FUKIEN SECONDARY SCHOOL

S2 First Term Uniform Test (2020-2021)

Integrated Science

(45 minutes)

Date: 21st October 2020 Name:_____

Time: 8:30a.m. - 9:15a.m. Class: _____ No.: _____

Instructions to students:

1. Write your name, class and class number on both the question paper and the answer sheets.
2. Answer ALL questions.
3. Write down all the answers on the answer sheets.
4. Hand in the question paper and the answer sheets at the end of the examination.
5. The total mark of the paper is 100.

Section A: Multiple Choice Questions (40 marks)

1. The percentage of nitrogen in air is about
   A. 78%.
   B. 21%.
   C. 0.9%.
   D. 0.04%.

2. Which of the following statements about the glowing splint test is / are correct?
   (1) It can be used to test for carbon dioxide.
   (2) It can be used to test for oxygen.
   (3) It burns more brightly when the gas it tests for is present.
   A. (1) only
   B. (2) only
   C. (1) and (3) only
   D. (2) and (3) only

3. Which of the following statements about oxygen are correct?
   (1) It supports burning.
   (2) It is essential for the survival of living things.
   (3) It is unreactive.
   A. (1) and (2) only
   B. (1) and (3) only
   C. (2) and (3) only
   D. (1), (2) and (3)

4. Which of the following properties of carbon dioxide make it the best gas for putting out fire?
   (1) It changes to solid directly at -78^{o}C.
   (2) It is denser than air.
   (3) It does not support burning.
   A. (1) and (2) only
   B. (1) and (3) only
   C. (2) and (3) only
   D. (1), (2) and (3)

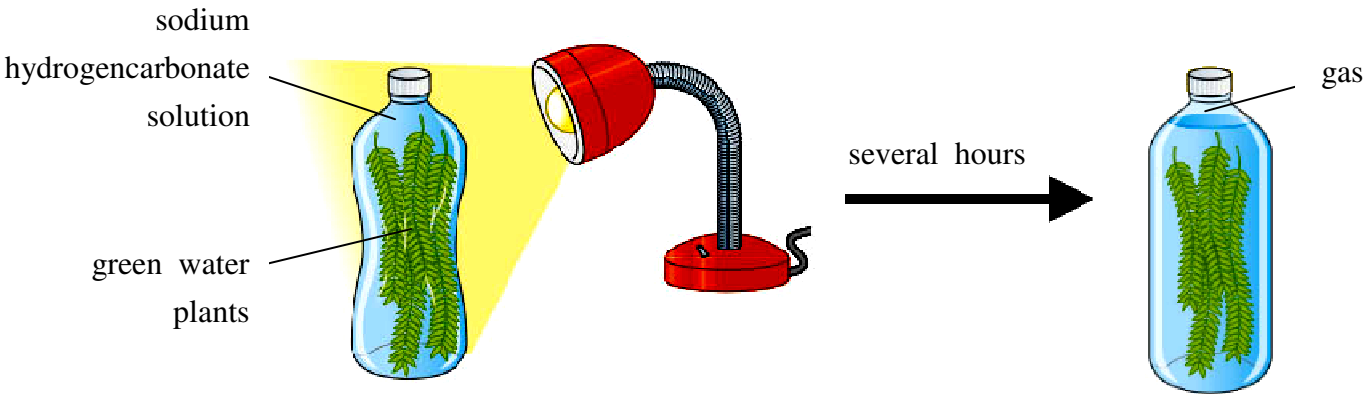
5. Which of the following are needed for photosynthesis?
   (1) oxygen
   (2) water
   (3) light energy
   A. (1) and (2) only
   B. (1) and (3) only
   C. (2) and (3) only
   D. (1), (2) and (3)

6. Which of the following describes the energy conversion of photosynthesis?
   A. Chemical energy → Light energy
   B. Light energy → Potential energy
   C. Potential energy → Light energy
   D. Light energy → Chemical energy

7. How is destarching carried out?
   A. Do not water the plant for 24 hours.
   B. Remove all the leaves of a plant.
   C. Put the plant in darkness for 24 hours.
   D. Kill the plant with high temperature.

8. Destarching is necessary if we want to show the leaves of a plant
   (1) produced starch.
   (2) released oxygen.
   (3) consumed carbon dioxide.
   A. (1) only
   B. (2) only
   C. (3) only
   D. (1), (2) and (3)

Directions: Questions 9 and 10 refer to the following experiment. Some green water plants are put into a plastic bottle containing sodium hydrogencarbonate solution. After squeezing out all the air in the bottle, it is sealed tightly and put under bright light. After several hours, the bottle returns to its original shape. Some gas is found in the bottle.



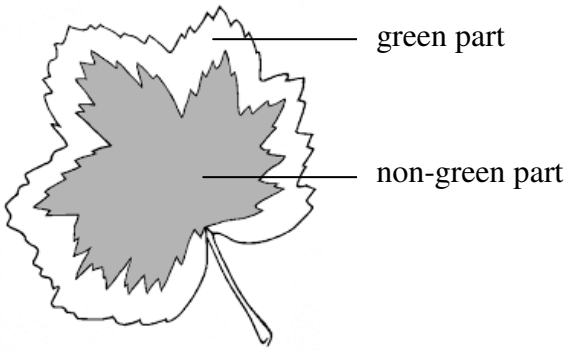
9. What is the function of sodium hydrogencarbonate solution?
   A. Absorbs carbon dioxide
   B. Produces oxygen
   C. Tests for the presence of carbon dioxide
   D. Supplies carbon dioxide

10. The gas formed in the bottle is
   A. oxygen.
   B. nitrogen.
   C. carbon dioxide.
   D. ordinary air.

11. A gas turns hydrogencarbonate indicator purple. What is the conclusion?
   A. It must be oxygen.
   B. It must not be carbon dioxide.
   C. It must be nitrogen.
   D. It must be exhaled air.

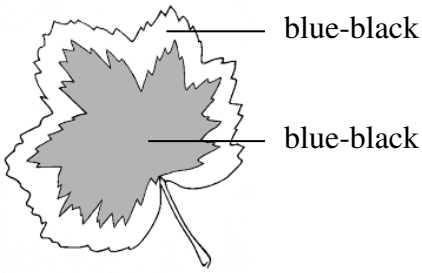
12. Which of the following statements about inhaled air and exhaled air is correct?
   A. Exhaled air does not contain oxygen.
   B. Inhaled air contains mainly oxygen.
   C. Inhaled air and exhaled air contain the same amount of nitrogen.
   D. Exhaled air contains more carbon dioxide than oxygen.

13. A destarched plant with variegated leaves was put under bright light for 2 hours. A piece of leaf was then removed from the plant and tested with iodine solution. The following diagram shows the original colour pattern of the variegated leaf.

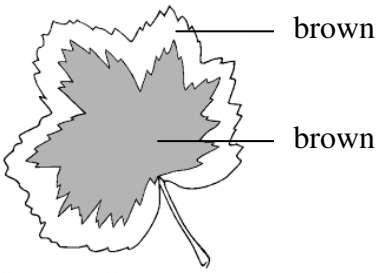


Which of the following diagrams shows the colour pattern of the leaf after the iodine test?

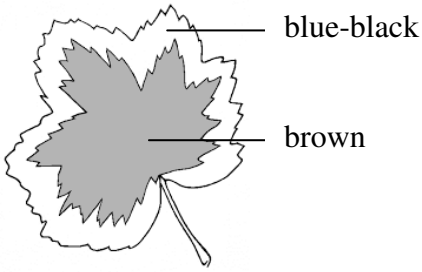
A.



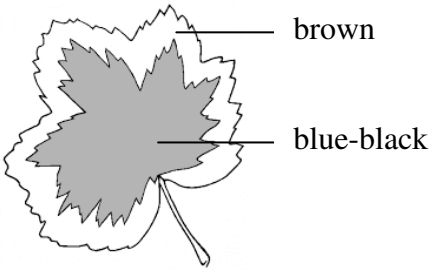
B.



C.



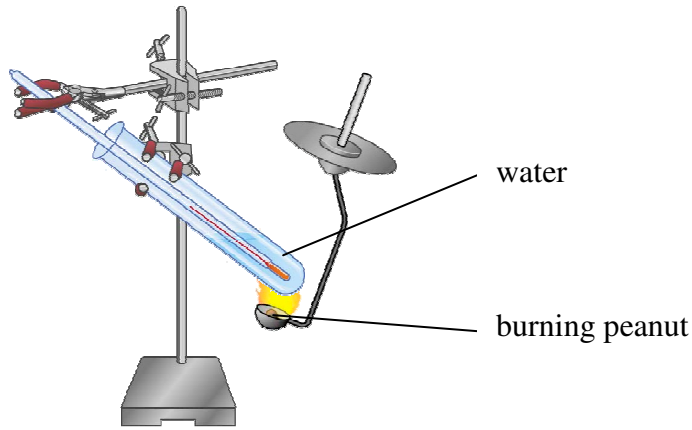
D.



14. Which of the following chemicals in cigarette smoke is addictive?
    A. Nicotine
    B. Tar
    C. Carbon monoxide
    D. Carbon dioxide

15. Which of the following can be caused by smoking?
    (1) Lung cancer
    (2) Yellow teeth and fingernails
    (3) Heart diseases
    A. (1) and (2) only
    B. (1) and (3) only
    C. (2) and (3) only
    D. (1), (2) and (3)

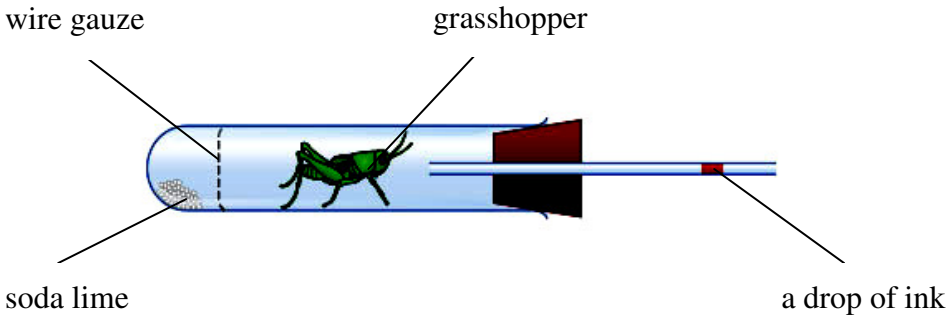
Directions: Questions 16 and 17 refer to the following experiment which studies the release of energy from food. A piece of peanut was burnt and used to heat some water in a boiling tube. The temperature of water was recorded at the beginning of the experiment.



16. When should the temperature of the water be recorded again?
    A. After 5 minutes
    B. When the peanut burns completely
    C. When the water boils
    D. When the bottom of the boiling tube turns black

17. The same experiment was repeated using almond instead of peanut to compare the energy value of these food. Which of the following variables need to be controlled?
    (1) Volume of water
    (2) Time of burning
    (3) Distance between the burning food and boiling tube
    A. (1) and (2) only
    B. (1) and (3) only
    C. (2) and (3) only
    D. (1), (2) and (3)

Directions: Questions 18 to 20 refer to the following experiment.



18. What will happen to the drop of ink after an hour?
    A. It will change from red to yellow.
    B. It will change from red to purple.
    C. It will move towards the right.
    D. It will move towards the left.

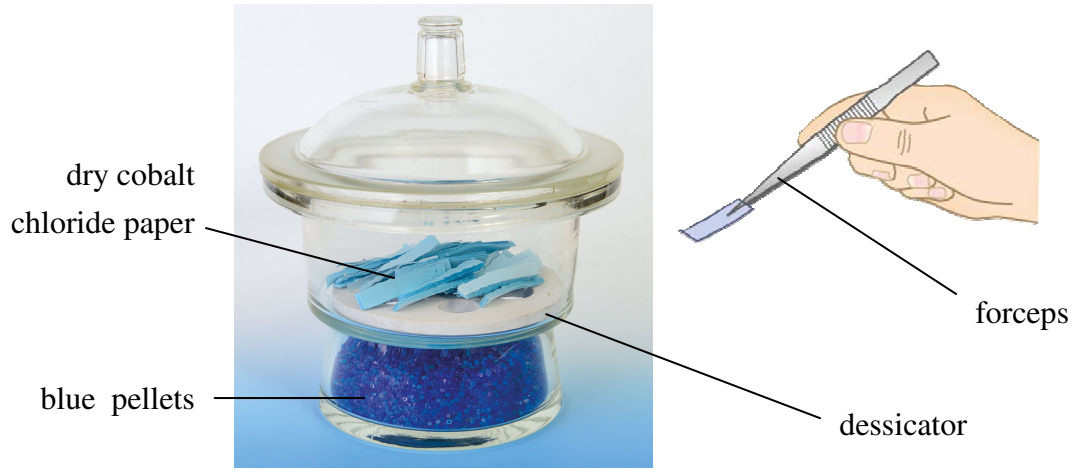
19. What is the function of soda lime in this experiment?
    A. Supplies carbon dioxide
    B. Absorbs carbon dioxide
    C. Tests for the presence of carbon dioxide
    D. Absorbs oxygen

20. This experiment shows that
    A. the grasshopper uses oxygen.
    B. the grasshopper releases energy.
    C. the grasshopper releases carbon dioxide.
    D. the grasshopper uses energy.

End of Section A

Section B: Structured Questions (60 marks)

1. The diagram below shows some dry cobalt chloride paper stored in a dessicator. A pair of forceps have to be used to take the dry cobalt chloride paper out of the dessicator.



(a) What is the function of dry cobalt chloride paper? Briefly describe how it works. (3 marks)

(b) Some blue pellets are present at the bottom of the dessicator. They are known to be able to absorb a certain gas in the air within the dessicator. What gas do they absorb? (1 mark)

(c) Why should we not use our bare hands to pick up the dry cobalt chloride paper? (2 marks)

2. Lily's teacher gave Lily a gas X. Lily was told that gas X was oxygen, carbon dioxide or nitrogen. To identify the gas, Lily carried out some simple tests and got the following results.

Test	Treatment	Result
I	Put a burning splint into gas X.	The flame went out.
II	Bubbled gas X through lime water.	It remained clear.

(a) Based on the result of test I only, what conclusion can Lily draw? (1 mark)

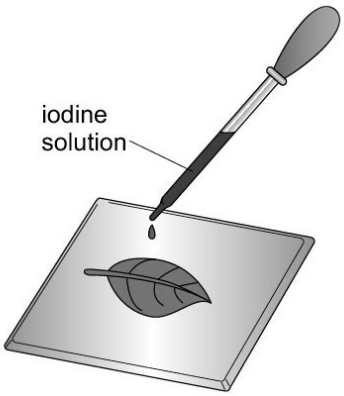
(b) Based on the results of tests I and II, what conclusion can Lily draw? (1 mark)

(c) Suggest ONE alternative to replace the burning splint in test I. State its result if it was used in the test. (2 marks)

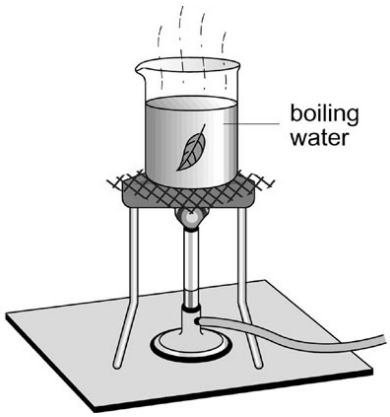
(d) State ONE daily use of gas X. (2 marks)

3. The diagrams below show the steps to test for the presence of starch in a green leaf.

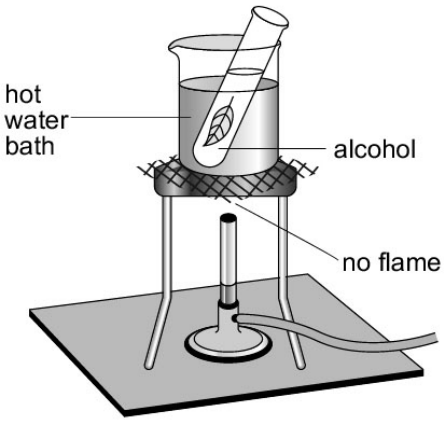
P



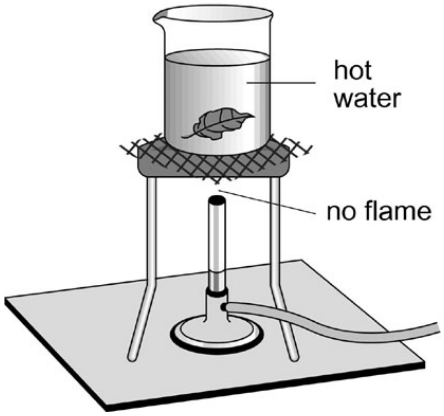
Q



R



S



(a) Arrange the steps in the correct order. (2 marks)

(b) Explain the purpose of

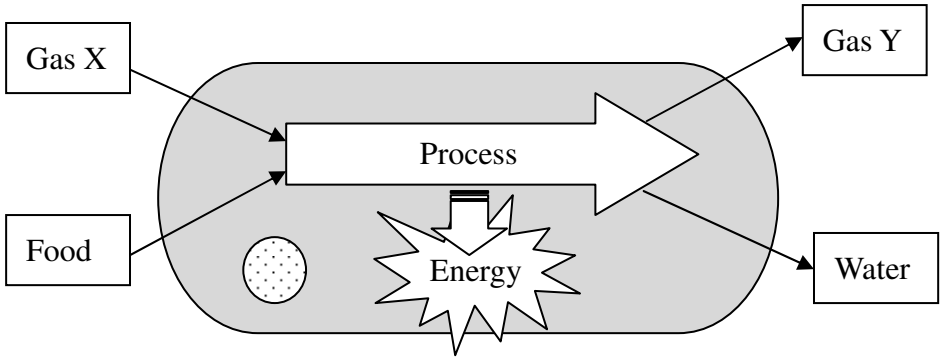
(i) step Q, and (2 marks)

(ii) step S. (2 marks)

(c) Besides turning off the Bunsen flame, state another safety precaution while carrying out step R. (2 marks)

(d) State the colour change of the iodine solution if starch was present in the leaf. (2 marks)

4. The diagram below shows a cell carrying out a process that generates energy for the cell.



(a) Name this process. (1 mark)

(b) Name gases

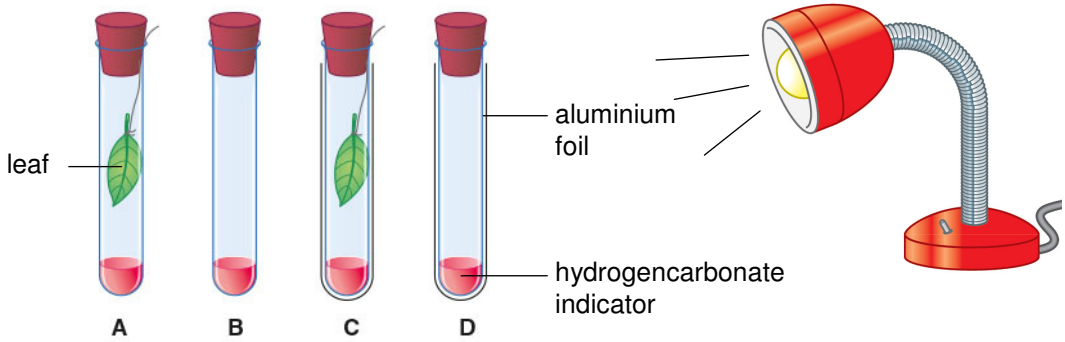
(i) X, and (1 mark)

(ii) Y. (1 mark)

(c) Write down the word equation for this process. (2 marks)

(d) State TWO body activities that need energy even when we sleep. (4 marks)

5. Mario uses the following set-up to investigate gas exchange in plants under light and dark conditions. He observes the colour change of the indicator three hours later.



(a) What is the colour of hydrogencarbonate indicator at the beginning of the experiment? (1 mark)

(b) What is the colour of hydrogencartbonate indicator in each tube at the end of the experiment? (4 marks)

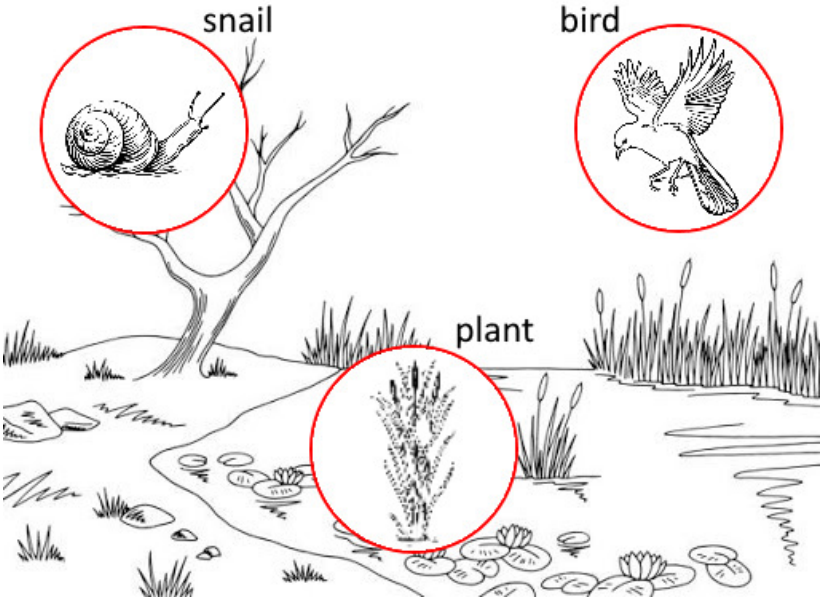
(c) In which tube(s) did the following processes happen?

(i) Respiration (2 marks)

(ii) Photosynthesis (1 mark)

(d) Why no conclusion can be made by comparing the results of A and D? (2 marks)

6. The following diagram shows some living things found in the wetland.



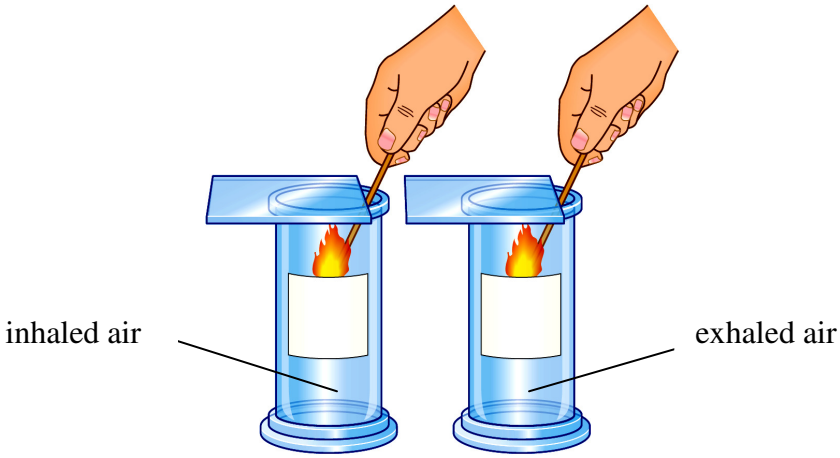
(a) Construct a food chain that involves all the living things shown above. (2 marks)

(b) Identify the producer(s) and consumer(s) in the food chain. (3 marks)

(c) Describe how the energy from the Sun can eventually reach the bird. (4 marks)

(d) Besides providing food, state another importance of photosynthesis to other living things. (2 marks)

7. The following diagram shows an experiment to compare the oxygen content in inhaled and exhaled air.



(a) What is the independent variable of this experiment? (2 marks)

(b) What is the dependent variable of this experiment? (2 marks)

(c) State the expected result of the experiment. (2 marks)

(d) What conclusion can be drawn from this experiment? (2 marks)

End of Paper