# FUKIEN SECONDARY SCHOOL S2 First Term Uniform Test (2021-2022) Integrated Science (45 minutes)

Date: 10<sup>th</sup> November 2021 Time: 8:30a.m. - 9:15a.m.

Name:	
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. Paul lit three candles and put them in three gas jars containing different gases as shown below. The three candles are the same.



Which of the following correctly shows the time needed for the candles in the jars to go out in descending order?

- A Jar 3 > Jar 2 > Jar 1
- B Jar 3 > Jar 1 > Jar 2
- C Jar 2 > Jar 3 > Jar 1
- D Jar 2 > Jar 1 > Jar 3

2. There are three jars of unknown colourless gas. Different tests were carried out on them.



The table below shows the results of the tests.

Gas	Test with a glowing splint	Test with lime water
Р	goes out	the colour does not change
Q	goes out	the colour does not change
R	relights	the colour does not change

What can be concluded from the results?

- (1) Gas P and gas Q are not carbon dioxide.
- (2) Gas P and gas Q are the same kind of gas.
- (3) Gas R must be oxygen.
- A (1) and (2) only
- B (1) and (3) only
- C (2) and (3) only
- D (1), (2) and (3)
- 3. Cobalt chloride paper should be kept
  - A in desiccators because water vapour in the air will make the paper useless.
  - B in containers with soda lime because carbon dioxide in the air will make the paper useless.
  - C in containers filled with nitrogen because oxygen in the air will make the paper useless.
  - D in the dark because exposure to light will make the paper useless.

- 4. Which of following are the properties of gases scientists usually look into when identifying a gas?
  - (1) Ability to react with certain chemicals
  - (2) Ability to support burning
  - (3) Smell of the gas
  - A (1) and (2) only
  - B (1) and (3) only
  - C (2) and (3) only
  - D (1), (2) and (3)
- 5. To remove the chlorophyll from a leaf, we should
  - A soak the leaf in hot alcohol.
  - B boil the leaf in water.
  - C wash the leaf in hot water.
  - D add iodine solution to the leaf.
- 6. In the test for starch in a green leaf, which of the following are the main reasons to turn off the Bunsen burner when the green leaf is heated in alcohol?



- (1) We can save the town gas.
- (2) Boiling alcohol is dangerous.
- (3) Alcohol is flammable.
- A (1) and (2) only
- B (1) and (3) only
- C (2) and (3) only
- D (1), (2) and (3)

7. During photosynthesis, what do plants obtain from the soil and the air respectively?

	<u>From soil</u>	<u>From air</u>
А	oxygen	carbon dioxide
В	water	oxygen
С	oxygen	water
D	water	carbon dioxide

- 8. What happens to a green plant when we destarch it?
  - (1) It carries out respiration.
  - (2) It carries out photosynthesis.
  - (3) It consumes stored starch.
  - A (1) and (2) only
  - B (1) and (3) only
  - C (2) and (3) only
  - D (1), (2) and (3)
- 9. Which of the following living things is/are consumer(s) in the food chain below?

(1) Grass  $\longrightarrow$  (2) Mouse  $\longrightarrow$  (3) Snake  $\longrightarrow$  (4) Hawk

- A (4) only
- B (2) and (3) only
- C (2), (3) and (4) only
- D (1), (2), (3) and (4)
- 10. Which of the following statements about cow is correct?
  - A Cow is a producer because it produces milk.
  - B Cow is a producer because it is eaten by man.
  - C Cow is a consumer because it takes in oxygen day and night.
  - D Cow is a consumer because it eats grass.
- 11. What is the initial energy source for all living things?
  - A The sun
  - B Starch
  - C Rainwater
  - D Sea

- 12. Which of the following statements about respiration are correct?
  - (1) Animals carry out respiration but plants do not.
  - (2) Respiration releases the chemical energy stored in food by breaking down the food.
  - (3) Water is formed during respiration.
  - A (1) and (2) only
  - B (1) and (3) only
  - C (2) and (3) only
  - D (1), (2) and (3)
- 13. Oxygen is a by-product of
  - A respiration carried out by green plants.
  - B photosynthesis carried out by green plants.
  - C respiration carried out by animals.
  - D photosynthesis carried out by animals.
- 14. Which of the following statements about gas exchange in green plants are correct?
  - (1) There is a net uptake of oxygen on a sunny day.
  - (2) There is no net uptake of carbon dioxide at night.
  - (3) At night, green plants only carry out respiration.
  - A (1) and (2) only
  - B (1) and (3) only
  - C (2) and (3) only
  - D (1), (2) and (3)
- 15. Five test tubes are prepared as shown below. They are put under bright light for an hour. Which test tube (A, B, C or D) gives the same colour change to the hydrogencarbonate indicator as X does?



- 16. What happens when a piece of dry cobalt chloride paper is exposed to exhaled air?
  - A Its colour changes from pink to blue.
  - B Its colour changes from blue to pink.
  - C Its colour changes from blue to deep blue.
  - D No colour change is observed.
- 17. Which of the following substances in cigarette smoke lower the amount of oxygen content in blood?
  - A Tar
  - B Nicotine
  - C Carbon dioxide
  - D Carbon monoxide
- 18. Cigarette smoking may cause
  - (1) lung cancer.
  - (2) heart diseases.
  - (3) addiction.
  - A (1) and (2) only
  - B (1) and (3) only
  - C (2) and (3) only
  - D (1), (2) and (3)
- 19. Which of the following gases in the atmosphere causes greenhouse effect?
  - A Nitrogen
  - B Oxygen
  - C Carbon dioxide
  - D Water vapour
- 20. Air pollutants such as sulphur dioxide and suspended particulates will
  - (1) irritate our eyes and lungs.
  - (2) lead to global warming.
  - (3) worsen some respiratory diseases.
  - A (1) and (2) only
  - B (1) and (3) only
  - C (2) and (3) only
  - D (1), (2) and (3)

### **End of Section A**

### Section B: Structured Questions (60 marks)

1. The pie chart below shows the composition of air in the atmosphere.



- (f) Suggest one daily use of gas R. (2 marks)
- 2. Study the experimental set-ups below.



hydrogencarbonate indicator

(a) State the final colours of hydrogenearbondate indicator in A, B and C after an hour.

(3 marks)

- (b) What conclusion can be made by comparing the results of A and B? Explain your answer. (3 marks)
- (c) Explain the result in A. (2 marks)
- (d) Would the result in A be different if the tube is covered with aluminium foil? Explain your answer. (3 marks)

to show the difference.	(6 marks)	
Condition	Light	Dark
Relative rates of	Rate of photosynthesis is	Only (b) happens.
photosynthesis and	(a) than that of	
respiration	respiration.	
Gas that is taken up by the	(c)	(d)
plant		
Gas that is released by the	(e)	(f)
plant		

3. Gas exchange of plants changes under different conditions. Complete the following table to show the difference. (6 marks)

4. Study the experimental set-up below.



- (a) Name the kind of leaves shown in the diagram. (1 mark)
- (b) One of the aims of this experiment is to find out whether chlorophyll is necessary for photosynthesis. State another aim of this experiment. (2 marks)
- (c) Before the experiment, the plant must be destarched. Suggest a method to destarch the plant. (2 marks)
- (d) After placing the plant under sunlight for five hours, leaf *X* and leaf *Y* are examined by iodine test.
  - (i) Label the diagrams on the answer sheet to show the expected results of the iodine test of leaves *X* and *Y*. (4 marks)
  - (ii) State TWO conclusions of this experiment. (4 marks)

6.

5. Mary carries out an experiment to compare the energy values of peanut and butter.



## The experimental results are as follows:

Food	Mass (g)	Rise in water temperature (°C)	Rise in water temperature per gram of food (°C/g)
Peanut	5	45	9
Butter	4	48	x

(a)	) Find the value of <i>x</i> , show your workings.			
(b)	) Which food contains more energy?			
(c)	) State the form of energy that is stored in food.			
(d)	) Write the word equation of respiration.			
(e)	Using the variables provided in the following list, state ONE controlled variable, the			
	independent variable and the dependent variable for this experiment.			
	Type of food Mass of food Rise in water temperature			
	Rise in water temperature per gram of food Volume of water			
(f)	State ONE safety precaution for this experiment.	(2 marks)		
Compare inhaled and exhaled air in terms of the following:				
(a)	Oxygen content,	(2 marks)		
(b)	nitrogen content,	(2 marks)		
(c)	carbon dioxide content and	(2 marks)		
(d)	temperature.	(2 marks)		

## **End of Paper**