

ST. PAUL'S COLLEGE
F.2 MID-YEAR EXAMINATION Sample Paper
INTEGRATED SCIENCE

Time allowed : 1 hour 15 minutes

Name: _____

Class: _____

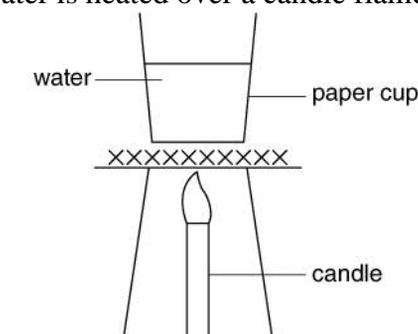
Class No. _____

Instructions

1. Answer ALL questions in both sections.
2. Answer section A on the multiple choice answer sheet.
3. Answer section B on the question paper in the spaces provided.
4. At the end of the examination, **hand in the two sections separately.**

Section A (40 marks)

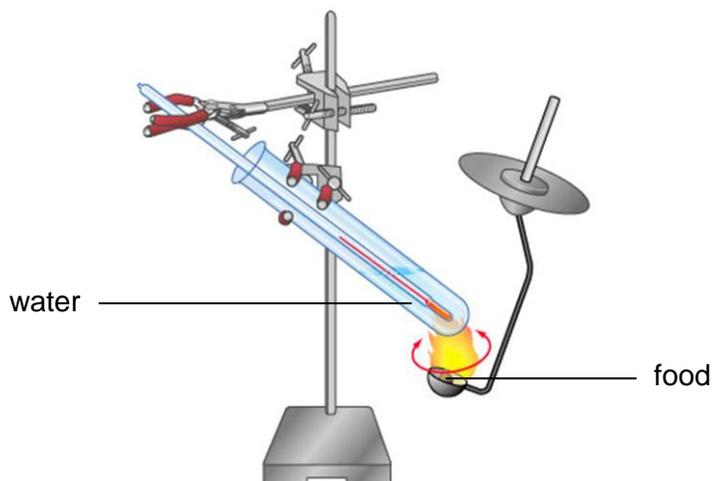
1. A colourless gas does not support burning and shows negative results in limewater and hydrogencarbonate indicator, which of the following statements must be correct?
 - A. The gas is nitrogen.
 - B. The gas is not oxygen.
 - C. The gas is carbon dioxide.
 - D. The gas is a mixture of carbon dioxide and nitrogen.
2. Cobalt chloride paper should be kept
 - A. in the dark because exposure to light will make the paper useless.
 - B. in the desiccator because water vapour in the air will make the paper useless.
 - C. in the container filled with nitrogen because oxygen in the air will make the paper useless.
 - D. in the container with soda lime because carbon dioxide in the air will make the paper useless.
3. Argon is a noble gas which is denser than oxygen, can we use argon to put out a fire?
 - A. No, because argon supports burning.
 - B. No, because only carbon dioxide can be used to put out a fire.
 - C. Yes, because argon is a noble gas.
 - D. Yes, because argon can displace the oxygen surrounding the object on fire.
4. A paper cup half-filled with water is heated over a candle flame. The paper cup does not catch fire.



Which of the following best explains the phenomenon?

- A. There is not enough fuel.
- B. The water does not support burning.
- C. The water blocks the oxygen from the cup.
- D. The water absorbs heat from the paper cup so that it does not get hot enough to start burning.

5. Jane carried out an experiment to measure the energy contents of several kinds of food by burning the food as shown below.



Which of the following statements about the above experiment is/are correct?

- (1) The chemical energy stored in food is changed to heat energy and light energy.
 - (2) The energy gained by the water in the boiling tube must be equal to the energy released by burning the food.
 - (3) The weight of each kind of food burnt must be the same if Jane wants to compare the energy contents of food per gram.
- A. (1) only
 B. (1) and (2) only
 C. (2) and (3) only
 D. (1), (2) and (3)

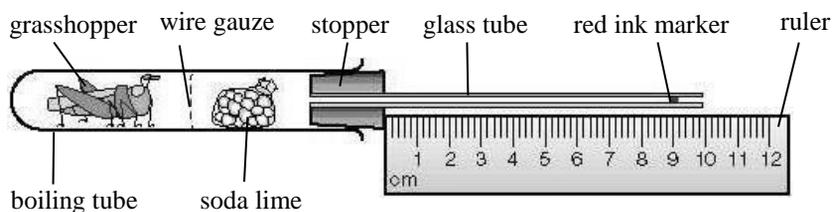
6. Which of the following descriptions is INCORRECT when a rabbit eats grass?

- A. Grass is a producer.
- B. The rabbit is a consumer.
- C. The rabbit does not depend on the sun.
- D. The chemical energy stored in the grass is transferred to the rabbit.

7. Which of the following pairs wrongly matches the structure of the animals used for gaseous exchange?

<u>Animal</u>	<u>Structure</u>
A. Human	Lungs
B. Grasshopper	Lungs
C. Fish	Gills
D. Frog	Skin

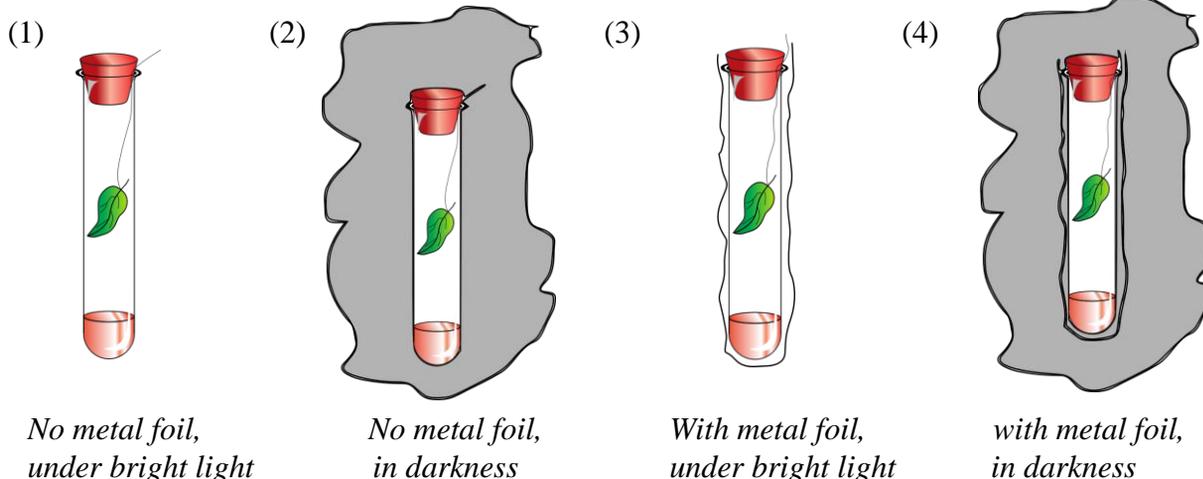
8. The following diagram shows the set-up of an experiment on the gaseous exchange of a grasshopper with the surroundings.



Which of the following correctly explain why the red ink marker moves to the left five minutes later?

- (1) Soda lime absorbs carbon dioxide inside the boiling tube.
 - (2) The amount of gases inside the boiling tube decreases.
 - (3) The temperature inside the boiling tube increases.
- A. (1) and (2) only
 B. (1) and (3) only
 C. (2) and (3) only
 D. (1), (2) and (3)

9. In which of the following boiling tubes will the hydrogencarbonate indicator turn yellow?



- A. (1) and (3) only
- B. (2) and (4) only
- C. (1), (2) and (3) only
- D. (2), (3) and (4) only

10. Recently, the President's Climate Action Plan has called on the federal government to reduce emissions of hydrofluorocarbons (HFCs) which are the potent greenhouse gases. Which of the following is/are the harmful effect(s) of HFCs?

- (1) Global warming
 - (2) Depletion of ozone
 - (3) Acid rain
- A. (1) only
 - B. (3) only
 - C. (2) and (3) only
 - D. (1), (2) and (3)

11. Which of the following statements are correct?

- (1) The direction of an electric current is from the positive terminal of a dry cell to its negative terminal in the circuit.
 - (2) The direction of an electric current is same as that of flow of free electrons.
 - (3) The higher the voltage, the faster is the rate of free electrons flow.
- A. (1) and (2) only
 - B. (1) and (3) only
 - C. (2) and (3) only
 - D. (1), (2) and (3)

12. Which of the following are the necessary conditions to make electricity flow in the circuit?

- (1) There must be at least one light bulb in the circuit.
 - (2) There must be a source of electrical energy.
 - (3) There must be a complete path from one end of the dry cell to the other end.
- A. (1) and (2) only
 - B. (1) and (3) only
 - C. (2) and (3) only
 - D. (1), (2) and (3)

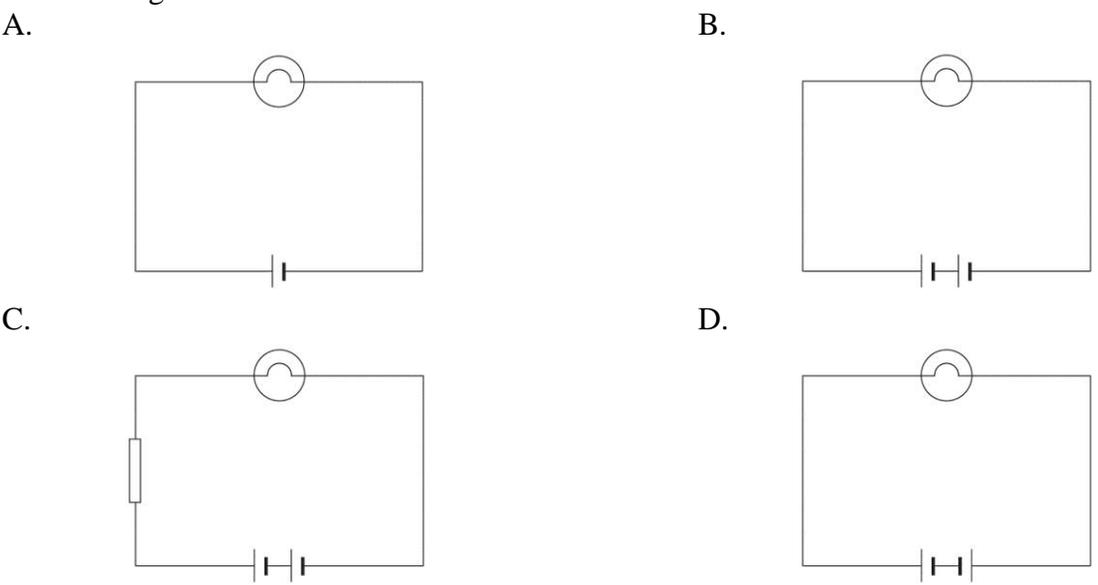
13. A battery and a light bulb are connected with some electrical wires. The light bulb lights up in the circuit. What energy is/are involved in the process?
- (1) Chemical energy
 - (2) Heat energy
 - (3) Potential energy
- A. (1) and (2) only
 - B. (1) and (3) only
 - C. (2) and (3) only
 - D. (1), (2) and (3)

14. Suppose that there are 4 different resistance wires. The table below summarises their dimensions and the materials they are made of.

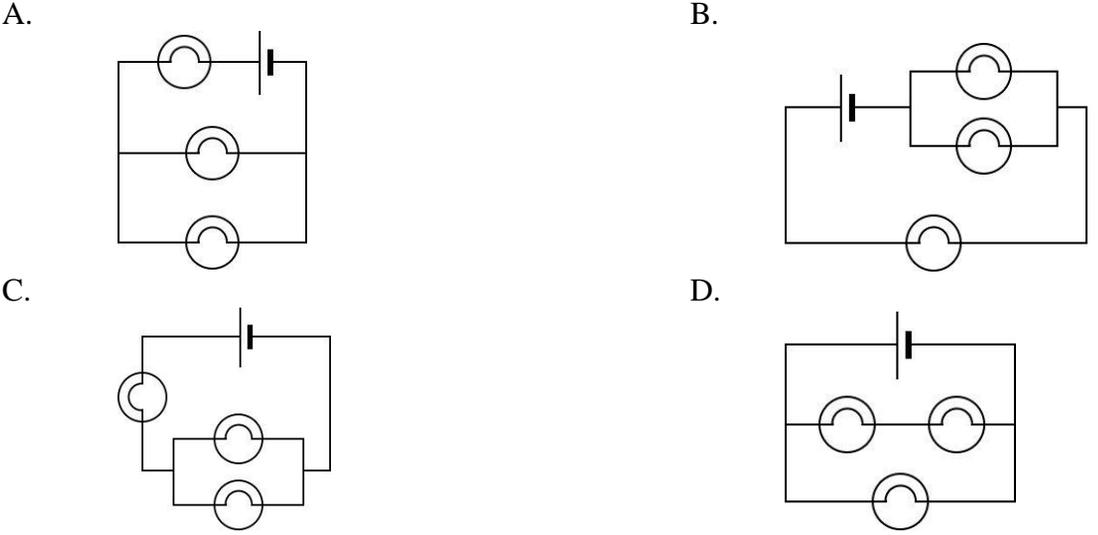
	Wire 1	Wire 2	Wire 3	Wire 4
Diameter of the cross section (mm)	6	4	6	6
Length (mm)	25	50	50	25
Material	Iron	Iron	Iron	Copper

Which of the following correctly arranges the wires in ascending order of the resistance?

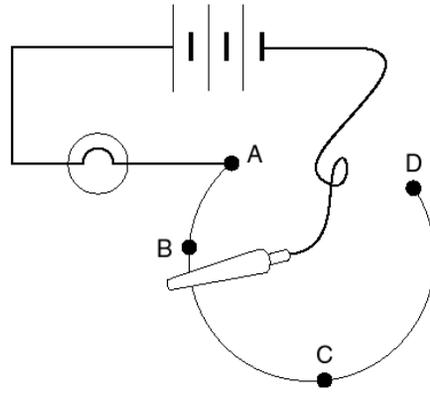
- A. Wire 4, Wire 1, Wire 2, Wire 3
 - B. Wire 1, Wire 4, Wire 3, Wire 2
 - C. Wire 4, Wire 1, Wire 3, Wire 2
 - D. Wire 2, Wire 3, Wire 1, Wire 4
15. The bulbs and batteries in the circuits below are identical. In which of the following cases is the bulb the brightest?



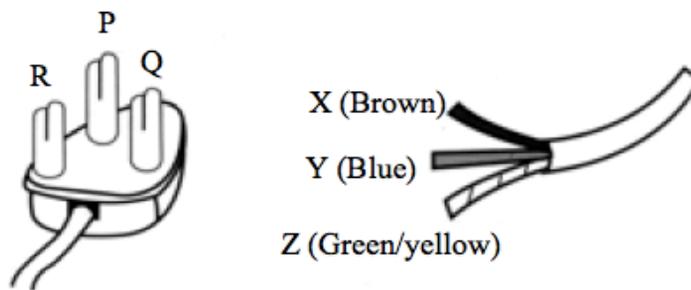
16. Which of the following circuits is different from the others?



17. The following diagram shows a circuit with a loop of resistance wire. Where should the clip be on the loop of resistance wire to make the bulb brightest?



18. The diagram below shows a three-pin plug and the wires connected to it. To which of the pins should each of the wires X, Y and Z be connected?



- | | | | |
|----|----------|----------|----------|
| | <u>P</u> | <u>Q</u> | <u>R</u> |
| A. | X | Y | Z |
| B. | Y | X | Z |
| C. | Z | Y | X |
| D. | Z | X | Y |
19. Which of the following best describes the difference between the live wire and the neutral wire?
- They are only different in colours.
 - Current flows in live wire only when the electrical appliance is working properly.
 - Live wire carries a voltage while neutral wire provides a return path for the current.
 - Neutral wire is a safety device while the live wire is not.
20. Which of the following actions is dangerous?
- Switching off the power before removing a plug from the mains socket.
 - Replacing a blown fuse with a copper wire of the same thickness.
 - Disconnecting a broken table lamp from the mains socket before repairing it.
 - Using more than one fuse in a circuit.

END OF SECTION A