



Leaving Certificate Examination

Technology
Higher Level

Sample Paper
Duration 2:5 hours

There are **three** Sections in this paper. Attempt **all three** Sections.

Section A: Core - Short-answer questions.

Section B: Core - Long-answer questions.

Section C: Options - Long-answer questions.

Section A - Core (72 marks)

Instructions:

- (a) *Answer any twelve questions in the spaces provided. All questions in Section A carry 6 marks.*
- (b) *Draw all sketches in pencil.*
- (c) *Hand up this booklet at the end of the examination.*
- (d) *Write your examination number in the box provided and on all other pages used.*

Centre Number

Section	Mark
Section A	
Section B	
Section C	
Total	
Grade	

Examination Number:

Section A. Answer *any twelve* questions. All questions carry 6 marks.

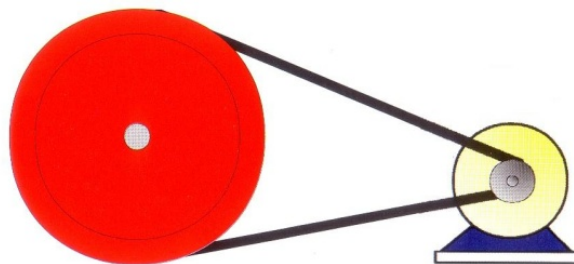
1. Explain the concept *carbon footprint* and give one example of how to reduce the carbon footprint of a product.



2. Explain why plywood, as shown, is a more suitable material than natural wood in certain situations. Suggest a situation and give reasons for its suitability.



3. On the sketch below, show one method for tensioning the belt and describe how the method shown holds the belt in tension.

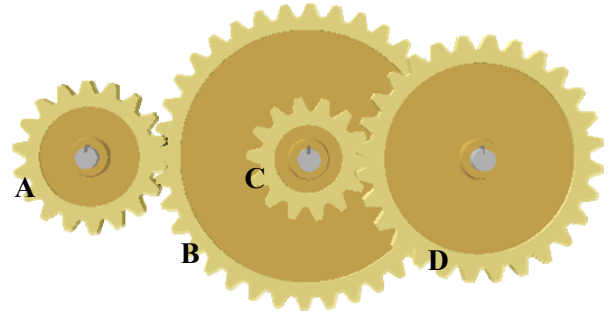


4.

(i) Using the following information, calculate the gear ratio of the gear train shown.

Teeth - **A**:18; **B**:36; **C**:14; **D**:28.

Calculation:

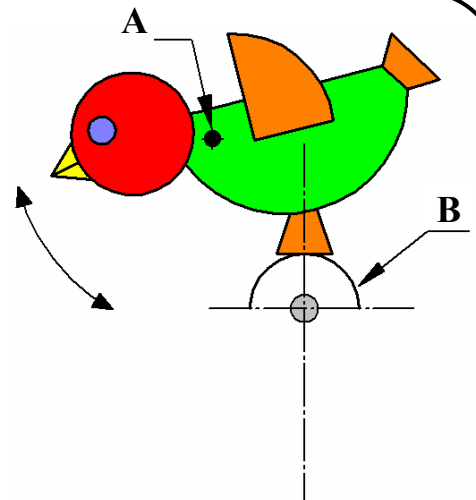


(ii) If the speed of gear A is 40 rev/min, calculate the speed of gear D.

Calculation:

5. A cam mechanism is required to make the toy bird shown pivot smoothly about point A.

- (i) Complete a suitable cam profile on B to provide the required movement.
- (ii) Show on your cam profile where the maximum lift occurs.



6. What is meant by *defragmenting* a hard disk drive in a computer?

Why is it necessary to defragment a hard disk drive?

7. Describe **two** specific safety precautions that should be observed when:

Cutting sheets of medium density fibreboard (MDF):

- (i) _____
- (ii) _____



Soldering electronic circuit boards:

- (i) _____
- (ii) _____

8. Give an example of each of the following and state **one** advantage of each:

- (i) composite material
- (ii) alloy

Composite material: _____

Advantage: _____

Alloy: _____

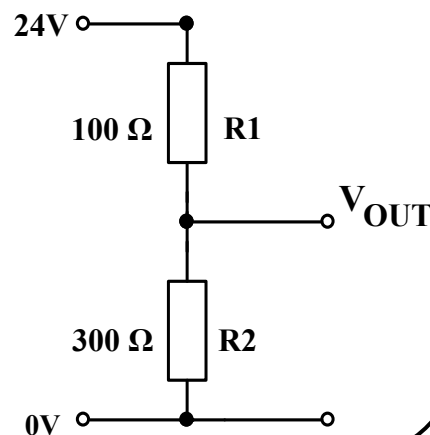
Advantage: _____

9. The resistor network shown is a potential divider.

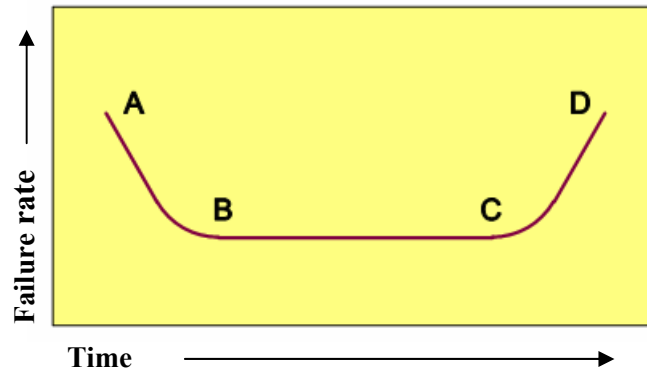
- (i) Suggest a reason for using a potential divider in a circuit.

- (ii) Calculate the value of V_{OUT} in the circuit shown.

Calculation:



10. The graph shows how the failure rate of a product can vary over its life cycle.



Explain what the regions A-B, B-C and C-D on the curve represent.

A-B _____

B-C _____

C-D _____

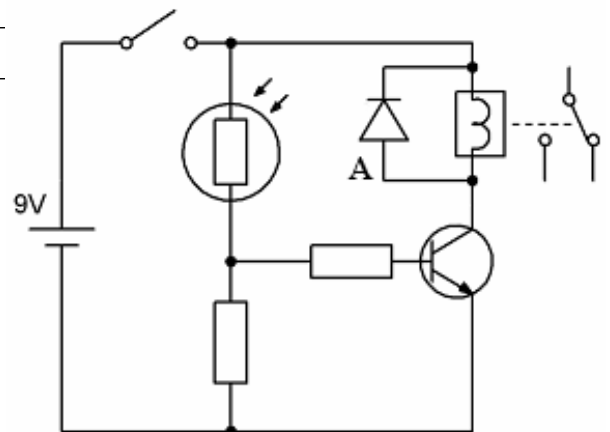
11. A control circuit to activate a relay when light levels increase is shown.

(i) What is the purpose of diode A in the given circuit?

(ii) To manufacture the circuit a choice has to be made between the following transistors:

BC 337 transistor (500mA) and
 BC108 transistor (100mA).

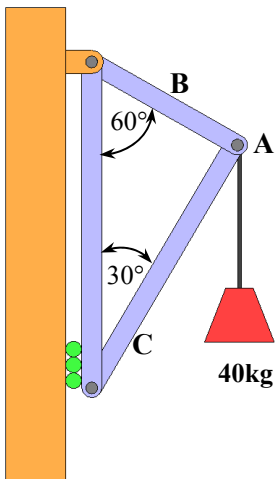
If the resistance of the relay coil is 50Ω ,
 show, with calculations, which of the above
 transistors is the most suitable:



Calculation:

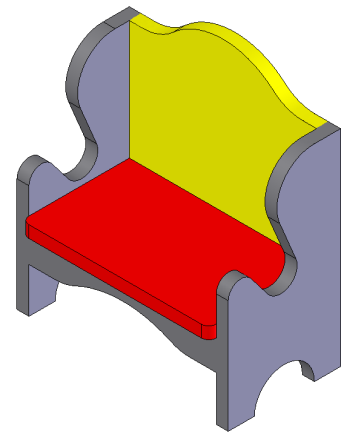
12. (i) Explain the difference between a **strut** and a **tie** in a structure.

(ii) A mass which is simply supported by a frame is shown in the sketch. The pin **A** on the frame is in equilibrium. Determine the magnitude of the forces acting on members **B** and **C** of the frame.



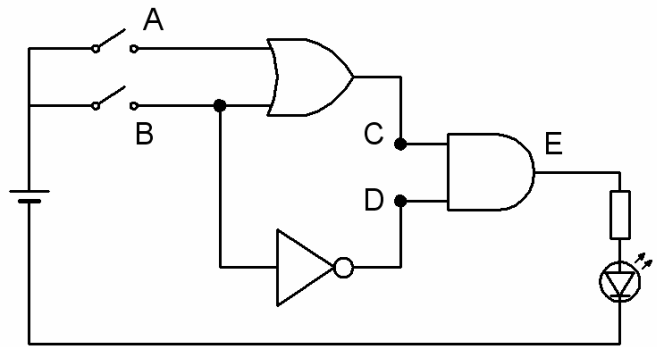
Calculation:

13. Make a well-proportioned freehand sketch of three principal orthographic views of the garden seat shown.



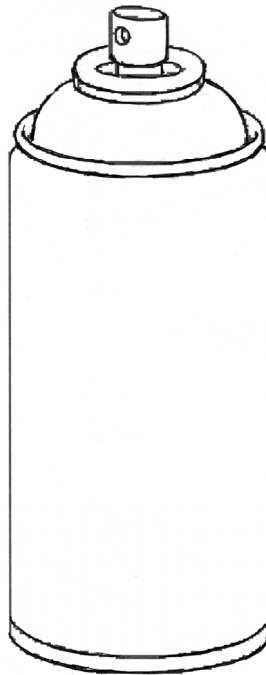
14. (i) Complete the truth table for the logic circuit shown.

A	B	C	D	E
0	0			



(ii) Identify the arrangement of switches A and B which will cause the LED to light up.

15. Use **two** graphic techniques to enhance the graphic representation of the aerosol can shown.



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