites to make meringue
   C. churning cream to make butter
   D. toasting bread

4. Which of the following food types was developed in response to nutritional considerations?

   A. Low alcohol beer and wines
   B. Low fat, low sugar yoghurt
   C. Pre-cut packaged vegetables
   D. Pre-packed frozen meals

5. A person has normal vision in bright conditions but cannot see clearly in dim light. Which of the following vegetables is most effective in helping him to overcome the problem?

   A. broad bean
   B. potato
   C. spinach
   D. green pepper

6. Which of the following food substances is not usually found in pork, milk and egg?

   A. fat
   B. protein
   C. dietary fibre
   D. mineral salts
7. If the diet of a person is rich in carbohydrates, his body will store the excess carbohydrates as
   (1) fat.
   (2) starch.
   (3) glycogen.
   A. (1) and (2) only
   B. (1) and (3) only
   C. (2) and (3) only
   D. (1), (2) and (3)

8. A student mixed a 0.1% amylase solution with a 1% starch solution. He performed a number of food tests on the mixture immediately after mixing and obtained the following results:

<table>
<thead>
<tr>
<th>Iodine test</th>
<th>Biuret test</th>
<th>Benedict’s test</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
<td>–</td>
</tr>
</tbody>
</table>

Key: + positive result
– negative result

If he repeated the food tests on the mixture after 10 minutes later, what would be the possible results?

A. + + +
B. – + –
C. – – +
D. + – –

9. What is the purpose of setting specifications for new food products?
   A. To assist in the feasibility study
   B. To enhance product convenience
   C. To confirm with company image
   D. To ensure consistent, high quality foods

10. Which one of the following meals contains the most energy-dense foods?
    A. Vegetable noodle soup and a wholemeal bread roll
    B. A tuna and lettuce salad sandwich
    C. Pasta with tomato and seafood sauce
    D. A cheeseburger with potato wedges and salad

11. The glycaemic index is a strategy that guides a person’s food choices to reduce the risk of developing
    A. obesity and type II diabetes.
    B. type I diabetes and cardiovascular disease.
    C. cardiovascular disease and anaemia
    D. anaemia and type II diabetes
12. Foods that increase iron absorption include
   A. coffee, milk and apples.
   B. whole-grain cereal products, bran and nuts.
   C. berry fruits, broccoli and parsley.
   D. milk, fish and oranges.

13. Vegans are at risk of being deficient in
   A. folate, protein, and carbohydrates.
   B. calcium, haem iron and vitamin B6.
   C. vitamin B12, haem iron and calcium.
   D. non-haem iron, protein and calcium.

14. Which of the following groups requires the highest recommended daily intake of iron?
   A. girls aged 4-7 years
   B. women aged 55-77 years
   C. girls aged 7-11 years
   D. women aged 18-35 years

15. Which of the following food additives is added to margarine during processing to prevent rancidity?
   A. humectants
   B. antioxidants
   C. emulsifiers
   D. thickeners
SECTION B – Design Questions

This section carries 25 marks. Answer ALL questions in this section.

1. In today’s fast-paced, fast-food culture, people who are constantly on the go don’t have time to eat as healthy as they would like. A food manufacturer has decided to develop a range of healthier alternatives that would be suitable for most fast-food shops.

   The specifications for your ‘new healthy fast-food’ are that it must:
   - Be savoury and suitable for vegetarians;
   - Be easy to handle and eat without using cutlery;
   - Have a good colour through the use of fresh and natural ingredients;
   - Be filling and low in fat content.

(a) Sketch and annotate TWO different design ideas for the ‘new healthy fast-food’ which meet the above specifications. (8 marks)

(b) Evaluate how well / good one your design ideas fulfill the requirement as a new healthy fast-food. Please specify idea 1 or idea 2. (5 marks)

Total: 13 marks

2. Some mothers are concerned that Hong Kong children often have little choice when buying their lunch at school. Mothers are concerned that there is not enough information to assist them when planning healthy lunches for their children. You have been asked to assist a publicity campaign. You are to develop five days of different lunch box menus that would be suitable for primary children.

(a) Outline four constraints that would exist in designing these lunch boxes menus. (4 marks)

(b) List foods suitable for two lunch box menus that would fulfill the requirements. (5 marks)

(c) Discuss the suitability of one of your menu in relation to the requirement of an obesity student. (3 marks)

Total: 12 marks
SECTION C – Structured Questions

This section carries 30 marks. Answer **ALL** questions in this section.

1. Recently, many fathers work across border in China every week. Discuss the implications for each member of the family in this situation.
   - the father (3 marks)
   - the mother (3 marks)
   - the child (3 marks)

   **Total: 9 marks**

2. Water is the most critical nutrient in the diet, though it does not provide energy.
   (a) List the health problems that may result if insufficient water is consumed. (2 marks)
   (b) Explain the formation of metabolic water. (3 marks)
   (c) Although by World Health Organization standards Hong Kong water is safe to drink, the consumption of bottled water in Hong Kong has continued to increase. Suggest two reasons for this. (4 marks)

   **Total: 9 marks**

3. Before a successful new food product can be developed, the food technologist must understand the properties and working characteristics of different ingredients and how they work together so that correct choices can be made.
   (a) Define raw and processed foods and give **ONE** example of each. (4 marks)
   (b) Eggs are very versatile and have useful properties which can be used in different ways for food design. Illustrate **TWO** functional properties of eggs in food preparation with **ONE** example each. (4 marks)
   (c) List **TWO** ways of glazing food products and give an example of the use of each. (4 marks)

   **Total: 12 marks**

END OF PAPER
TECHNOLOGY AND LIVING (FOOD SCIENCE & TECHNOLOGY)

PAPER 2

(Sample Paper)

Time allowed: 2 hours
This paper must be answered in English

1. This paper consists of THREE sections, A, B and C. Each section carries 40 marks.
2. Attempt TWO sections only. Write your answers in the answer book provided.
3. Answers should be presented in an orderly way.
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5. Graph paper and supplementary answer sheets will be supplied on request. Write your candidate number on each sheet, and fasten them with a string inside the answer book.
SECTION A   FOOD CULTURE

Answer ALL questions in this section.

Short Questions:
1. (a) Give TWO reasons why food is used in celebrating or remembering an occasion.    (2 marks)
    (b) Give TWO examples of food and describe how they are related to particular celebrations.    (2 marks)
    (c) People of certain regions do not eat certain food on specific days. Give TWO examples.    (2 marks)

Total: 6 marks

2. Describe TWO customs associated with eating, that may be seen as strange or offensive to others from different cultures. Indicate the cultures involved.    (4 marks)

Total: 4 marks

Data analysis questions:
3. (a) Australia has no distinct cuisine. Explain why you think this may be the case. (2 marks)
    (b) Modern Australian cuisine is known as “fusion”. Explain why this term is used. (1 mark)

Total: 3 marks

4. With reference to the differences of the dietary patterns of Asian and Western cultures, explain why cardiovascular diseases is more common for people adopting dietary pattern of Western cultures. (4 marks)

Total: 4 marks
5. (a) Customs have an impact on the food we eat or the way we eat. Other than types of foods eaten, list **TWO** other religious customs that are associated with food. (2 marks)

(b) Use the information in the Religion and Food Table (below), to make recommendations regarding a choice of each course for a Jew & a Hindu. (6 marks)

<table>
<thead>
<tr>
<th>Type of Food</th>
<th>Jewish</th>
<th>Hindu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables, fruits &amp; nuts</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Lamb</td>
<td>Kosher</td>
<td>Some</td>
</tr>
<tr>
<td>Beef</td>
<td>Kosher</td>
<td>No</td>
</tr>
<tr>
<td>Pork</td>
<td>No</td>
<td>Some</td>
</tr>
<tr>
<td>Animal fats</td>
<td>No</td>
<td>Some</td>
</tr>
<tr>
<td>Fish</td>
<td>With scales, fins &amp; backbone</td>
<td>With fins &amp; scales</td>
</tr>
<tr>
<td>Shellfish</td>
<td>No</td>
<td>Some</td>
</tr>
<tr>
<td>Chicken</td>
<td>Kosher</td>
<td>Some</td>
</tr>
<tr>
<td>Eggs</td>
<td>Yes</td>
<td>Some</td>
</tr>
<tr>
<td>Milk Products</td>
<td>No rennet (used for curdling milk for cheese)</td>
<td>No rennet (used for curdling milk for cheese)</td>
</tr>
</tbody>
</table>

**Western Banquet Menu**

*Choice of Appetizers:*
- Shrimp Cocktail
- Smoked Salmon Napoleon
- Lobster Bisque
- New England Clam Chowder
- Mixed Greens with House Vinaigrette
- Caesar Salads

*Choice of Entrées:*
- Filet Mignon with Mushrooms & Onions
- Linguini with Red or White Clam Sauce
- Grilled Marinated Chicken Breast
- Stuffed Shrimp with Crabmeat

*Choice of Dessert:*
- Tiramisu
- Cheesecake

Total: 8 marks

Essay Question:
6. Compare Szechuan and Cantonese cuisines. Discuss how and why each cuisine had developed differently. (15 marks)

Total: 15 marks
SECTION B  FOOD SCIENCE AND TECHNOLOGY EXTENDED STUDY

Answer **ALL** questions in this section.

Short questions:

1. Wheat flour is the major ingredient used in the production of bakery product.
   
   (a) Describe the chemical reactions occurred for the development of crust color. (1 mark)
   
   (b) Describe the biological reactions that take place during bread baking. (4 marks)
   
   **Total: 5 marks**

2. A stable food system is a dispersion containing two phases of a continuous phase and a dispersed phase.
   
   (a) What are the colloidal dispersions? (2 marks)
   
   (b) Describe the aggregation of food colloids. (3 marks)
   
   **Total: 5 marks**

Data analysis questions:

3. Nutrient composition of various types of food items as listed in the following table:

<table>
<thead>
<tr>
<th>Food items (100g)</th>
<th>Protein (g)</th>
<th>Carbohydrate (g)</th>
<th>Fat (g)</th>
<th>Cholesterol (mg)</th>
<th>Energy (kcal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh tuna fish</td>
<td>30</td>
<td>0</td>
<td>1.18</td>
<td>33</td>
<td>131</td>
</tr>
<tr>
<td>Hard boiled egg (~50g/each)</td>
<td>12</td>
<td>&lt; 2</td>
<td>10</td>
<td>426</td>
<td>148</td>
</tr>
<tr>
<td>Cottage Cheese (Low fat)</td>
<td>13.8</td>
<td>3.5</td>
<td>1.8</td>
<td>8.3</td>
<td>90</td>
</tr>
</tbody>
</table>

   (a) Which one of the food items is more perishable than the others? Give **TWO** reasons to support your answer. (3 marks)

   (b) It is not recommended for adult to take more than one egg per day. Why? (2 marks)

   (c) What is the name of dairy carbohydrate in cottage cheese? (1 marks)

   **Total: 6 marks**
4. The ingredients and processing steps for manufacture of frozen spaghetti are given as follows:

Ingredients used:
- 30 kg Spaghetti
- 3 kg water
- 90g salt
- 6 kg frozen beef
- 6 kg tomato sauce

Processing steps:
- in-process steps for food preparation
- heat processing for minced beef and spaghetti
- packaged in a aluminum foil container as finished product
- receiving of raw materials and ingredients
- storage the product in freezer
- distribution to sales outlets

(a) Explain how the ‘Hurdle technology’ is used in the food product. (3 marks)
(b) Develop a flow diagram in order for manufacture of frozen cooked spaghetti. (3 marks)
(c) Identify the critical control points (CCPs) for the whole process. (3 marks)

Total: 9 marks

Essay Question:
5. Properties of lipids do not only contribute to its uses in food product but also create problem in storage and transport. Discuss. (15 marks)

Total: 15 marks
SECTION C  FOOD PRODUCTION DEVELOPMENT

Answer ALL questions in this section.

Short questions:
1. Product analysis is an important part of food product development.
   (a) Why is product analysis useful and important in development new food products? (2 marks)
   (b) List THREE of the criteria that may be used when assessing a food product. (3 marks)

   Total: 5 marks

2. Modern technology has affected many aspects of food technology, including packaging.
   (a) What does modified atmosphere packaging (MAP) stand for? How does it help to extend the shelf life of food? (3 marks)
   (a) Give TWO examples of food products where MAP is used. (2 marks)

   Total: 5 marks

Data analysis question:
3. The ingredients listed below have been developed for a lasagna produced as a home meal replacement.

   Ingredients:
   ● Minced beef  ● Plain flour
   ● Onion  ● Butter
   ● Green pepper  ● Full fat milk
   ● Mushroom  ● Cheddar cheese
   ● Beef stock  ● Lasagna sheets
   ● Herbs  ● Tomatoes

   (a) Suggest TWO sensory descriptors for each of the following areas that could be used on a star diagram for rating this product when it is finished. (8 marks)

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Taste</th>
<th>Texture</th>
<th>Smell</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   (b) Some of these lasagna ingredients are unsuitable for someone on a low fat diet. Using the table below, name TWO unsuitable ingredients and give an alternative in each case. (4 marks)

<table>
<thead>
<tr>
<th>Unsuitable ingredients</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   (c) Why might Coeliacs find this product unsuitable? What kind of diet do Coeliacs need to follow? (3 marks)

   Total: 15 marks

Essay Question:
4. Discuss the advantages and disadvantages of genetically modified (GM) ingredients / food on the environment and consumers. (15 marks)

   Total: 15 marks

END OF PAPER