JUNIOR LYCEUM ANNUAL EXAMINATIONS 2008
DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Educational Assessment Unit

FORM 4 **DESIGN AND TECHNOLOGY** **TIME: 1h 30 min**

Name: _____ **Class: _____**

ATTEMPT ALL QUESTIONS OF ALL SECTIONS

SECTION: A **(Design)** this section carries a total of 20 marks

Read the following situation carefully before answering questions 1a to 1f

In a shop, about 20 different keys are used to open different locks on display units. This is time consuming and frustrating as shop assistants need to identify the correct keys for opening display units.

1a. Write a design brief for the above situation.

_____

_____

3 marks

1b. Is the project going to be designed for mass production or for batch production? Why?

_____

Reason: _____

2 marks

1c. Mention two persons you would consult when investigating the above situation.

_____ _____

2 marks

1d. Give two design requirements (specifications) that you would consider as essential for your project.

_____

_____

2 marks

1e. By means of a labelled sketch show one idea of how you intend to solve the problem.

7 marks

1f. Write a short paragraph explaining why and how your idea will be effective enough to solve the shop assistants' problem.

4 marks

SECTION: B (Resistant Materials) this section carries a total of 20 marks

1. Manufacture of plastic products is very common. State a manufacturing process you would choose to produce trays made of polystyrene.

_____

2 marks

2. Give two reasons why it is necessary to place a piece of scrap wood between the work and the jaws of a G-cramp.

_____

_____

2 marks

3. List two safety precautions to be observed when using a strip wire heater for bending acrylic sheet.

_____

_____

2 marks

4. State two temporary methods by which wood can be joined.

_____ _____

2 marks

5. State two methods of permanent joints commonly used in steel work.

_____ _____

2 marks

6. Name one thermosetting plastic and state one particular use of it.

Thermosetting Plastic	Use

4 marks

7. By means of a labelled diagram show the setting-up required on a drilling machine table to drill a hole in an aluminium block 50x50x50mm.

6 marks

SECTION: C (Electronics) this section carries a total of 20 marks

1. Draw the symbols of the following components.

i) Polarised capacitor

ii) Non polarised capacitor

2 marks

2a. What type of switch is suitable for an electronic circuit used to indicate whether a door is open or closed?

_____

2 marks

2b. Draw a diagram of the switch you mentioned in question 2a.

2 marks

3. List two faults that can be noticed in a soldered joint on a strip board.

_____

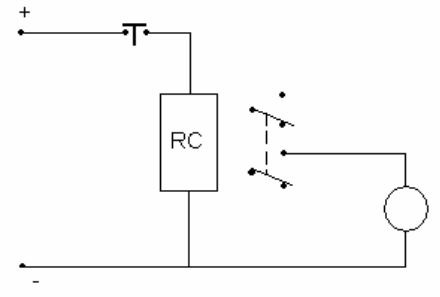
_____

2 marks

4. Draw a circuit diagram of a DPDT relay switch to operate a reversing motor.

4 marks

5. Complete the following circuit diagram to show how a DPDT relay is connected to latch when switched on.



4 marks

6a. For what purpose could a Darlington pair circuit be used?

_____

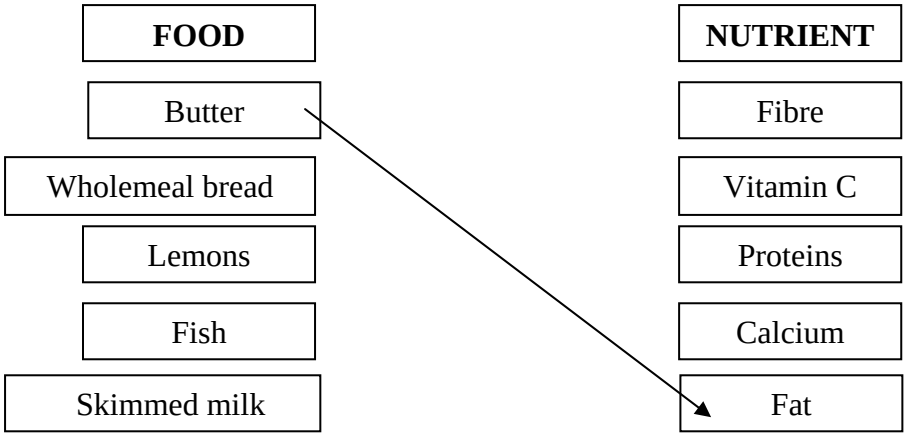
2 marks

6b. Draw a circuit diagram of a Darlington pair and label all the connections of the transistors.

2 marks

SECTION: D (Food technology) this section carries a total of 20 marks

1. Match the following food products according to the type of nutrient that each one contains. (The first one is done for you)



2 marks

2. A food company wants to produce new food products using biotechnology for different dietary needs.
Establish ingredients for a food product using biotechnology for the following:

VEGANS
Name of product: _____
Ingredients: _____
_____

PRIMARY SCHOOL CHILDREN
Name of product: _____
Ingredients: _____
_____

4 marks

3. List two possible hazards in a design and technology food lab and say what precautions should be taken against them.

_____ _____

_____ _____

2 marks

4. Write down one advantage and one disadvantage of using a microwave oven.

Advantage: _____

Disadvantage: _____

2 marks

5. Name two important examples of information, which a food packaging label must have.

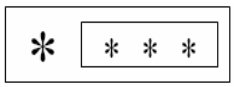
_____

_____

2 marks

6. What do the following stand for?

g _____ **ml** _____ **tsp.** _____



_____

4 marks

7. Define the following food preservation methods and give one example of a food product for each method.

Blast freezing: _____

Example: _____

Cryogenic freezing: _____

Example: _____

4 marks

SECTION: E (Textiles technology) this section carries a total of 20 marks

1a. Give one reason why fabric made from cotton is often used to manufacture jeans-wear.

_____

_____

2 marks

1b. Explain why cotton fabrics are often used for summer and sports clothing.

_____

_____

2 marks

2. Give the reason why linen is a very suitable material for tea towels.

_____

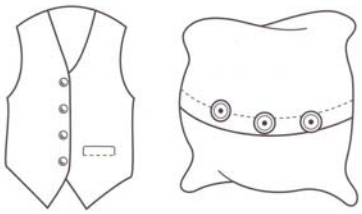
2 marks

3. Give one reason why it may be necessary to neaten the edge of a seam allowance.

_____

2 marks

4. Fastenings on a product are important.
Look at the products shown in this picture.



a. Name the fastenings used.

Buttons and buttonholes

2 marks

b. Name one different fastening that could be used instead.

_____

2 marks

5. When manufacturing a textiles product, quality assurance and quality control must be considered.

a. Explain what is meant by “Quality Assurance”.

b. Explain what is meant by “Quality Control”.

Quality Assurance: _____

_____

4 marks

Quality Control: _____

_____

4 marks