

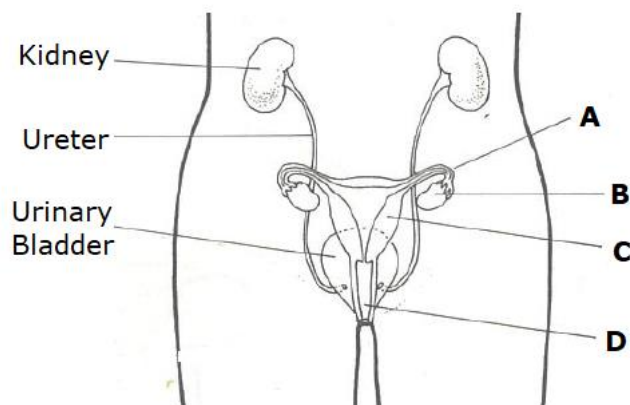
Annual Examinations for Secondary Schools 2022

YEAR 11 **SCIENCE AND TECHNOLOGY** **TIME: 1hr**

Name: _____ Class: _____

Answer all questions in this paper.

1. Figure 1 shows a cross-section of the female reproductive system.



Source: Human Biology GCSE Letts Study Aid

Figure 1: Cross-section of female reproductive system

- a. Using the labels below, name the structures A to D.

uterus	fallopian tube	vagina	ovary
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A: _____

B: _____

C: _____

D: _____

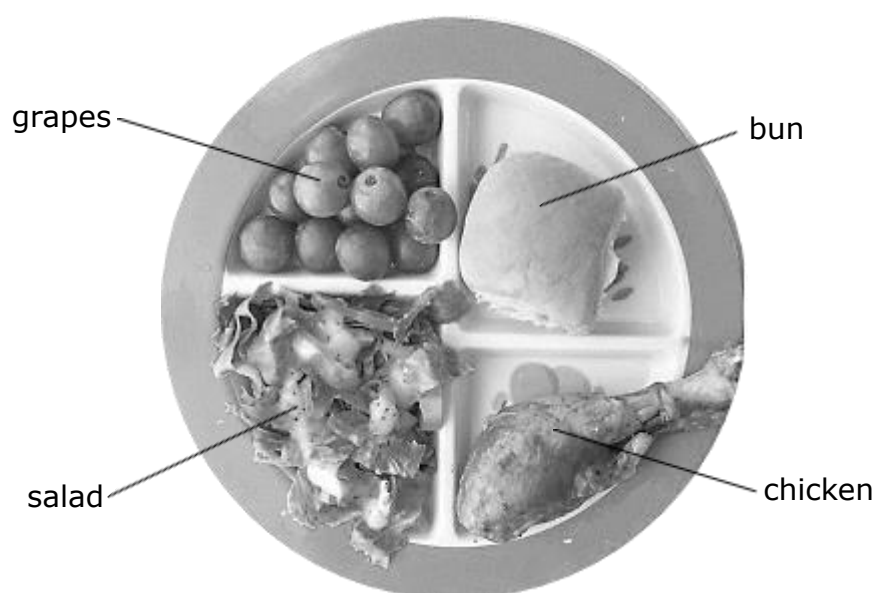
(2)

- b. List the letter of the organ that produces the ovum (egg).

(1)

Total: 3 marks

2. Figure 2 shows a plate with different food.



<https://healthbeet.org/wp-content/uploads/2019/02/MyPlate-Table-Setting-017-SHK.jpg>

Figure 2: Plate with different food

From figure 2, name **one** foodstuff that:

- a. contains complex carbohydrates and provides the body with energy;

_____ (1)

- b. provides vitamins and fibre;

_____ (1)

- c. provides protein for the building of the body.

_____ (1)

Total: 3 marks

3. a. Salvu is a heavy smoker. He coughs a lot and has difficulty with breathing even when climbing stairs.



<https://i450v.alamy.com/450v/2cd6ecd/cartoon-character-with-shortness-of-breath-symptoms-illustration-2cd6ecd.jpg>

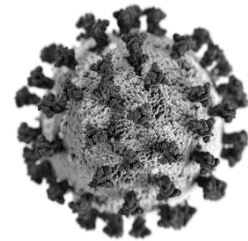
- i. List **one** side effect of smoking other than difficulty with breathing.

_____ (1)

- ii. List **one** way how a person can lead a healthy lifestyle.

_____ (1)

- b. Ever since the outbreak of the COVID-19 pandemic, Salvu must be very careful because he is considered to be a vulnerable person.



<https://www.apsf.org/wp-content/uploads/newsletters/2020/3502/coronavirus-covid-19.png>

- i. List **one** way how Salvu can protect himself from getting infected with COVID-19.

_____ (1)

- ii. Name the agent of this disease.

_____ (1)

Total: 4 marks

4. a. Underline the correct word/words in the brackets.
- i. The point through which the whole weight of an object acts is called its (central point, centre of gravity). (1)
 - ii. One way of increasing the stability of an object is to (lower, raise) its centre of gravity. (1)
 - iii. The centre of gravity of a rectangle will be at its (centre, intersection of diagonals). (1)

- b. Explain why only a limited number of passengers are allowed on the top deck of a double decker bus.

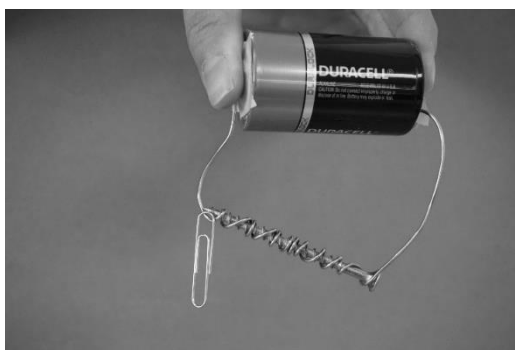


<https://www.shutterstock.com/doubledecker>

(2)

Total: 5 marks

5. Morgan built an electromagnet by winding a coil of wire around an iron nail as shown in figure 3.



<https://greatbasinobservatory.org/lesson-plans/build-electromagnet>

Figure 3: Electromagnet built by winding a coil of wire around an iron nail

- a. Fill in the blanks by using **some** of the words below:

turns	magnet	stronger	iron bar	current	steel strip
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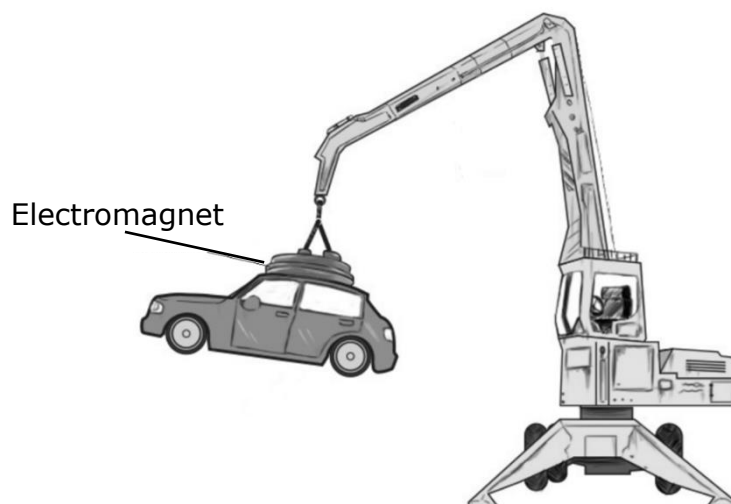
The electromagnet can be made stronger to attract more paper clips

by using a _____ current, by putting more

_____ of wire on the coil or by using an

_____ inside the coil. (3)

- b. Figure 4 shows an electromagnet being used on a scrapyard crane.



<https://mammothmemory.net/physics/magnets-and-electromagnetism/electromagnetism/uses-of-electromagnetism.html>

Figure 4: An electromagnet being used on a scrapyard crane

Explain why a permanent magnet is not as useful as an electromagnet on a scrapyard crane.

(2)

Total: 5 marks

6. Luke has started a new job as a shop assistant in a pet shop where a new device will help to wash and dry pets like dogs. As shown in figure 5, when a washed dog walks over a metal table-top in the drying area, the hair dryer will need to automatically start blowing to dry the pet. An electronic circuit will be used to start the dryer safely.

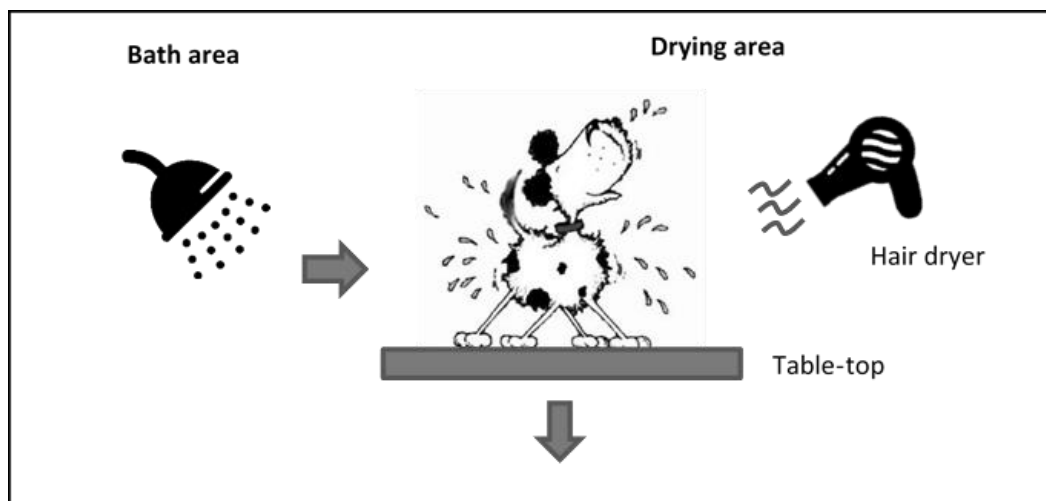


Figure 5: New device used to wash pets

- a. Circle the correct answers to help Luke understand how this machine works.

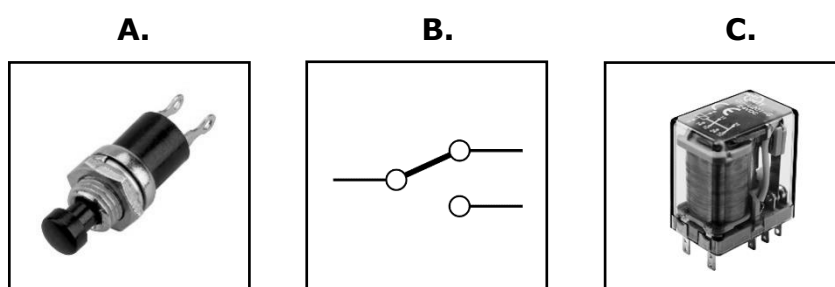
- i. The dryer will need to work using the normal household mains voltage. Mains voltage is rated at:

A. 50 Volts AC	B. 240 Volts AC	C. 2000 Volts AC	(1)
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- ii. A switch will be placed under the table-top to start the blower when it feels the weight of the dog. This needs to be:

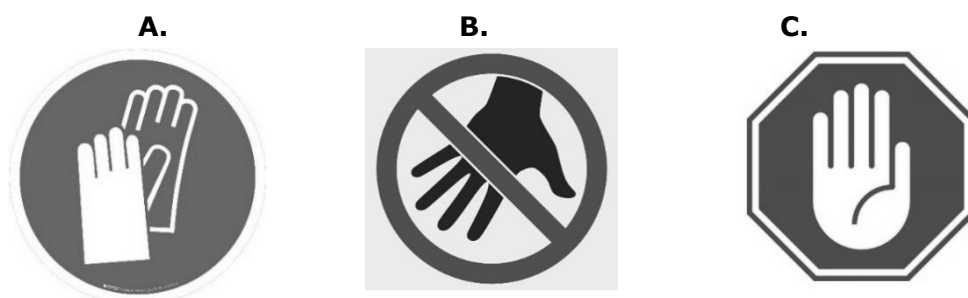
A. dog-proof	B. water-proof	C. fire-proof	(1)
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- iii. Which of these pictures shows an electromagnetic relay switch:



(1)

- b. Circle a sign that says people must use gloves when using this equipment.



(1)

- c. The incomplete circuit required for the pet drying machine is shown in the figure 6.

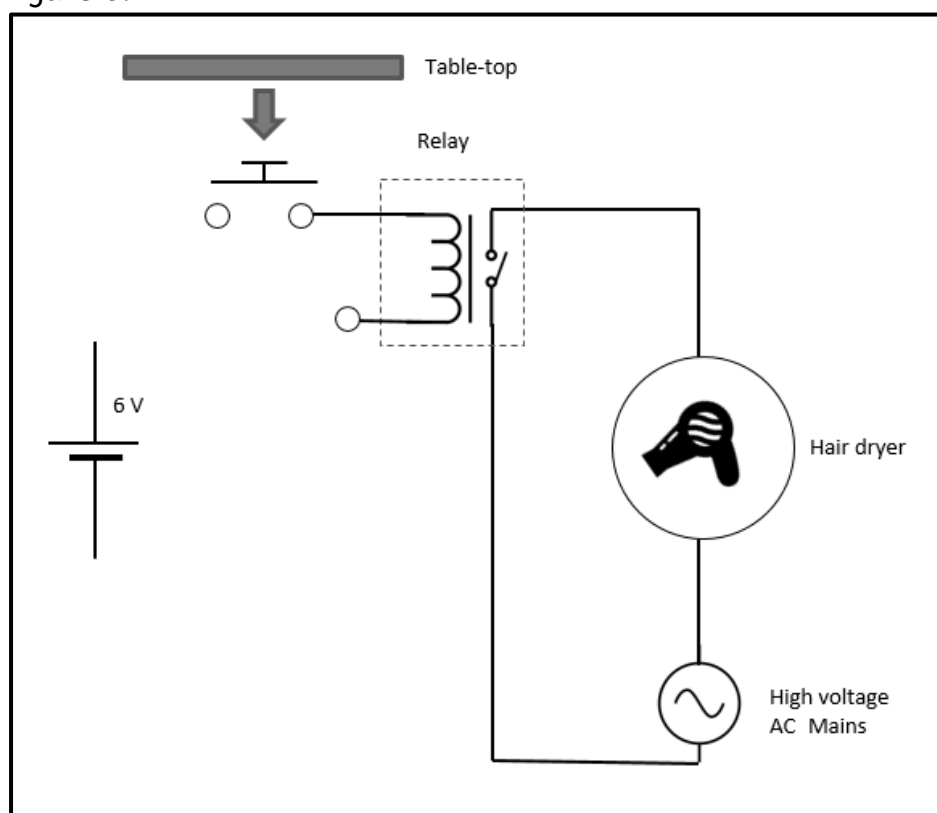


Figure 6: Incomplete circuit required for the pet drying machine

- i. On figure 6, **draw** freehand the wires needed to complete the circuit used for the pet drying machine system. (4)
- ii. On figure 6, add the polarity '+' and '-' to the battery. (1)
- iii. What is the maximum voltage that can touch the metal table-top and the dog in the circuit in figure 6?

(1)

Total: 10 marks