

FORM 3 (Year 3)

DESIGN & TECHNOLOGY

TIME: 2 hours

Name: _____ **Class:** _____ **Set:** _____

----- **Note to student:** -----
You are required to answer all questions

	Areas corrected					Marks for Written Exam.	Marks for Design Folio	TOTAL	FINAL MARK
	D	RM	E	F	T				
Max. Marks	20	20	20	20	20	100	100	200	%
Student's mark									

FOR TEACHERS' USE ONLY

DISTRIBUTION OF MARKS

Enter student's mark obtained in every area of study in the above table.

D for Design, **RM** for Resistant Materials, **E** for Electronics, **T** for Textiles technology and **F** for Food technology

SECTION A: DESIGN

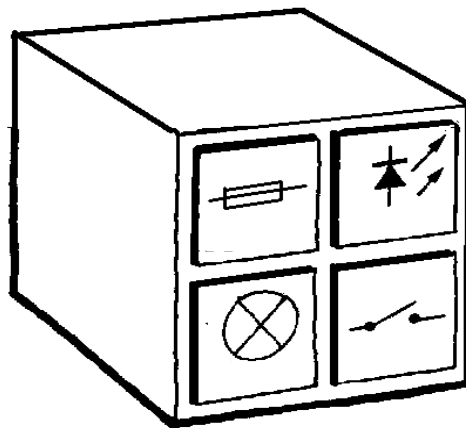
1. Below is an example of a design brief with the keywords underlined.
At what **stage** of the **design process** are the keywords used?

Design and make a container for the storage of different types of electronic components in an organised manner and which is to be used by school technicians.

2 marks

2. Below is the sketched idea of a container for the storage of electronic components.

Label the sketch with notes and comments to indicate (a) overall details of what dimensions you will propose for it, (b) the possible material or materials from which you can make it, (c) details of how each drawer can easily be pulled open and (d) what type of finish you may use.



2 marks x 4 = 8 marks

3. The sketch in question 2 shows that the drawers are labelled by symbols of the computer stored inside them.

Write down a work plan for ONE method of how you can produce these labels and fix them to the drawers.

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

8 marks

4. List TWO details that a working drawing for a project could show.

1 mark x 2 = 2 marks

SECTION B: RESISTANT MATERIALS

- 5. List FOUR safety precautions that should be observed in a Resistant Materials workshop.**

1 mark x 4 = 4 marks

6. State ONE type of finish you would recommend for each of the following products.

Item	Finish
A bench made of timber for a public garden	
A wall bracket made of mild steel for hanging a pot in a garden	

1 mark x 2 = 2 marks

7. State ONE method or component that can be used for each of the following jobs.

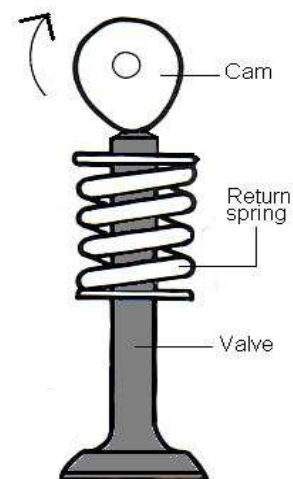
To make a PERMANENT joint between two strips of metal	
To make a TEMPORARY joint between two strips of metal	
To make a PERMANENT joint between two pieces of white deal wood	
To make a TEMPORARY joint between two pieces of white deal wood	

1 mark x 4 = 4 marks

8. The figure on the right shows a valve operated by means of a cam.

- Draw arrows on the diagram to show the direction of motion of the valve when the cam is rotating.
- Now that you have shown the movement of the valve by means of arrows, underline one of the following words to indicate the correct name by which that type of movement is known.

▪ Oscillating ▪ Linear ▪ Rotating ▪ Reciprocating



2 marks x 2 = 4 marks

9. Your friend is making a desk organiser and needs to glue a number of rigid (unplasticised) PVC pipes together. What type of glue would you recommend for the job?

2 marks

10. One method of forming objects out of plastic sheets is by using Vacuum Forming. Should the plastic sheet be of the Thermosetting or of the Thermoplastic type? Why?

1 mark x 2 = 2 marks

11. Mention ONE material from which a mould for a vacuum forming project can be made.

2 marks

SECTION C: ELECTRONICS

12. Draw the symbols of the PNP and NPN bipolar transistors.
On each symbol indicate the Base, Collector and Emitter of each transistor.

PNP transistor	NPN transistor

3 marks x 2 = 6 marks

13. List THREE output devices that can be used in electronics. Indicate the output characteristic for each device. An example has been done for you.

Output Device	Characteristic
Bell	sound

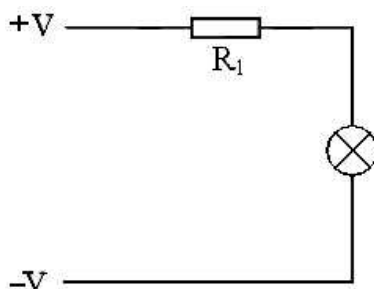
1 mark x 6 = 6 marks

14. What TWO important factors should be considered when selecting a capacitor for an electronic circuit?

_____ and _____

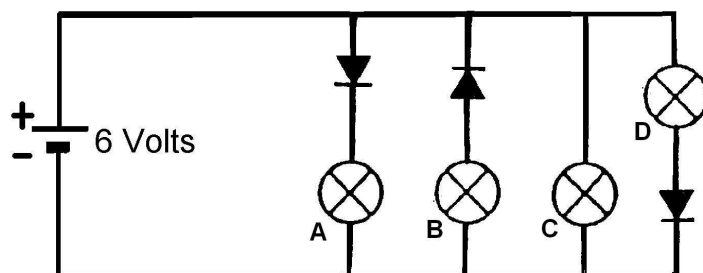
1 mark x 2 = 2 marks

15. Indicate by drawing, how a MULTI-METER should be connected to measure the VOLTAGE across the resistor (R_1) shown in the circuit below.



3 marks

16. Below is a circuit with four 6V lamps (marked A, B, C, and D) together with three diodes connected as shown to a 6V battery. Which lamp or lamps will light up?



Answer: _____

1 mark x 3 = 3 marks

SECTION D: FOOD

17. Fill in the sentences using the words given below.

▪ protein ▪ starch ▪ infections ▪ energy ▪ calcium

- It is essential to eat _____ food for growth and repair of the body.
- Carbohydrate is our main source of _____.
- Carbohydrate is divided into sugar, _____ and fibre.
- Vitamins help us to resist _____ and diseases.
- _____ makes stronger bones and teeth.

1 mark x 5 = 5 marks

18. Fill in the table below to classify the following foods according to the main food group each belongs to.

▪ Noodles ▪ fresh cream ▪ broccoli ▪ rice ▪ mushrooms ▪ UHT milk

Grain	Fruit & Vegetables	Dairy

1 mark x 6 = 6 marks

19. Why are many of today's food manufacturers developing more low fat products?

2 marks

20. Finish off these sentences by matching each to an appropriate ending.
The first one has been done for you as an example.

a	When preparing meat ...		tastier and easier to digest.
b	We cook food to make it ...		store frozen food.
c	Some food industries offer free gifts ...	a	use clean, sharp knives.
d	-18°C or below is the temperature to ...		cut down on fat.
e	Grill, poach, bake or steam food to ...		to influence children to buy food high in fats, sugars and salts.

1 mark x 4 = 4 marks

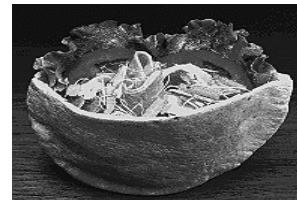
21. Which snack should a person who has a weight problem opt for?
Give ONE reason for your choice.



Hotdog



Beef burger
and soft drink



Pitta bread filled
with wafer sliced
ham and salad

The best snack is: _____

1 mark

Reason: _____

2 marks

SECTION E: TEXTILES

22. Draw a sketch to show how a PLAIN open seam looks like.

4 marks

23. List THREE uses of the STEAM IRON in a textiles laboratory.

2 marks x 3 = 6 marks

24. Give TWO reasons why manufacturers make use of Elastane or Lycra to produce swimwear.

3 marks x 2 = 6 marks

25. (a) Give TWO reasons for applying an overlock stitch to the edge of fabric.

1 mark x 2 = 2 marks

(b) Give TWO alternative methods by which you can replace the overlock stitch.

1 mark x 2 = 2 marks