

JUNIOR LYCEUM ANNUAL EXAMINATIONS 2007

Educational Assessment Unit – Education Division

FORM 3 (1st Year)

DESIGN AND TECHNOLOGY

TIME: 1h 30 min

Name: _____

Class: _____

SECTION (A) *compulsory*
DESIGN PROCESS

This section carries a total of 50 marks

1. List the following design processes in correct order:

- Developing Chosen Idea
- Situation (or Problem)
- Planning
- Testing and Evaluation
- Initial Ideas
- Design Brief
- Research (or investigation)
- Chosen Idea
- Specification
- Making (or realisation)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

5 marks

2. Underline **FOUR** Key Words in the following design brief.

**Design a clock for use in a nursery school.
The clock must be suitable for hanging to a wall and based upon a theme of children's cartoon characters.**

4 marks

3. Give TWO examples how you can get ideas for a project.

i _____

ii _____

2 marks

4. Which is the best method of production for making the following?

Mark your answer with a ✓ sign under the best method of production.

	One-off production	Batch Production	Mass Production
A birthday cake			
100 Hot-dogs for a party			
5,000 Bottled soft drinks			
80 Magazines for local council			

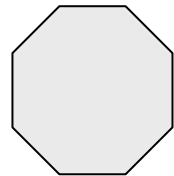
4 marks

5. Correct marking-out saves material, money and reduces waste.

You need to cut out TWO octagons similar to the pattern shown here.

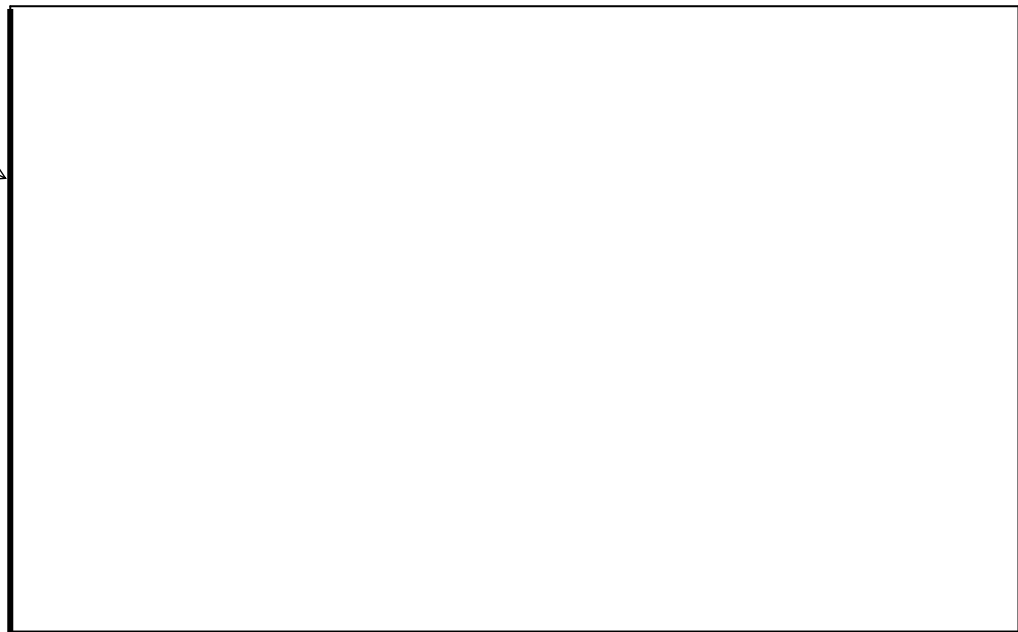
Show by drawing how you would lay out the two octagons efficiently and economically on the piece of Acrylic plastic whose size is shown below.

pattern – Scale 1:1



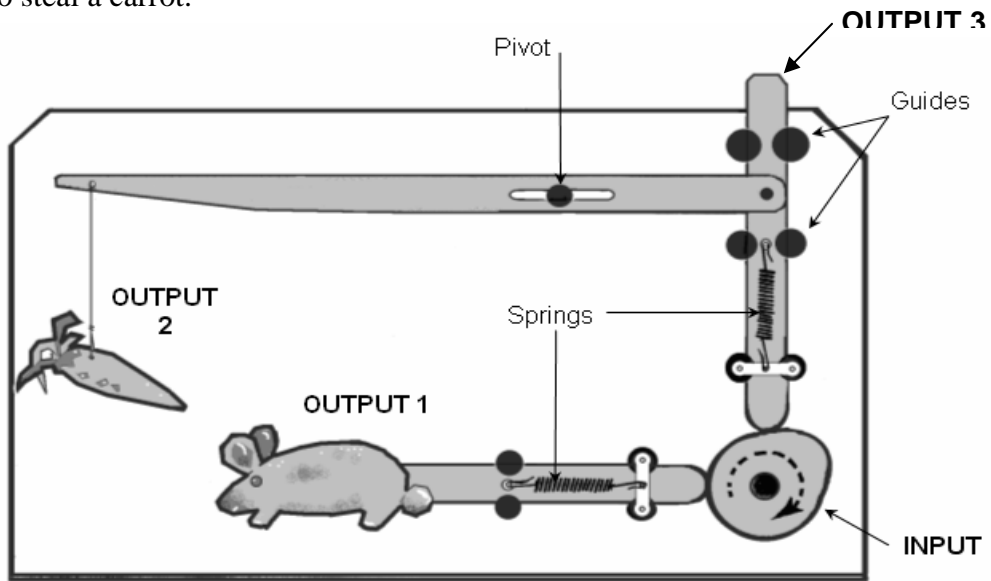
Octagon

Actual size of acrylic



6 marks

6. You are asked to investigate the following idea for making a moving picture of a rabbit trying to steal a carrot.



- What type of mechanism is the input? _____ (1 mark)
- Is it turning clockwise or anti-clockwise? _____ (1 mark)
- Draw arrows on the picture to show the rabbit's movement after one complete rotation of the input. (1 mark)
- Draw arrows on the picture to show the carrot's movement after one complete rotation of the output. (1 mark)
- Does the movement of the rabbit and the carrot change if the input is turned in an opposite direction? _____ (1 mark)
- The above moving picture has a possibility of another output marked as OUTPUT 3. What type of movement is obtained at that point? (2 marks)

7 marks

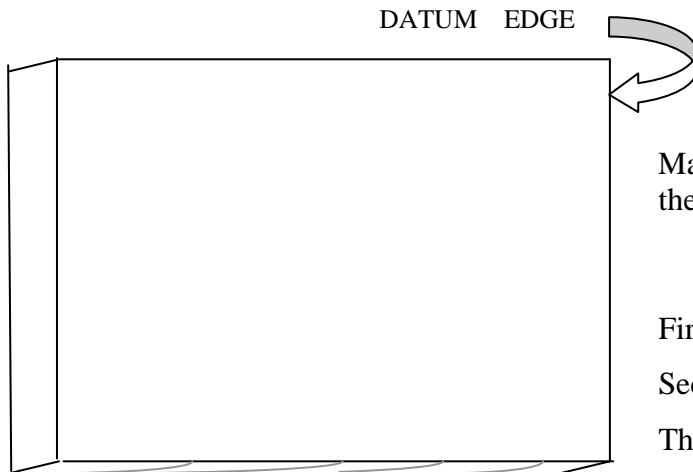
7. Write the following under their correct heading.

- Natural Gas
- Coal
- Wind
- Sun
- Water
- Oil

RENEWABLE source of energy	NON-RENEWABLE source of energy

6 marks

8a. Your friend needs your help to mark out **VERTICAL** lines on this piece of wood.



Mark out the lines for him according to the following measurements.

First line: 1.5 cm away from datum edge.

Second line: 3 cm away from datum edge.

Third line: 5.5 cm away from datum edge

4 marks

8b. Use the correct words from the given list to fill in the blanks in the following sentence.

- Tapering
- Parallel
- Straight
- Curved
- Horizontal




The lines drawn on my friend's wood are _____ and _____ lines.

2 marks

9. Symbols or pictograms are used to communicate many useful instructions or information.

a. Match the following products to the appropriate symbol shown in the table and give the meaning of each.

- Beer can
- Bottle of ice tea
- Pasta packet
- Hot air blower

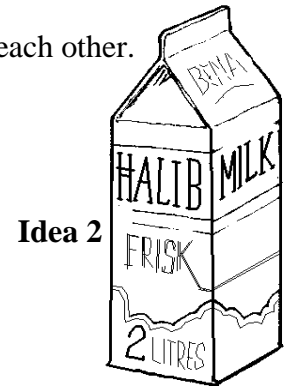
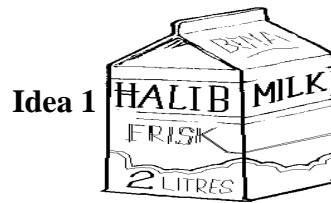
SYMBOL	PRODUCT	MEANING
		
		
		
1kg e		

4 marks

b. Give an advantage of using symbols or pictograms for communication purposes.

2 marks

10. Here are two ideas for a milk carton. Both of them are meant to hold 2 litres of milk.
Give **TWO** advantages and disadvantages these ideas have over each other.



Advantages: i. _____
ii. _____

Disadvantages: i. _____
ii. _____

4 marks

END OF SECTION (A)

IMPORTANT: Choose any **TWO** other sections from B, C, D and E

SECTION (B)
RESISTANT MATERIALS

This section carries a total of 25 marks

1. Draw a flat screwdriver indicating the blade and handle.

4 marks

2. Write one safety precaution that should be observed when using the following tools.

A firmer chisel: _____

A craft knife: _____

A file: _____

A bradawl: _____

4 marks

3. Give TWO examples for each material shown in the following table.

TIMBER	NON- METALS	METALS

6 marks

4. Complete the following statements:

a Smoothing plane is used to _____

b A twist drill is used to _____

c A marking gauge is used to _____

3 marks

5. Name ONE type of finish suitable for each of the following furniture:

MATERIAL	FINISH
Iron garden bench	
Mahogany bookcase	

2 marks

6. State TWO advantages for using MDF instead of natural timber.

i. _____

ii. _____

2 marks

7. Name TWO jointing methods for the materials shown below:

JOINTING TIMBER	JOINTING METAL

2 marks

8. Name the two types of plastics:

i.	_____	2 marks
ii.	_____	

END OF SECTION (B)

SECTION (C) ELECTRONICS

Total marks for this section: 25

1. Using **symbols** draw the circuit of a torch consisting of a bulb, battery, a switch and necessary wiring.

4 marks

2. a Give the symbol for RESISTANCE. _____

b Write the value of 1200 ohms in kilohms _____ $k\Omega$

c Sketch a fixed resistor showing its colour bands.

3 marks

3. Using symbols draw:

i. three resistors in series

i. three resistors in parallel

2 marks

4. Draw the symbol of a Light Emitting Diode (LED) and indicate the cathode and anode side in their respective place.

4 marks

5. What is the purpose of the flat notch on the LED?

2 marks

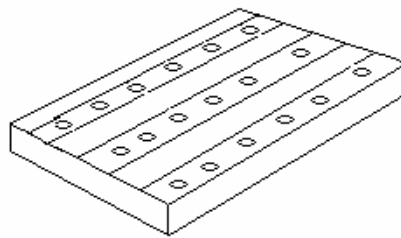
6. Write TWO steps that should be observed before connecting an LED.

i _____

ii _____

2 marks

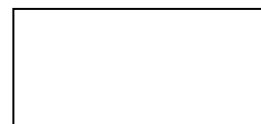
7. Indicate the conductor strips of the veroboard shown in the following picture.



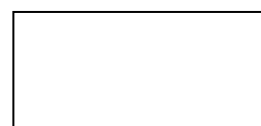
1 mark

8. Using symbols draw the following:

i single pole single throw switch (SPST)



ii single pole double throw switch (SPDT)



4 marks

9. Write the tools required for the job description shown in the table below.

Job description	Tools used
Cutting wire to the required length	
Stripping wire for soldering joint	
Soldering a resistor on veroboard	

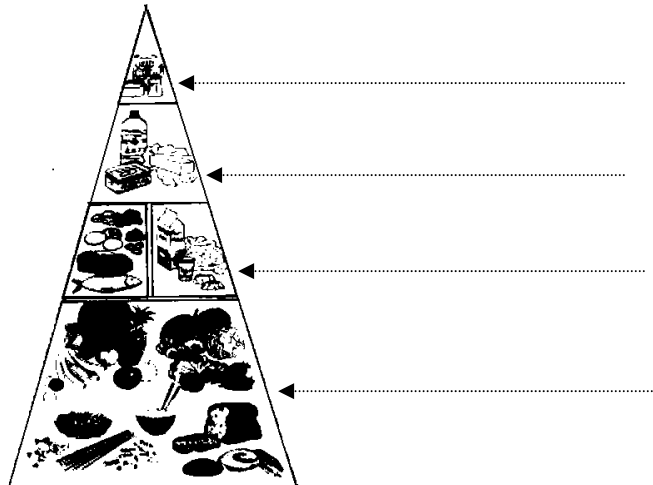
3 marks

END OF SECTION (C)

**SECTION (D)
FOOD**

Total marks for this section: 25

1. “Eat less” is one of the four dietary guidelines that go with this food guide pyramid. Mark on the dotted arrows the correct dietary guidelines that fit best the four sections of this pyramid.



4 marks

2. a. If wheat is considered as “primary food”, what kind of food is flour?

2 marks

b. What is the function of flour in food?

2 marks

3. All the food we eat contains different nutrients most needed to live a healthy life.

a. Which are the 5 nutrients found in food?

i. _____

ii. _____

iii. _____

iv. _____

v. _____

5 marks

b. Which nutrient helps to fight infections?

2 marks

4. During the preparation of food products what tool or equipment you would use to perform these tasks?

Cutting shaped biscuits. _____

Chopping food on. _____

Removing core of apples. _____

Grating cheese or carrots. _____

Cutting fruits in small pieces. _____

5 marks

5. a. Why is food packaged? Give TWO reasons.

i. _____

ii. _____

2 marks

b. List THREE types of information that a food label should have.

i. _____

ii. _____

iii. _____

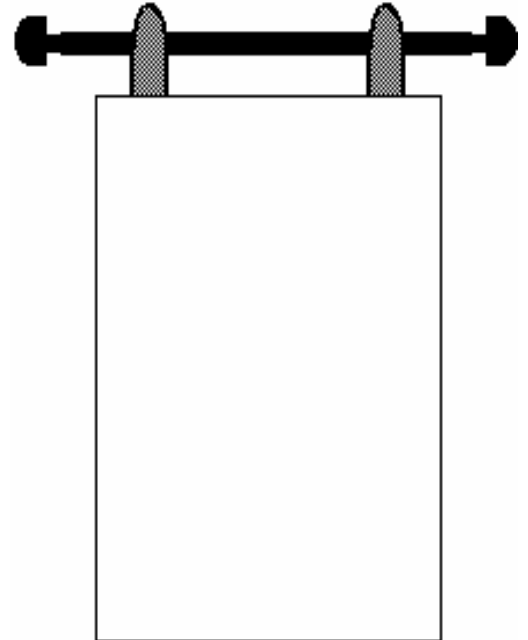
3 marks

END OF SECTION (D)

SECTION (E)
TEXTILES

Total marks for this section: 25

1. Study carefully this plain Wall Hanger and answer the following questions:



a. Draw a suitable picture on this wall hanger.

3 marks

b. Suggest ONE intended user.

_____ *1 mark*

c. What finishing method would suggest for the side and bottom edges?

Side edges: _____ *1 mark*

Bottom edge: _____ *1 mark*


Total 6 marks

2. List TWO safety precautions you would take when using a sewing machine.

i. _____

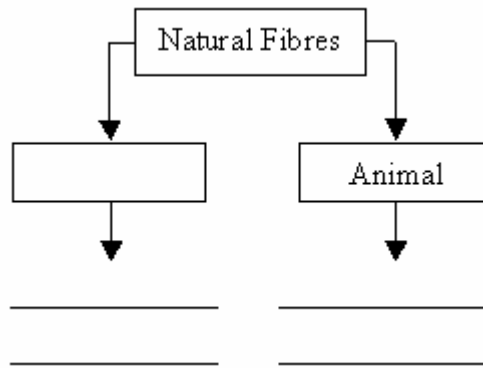
ii. _____ **2 marks**

3. Which of the following statements is **TRUE** or **FALSE**?

		True or False?
a.	Cotton is an animal fibre.	
b.	Sewing needles come in different sizes.	
c.	The warp yarn is stronger than the weft yarn.	
d.	Velcro is a type of fabric.	
e.	 This symbol indicates that cool iron should be used.	

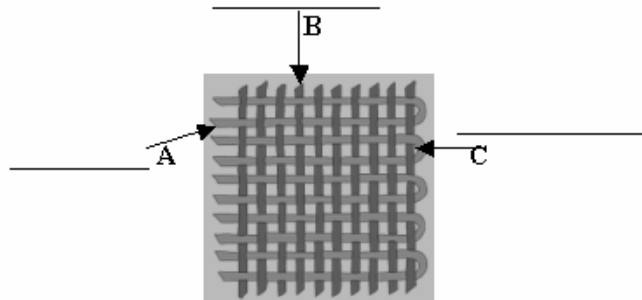
5 marks

4. The diagram below illustrates the classification of fibres with some missing words. Complete this diagram by filling in the missing words.



5 marks

5. a. The diagram below is indicating 3 important parts marked A, B and C. What are they called?



3 marks

- b. Which of the 3 parts marked A, B and C does not fray? What is this called?

A

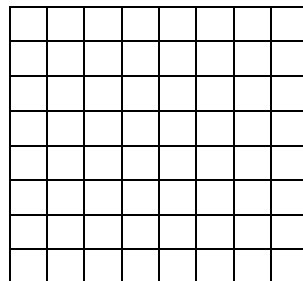
B

C

It is called _____

2 marks

6. a. Draw a twill weave on this diagram



3 marks

END OF PAPER