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

FORM 3 **DESIGN & TECHNOLOGY** **TIME: 1h 30min**

Name: _____ Class: _____

Answer all questions in section A and all questions in <u>two</u> other sections of your choice.

SECTION A - Design

Total marks for this section: 50

All questions in this section are related to the given situation. So it is important to read the following situation carefully before answering questions 1a to 1h.

SITUATION:
Many workmen find it difficult to hold a number of tools when working on ladders. They have to climb up and down the ladder every time they need to change or get another tool.

1a. What problem is being presented in the above situation?

_____

3 marks

1b. Give three categories of workers who very often have to work on ladders.

i_____ ii _____ iii _____

3 marks

1c. How is safety and efficiency affected, when workers have to keep going up and down ladders to fetch their tools?

_____ **4 marks**

1d. What can be done to solve the problem for these workers?

_____

_____ **4 marks**

1e. Finish off this design brief related to the given situation.

Design and make some kind of holder, belt or container for holding _____

so that workmen _____.

6 marks

1f. Now that you have written your brief, sketch two initial ideas to show what can be done to solve the problem. Your ideas can be targeted either for one particular category of workmen of your choice or for general use by different categories of workmen.

Remember that in order to communicate your ideas to others it is important for your sketches to be clear enough and with an indication of sizes, materials, finishing and any proposed decoration.
You are free to colour your sketches. **20 marks** (10 marks for each idea)

Idea No.1	*Idea No.2*

1g. In not more than 4 lines say how and where ICT can be used throughout the development and planning of your project.

_____

_____

_____

_____

5 marks

1h. Give two examples of how you would evaluate your project after completion.

a) _____

b) _____

5 marks

SECTION B - Electronics

Total marks for this section: 25

1. Draw the symbol of each of the following switches.

- Single pole single throw (SPST)
- Single pole double throw (SPDT)

2 marks

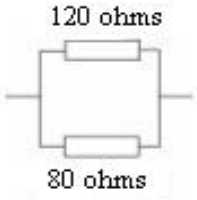
2. State the type of tool used for assembling electronic components on veroboard (stripboard).

_____

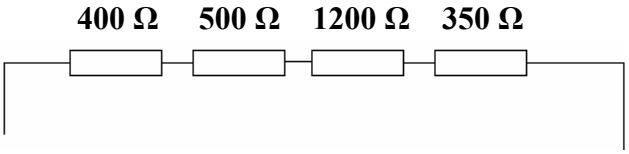
1 mark

3. Calculate the total resistance:

a)



b)



4 marks

4. Give the symbols of the following electronic components

ELECTRONIC COMPONENT	**Symbol**
Buzzer	
NPN Transistor	
Light dependent resistor (LDR)	

3 marks

5. Write the unit and the symbol of the following:

	Unit	Symbol
current		
voltage		

2 marks

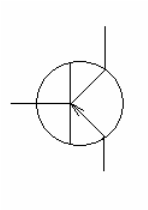
6. Every system is made up of an input, a process and an output.
Classify the following components under the correct heading.

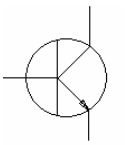
- **Bell**
- **Transistor**
- **Switch**

INPUT	PROCESS	OUTPUT

3 marks

7. Identify the leads (legs or terminals) of the PNP and the NPN bipolar transistors shown below.





4 marks

8. Using symbols draw a circuit diagram showing how a Darlington pair is connected.

3 marks

9. **a)** Use symbols, to show how a resistor is connected in SERIES to a Light Emitting Diode.

1 mark

b) Why is it important to connect a resistor in SERIES with a Light Emitting Diode in an electronic circuit?

_____

_____

2 marks

SECTION C – Resistant Materials

Total marks for this section: 25

1. Name four sections of iron that can be found for sale.

a) _____ b) _____ c) _____ d) _____

2 marks

2. Under each of the following headings, name four tools that can be used for wood and metal work in a Design and Technology laboratory.

Marking Tools	Hand Cutting Tool	Power Tool or Machine

6 marks

3. Give three reasons why it is important to use protective clothing during the making process in Design and Technology work.

_____

_____

_____

3 marks

4. Draw sketches of the following mechanisms.

Name of mechanism	Sketch
LINKAGE MECHANISM	
PULLEYS and BELT	
RACK and PINION	

3 marks

5. List three safety precautions that should be observed when drilling a piece of iron using a bench drilling machine.

_____

_____

_____

3 marks

6. Name one suitable type of finish for the following:

Material	Finish
Iron Furniture for a garden	
Wooden ornament for a living room	

2 marks

7. Mention two methods for joining metals.

_____ _____

2 marks

8. Suggest one suitable material for making the following items and state one reason for your choice.

Item	Material	Reason
CD rack		
Chopping board		

4 marks

SECTION D – Textiles Technology

Total marks for this section: 25

1. Give two reasons why it may be necessary to neaten the edge of a seam.

_____

_____

6 marks

2. Many people use swimming as a regular form of exercise to keep fit. Give two reasons why manufacturers now use Elastane or Lycra to produce swimwear.

_____

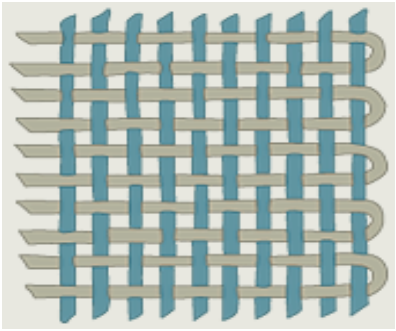
_____

6 marks

3. In the space provided, sketch how a Plain Seam looks like.

3 marks

4. This diagram shows a piece of fabric.



a) Name the weave used to construct the fabric shown above.

_____

2 marks

b) On the diagram given above, label the following:

- The Selvedge
- The Warp Thread
- The Weft Thread
- The True Bias

8 marks

SECTION E – Food Technology

Total marks for this section: 25

1. **Protein** is one of the five nutrients. Everyone needs protein. Two groups of people who especially need protein in their diet are children and adolescents.

a. Give the **function** of protein.

_____

1 mark

b. **Chicken pies** are one of the snacks sold in a school's tuck shop.
The chicken pies are filled with the following ingredients: chicken breast, green peppers, onions, red kidney beans, mushrooms, milk and cheese.

From the ingredients of the chicken pie given above, **choose four ingredients which will provide the adolescents with protein**. Write your answers in the spaces below.

_____ _____

_____ _____

2 marks

c. The chicken pies are made using **wholemeal shortcrust pastry**.

List the **four main ingredients** needed to make wholemeal shortcrust pastry.

_____ _____

_____ _____

2 marks

d. List the **main steps you followed to make shortcrust pastry in your Food Technology focus task**.
Some of the steps have already been given to you.

i. *Put on apron and headgear, remove jewellery, sanitise hands and work surfaces.*

ii. *Prepare and weigh all ingredients and prepare all equipment.*

iii._____

iv._____

v. _____

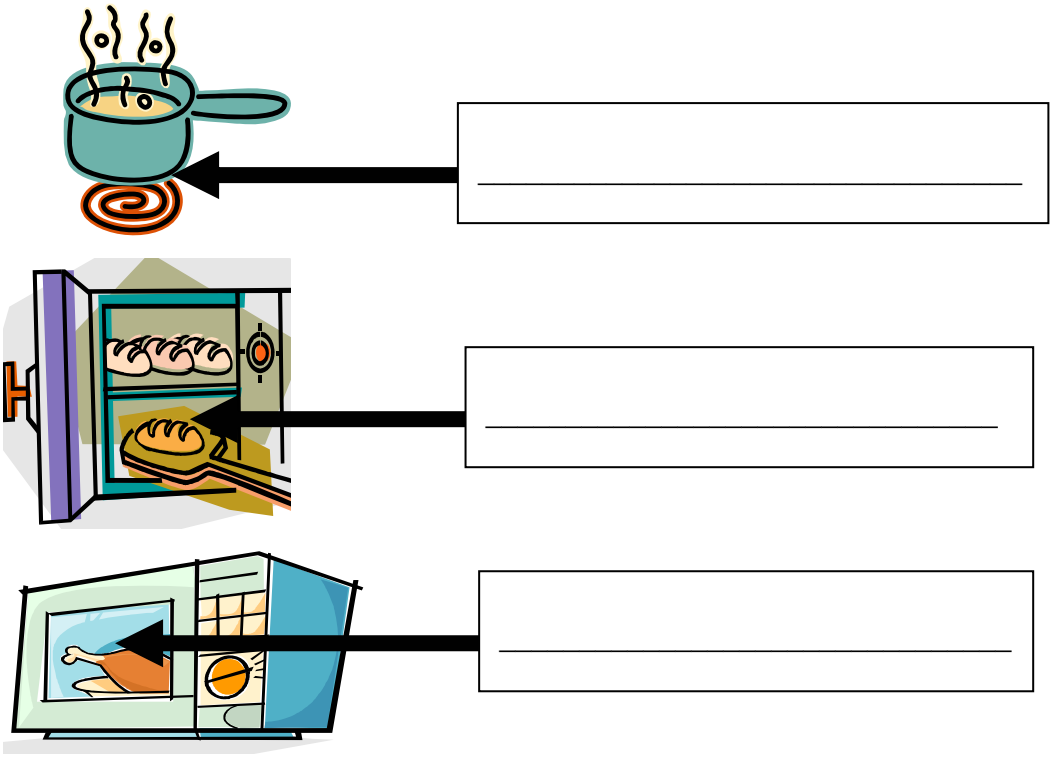
vi._____

vii._____

viii. *Wash and dry all used equipment well. Sanitise work surfaces.*

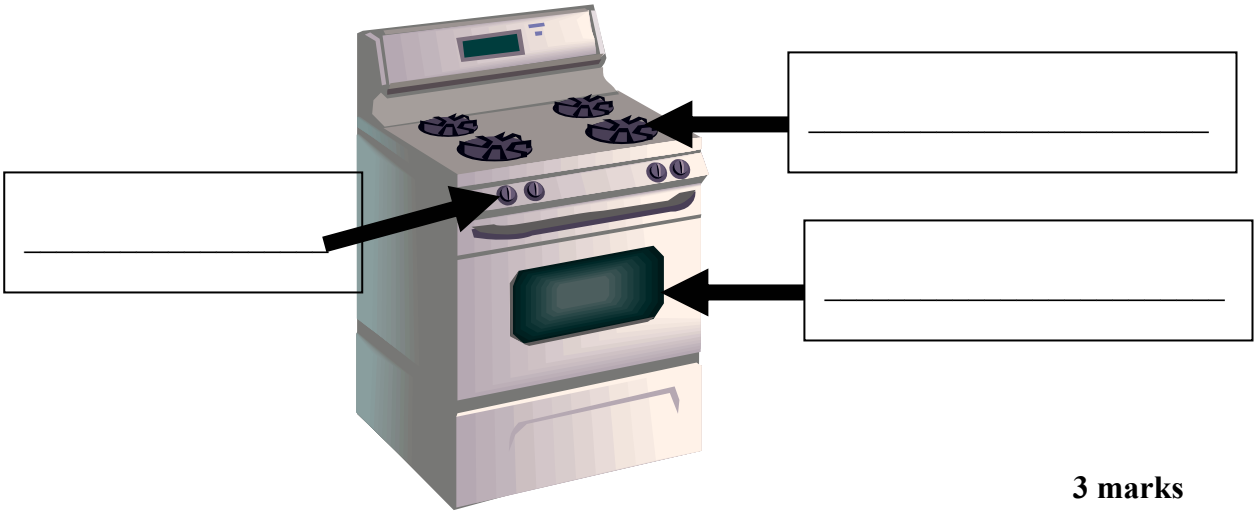
5 marks

2. The **arrows** in the pictures below are pointing to a **method of heat transfer** (**conduction, convection or radiation**). Write what method of heat transfer is shown by each picture.



3 marks

3. Label the **parts of the cooker** in the boxes below.



3 marks

4. A Maltese food company produces **fresh cheeselets**.

a. Name the **method** used in food technology to make cheeselets.

_____

1 mark

b. Name **one coagulating ingredient** used to make Maltese cheeselets.

_____

1 mark

c. Name the **equipment** which is used to check the **exact temperature** when **heating the milk** to make the cheeselets.

_____

1 mark

d. Maltese cheeselets are a very good source of a **mineral**. Name, give the function of and list **two other** sources (apart from cheese) of this mineral.

Name of mineral: _____

Function of the mineral: _____

Two other sources:

_____

_____

3 marks

5. Define **cross contamination**.

_____

_____

_____

_____

2 marks

6. Whilst draining pasta, a student burnt his hand with boiling water.
Explain the correct **First Aid procedure** to follow in case of minor **scalds**.

_____

_____

_____

1 mark