

# SECONDARY SCHOOL ANNUAL EXAMINATIONS 2002

Educational Assessment Unit – Education Division

**FORM V**

**TECHNOLOGY EDUCATION (A)**

**TIME: 2 hours**

Name: \_\_\_\_\_

Class: \_\_\_\_\_

---

## **Answer all questions**

---

1. Houses in very hot countries are generally painted in light colours. State why.

\_\_\_\_\_

\_\_\_\_\_

**(2 marks)**

2. Solar panels work best when painted in one particular colour.

- (i) Which colour is it?  
(ii) Why is it the best colour to use?

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

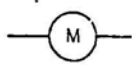
**(4 marks)**

- 
3. Match the most suitable surface finish for the following items:

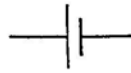
<u>Item</u>	<u>Surface finish</u>
handle for screwdriver	smooth
sole plate of pressing iron	hard
machine surface	non-slip

**(3 marks)**

4. Use the given symbols to draw a circuit diagram in order to operate and control a motor.



motor



battery



switch

(6 marks)

5. Match the following components to their respective symbol.

1:

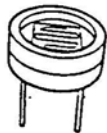


A



example: 1 = B

2

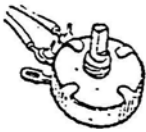


B

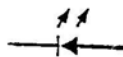


2 = \_\_

3



C



3 = \_\_

4

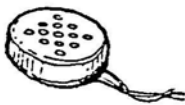


D

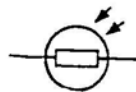


4 = \_\_

5



E

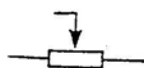


5 = \_\_

6



F

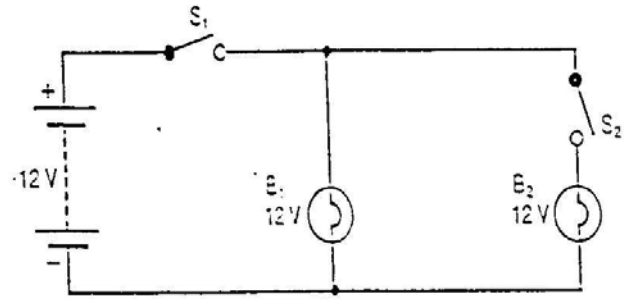


6 = \_\_

(5 marks)

6. Refer to the circuit diagram and answer the following:

- (a) What type of switches are  $S_1$  and  $S_2$ ?
- (b) Which switch or switches must be operated to light bulb  $B_2$ ?
- (c) When both bulbs are on, will they be at full or half brightness?

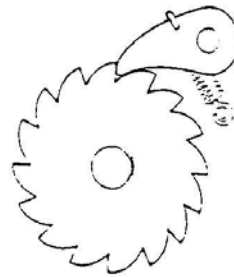


- (a) \_\_\_\_\_
- (b) \_\_\_\_\_
- (c) \_\_\_\_\_

(6 marks)

---

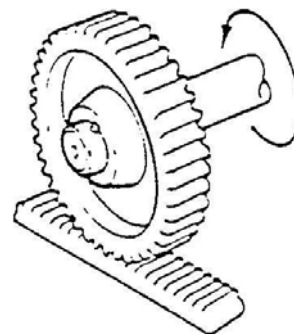
7. Indicate by means of an arrow the direction in which this **ratchet wheel** will turn.



(1 mark)

---

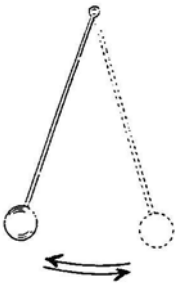
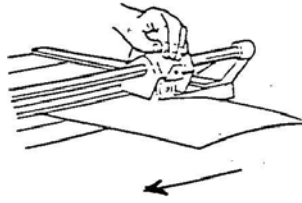
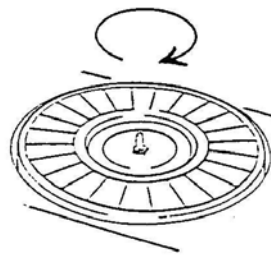
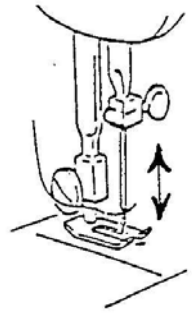
8. Indicate by means of an arrow the direction in which this **rack** is moving.



(1 mark)

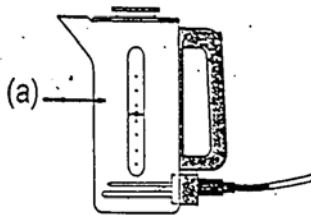
---

9. A movement can be **reciprocating, linear, rotary, or oscillating**.  
Indicate which type of movement is involved in each situation shown below.

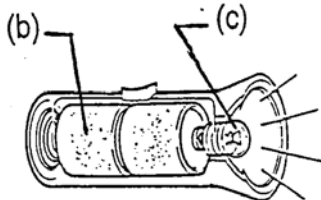
Pendulum	Paper trimmer	Turn-table	Sewing machine needle
			

(4 marks)

10. State what type of energy conversion (change) is involved in each of the following:



(a) Electric kettle: From \_\_\_\_\_ energy  
to \_\_\_\_\_ energy.



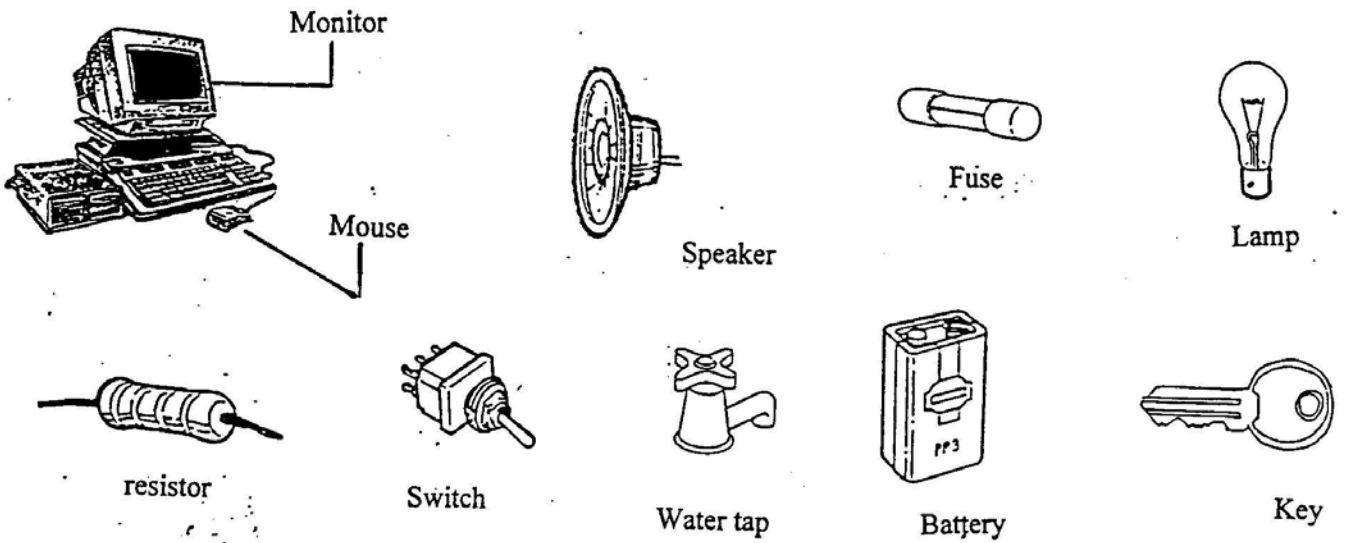
(b) Battery: From \_\_\_\_\_ energy  
to \_\_\_\_\_ energy.

(c) Lamp: From \_\_\_\_\_ energy  
to \_\_\_\_\_ energy.

(6 marks)

11. Various components are shown below.

List each under its respective column as **Input**, **Control** or **Output**.

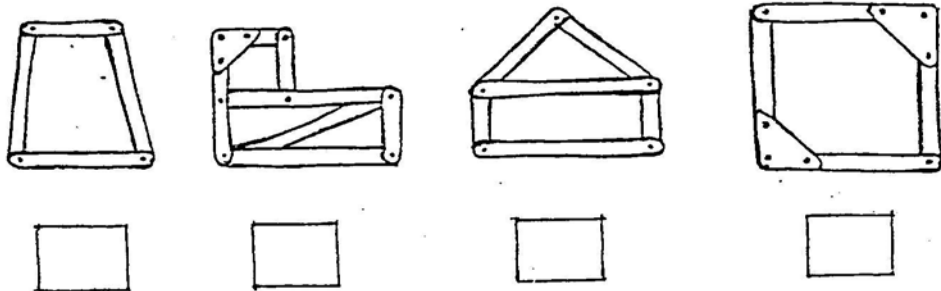


Input	Control	Output

(10 marks)

12. Some simple structures with nut and bolt connections are shown hereunder.

Label each structure with **(R)** if it is rigid, and with **(NR)** if non-rigid.



(4 marks)

13. Imagine you are a safety officer checking a school workshop.

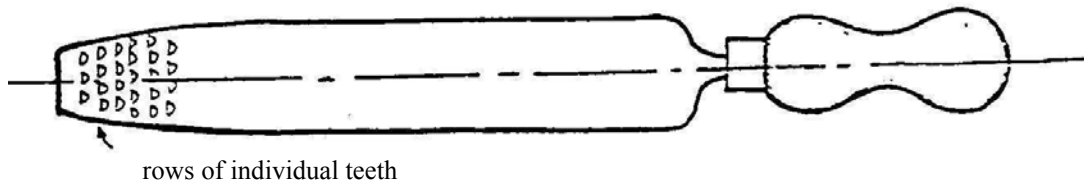
(a) Identify 4 hazards that you might come across with.

(b) Suggest a suitable safety precaution for each.

Hazards	Safety precaution
1	
2	
3	
4	

(8 marks)

14. Redraw this rasp and show the hidden detail.



(3 marks)

15. Give 4 factors which might be considered when choosing a material for making a drinks trolley.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

(4 marks)

16. Here is a situation:

**A hot cup of soup can damage the polished wood surface of a dining table if this is placed directly on it.**

- (a) Examine this situation and write a design brief for it.
- (b) Suggest **or** sketch one possible idea that will solve this problem.
- (c) State the material you will intend to use and give a reason.

(a) Design brief: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**(2 marks)**

(b) Possible idea: \_\_\_\_\_  
\_\_\_\_\_

**(2 marks)**

(c) Material: \_\_\_\_\_  
Reason: \_\_\_\_\_

**(2 marks)**

---

17. (i) Give **one** example where solar energy can be used.  
Example:

\_\_\_\_\_

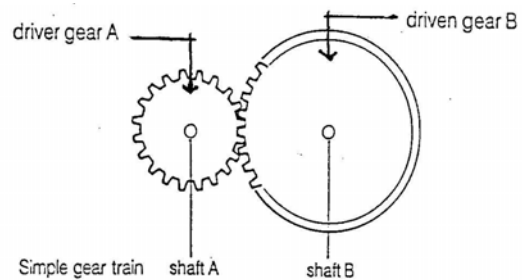
(ii) Give **one** example where wind energy can be used.  
Example:

\_\_\_\_\_

**(2 marks)**

---

18. A simple gear train is shown.  
Gear (A) is the driver and has 20 teeth.  
When shaft (A) is rotated 10 times,  
shaft (B) rotates 5 times.



- (i) What is the gear ratio of the system? \_\_\_\_\_
- (ii) How many teeth has gear (B)? \_\_\_\_\_
- (iii) If shaft (A) rotates 60 rpm, at what speed does shaft (B) rotate? \_\_\_\_\_
- (iv) If shaft (A) rotates anti-clockwise, in which direction does shaft (B) rotate? \_\_\_\_\_

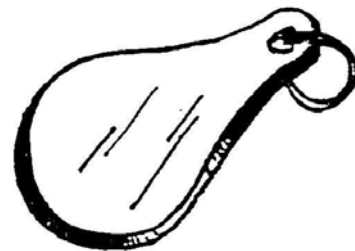
(8 marks)

19. Suggest a suitable material for the following items. Give a good reason for each.

Object	Material	Reason
blade of a kitchen knife		
handle of a saucepan		
container for take-away food		
car seat cover		
canoe		

(10 marks)

20. Listed below are the main activities involved in the making of this **key fob** made from acrylic. Arrange them in the correct order.



- Insert ring 1. \_\_\_\_\_
- Prepare template 2. \_\_\_\_\_
- Polish edges 3. \_\_\_\_\_
- File edges 4. \_\_\_\_\_
- Mark around template on acrylic 5. \_\_\_\_\_
- Drill hole 6. \_\_\_\_\_
- Cut the shape 7. \_\_\_\_\_



(7 marks)

---