



# PSLE FOUNDATION SCIENCE

## PSLE FOUNDATION SCIENCE EXAMINATION FORMAT

### FORMAT OF PAPER

The examination consists of one written paper comprising two booklets, Booklet A and Booklet B.

Booklet	Item Type	Number of Questions	Number of marks per question	Marks
A	Multiple-choice	16	2	32
B	Open-ended	6-8	2-4	14

(a) Booklet A consists of 16 multiple-choice questions with three options. Each multiple-choice question carries 2 marks.

(b) Booklet B consists of two parts. The first part consists of 6-7 structured questions, e.g. "Fill in the blanks", "Matching", etc. Each question carries 2-3 marks.

The second part consists of 6-8 open-ended questions with varying mark allocation (2-4 marks).

Candidates are required to answer all the questions in the two booklets.

**Duration of Paper**  
The duration of the paper is 1 hour 15 minutes.

**Provision of Word List**  
A word list is provided and it should be appreciated that the list is not exhaustive.

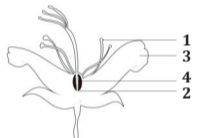
- |                                 |                             |
|---------------------------------|-----------------------------|
| animals                         | energy                      |
| arteries/veins                  | evaporate/evaporation       |
| attract/repel                   | expand/expansion            |
| bacteria                        | fertilise/fertilization     |
| battery                         | fibrous                     |
| blood vessels                   | flexible                    |
| bulb                            | float/sink                  |
| carbon dioxide                  | freezing                    |
| chlorophyll                     | friction/frictional force   |
| circulate/circulatory           | fungi                       |
| compressed                      | gas/gaseous                 |
| condense/condensation           | germinate/germination       |
| contract/contraction            | gravity/gravitational force |
| (good/poor) conductor           | heart                       |
| deforestation                   | increase/decrease           |
| digestion                       | inflate/deflate             |
| digestible                      | insect                      |
| effect                          | insulator                   |
| electricity/electrical circuit  | (large/small) intestine     |
| endangered/extinct              | lungs                       |
| magnet/magnetic/magnetism       | reproduce/reproduction      |
| mass                            | respiration/respiratory     |
| measure (cylinder/beaker)       | ribcage                     |
| melting                         | (occupy) space              |
| microscope                      | (opened/closed) switch      |
| mineral salts                   | (definite/indefinite) shape |
| muscles                         | skeletal/skeleton           |
| mushrooms/toadstools            | splitting/explosive action  |
| nitrogen                        | spore                       |
| nutrients                       | steam                       |
| nymph                           | stem/trunk                  |
| opaque                          | stomach                     |
| photosynthesis                  | temperature/thermometer     |
| pollinate/pollination           | translucent                 |
| pollute/pollution               | transparent                 |
| (north/south/like/unlike) poles | transport                   |
| prey/predator/producer          | underside (stomata)         |
| reduce/reuse/recycle            | volume                      |
| reflect                         | windpipe                    |
|                                 | wing-like structure         |

### PSLE Science Foundation Booklet A (32 marks)

For each of the following questions, four answers are provided. Choose the correct answer and write its number in the brackets provided.

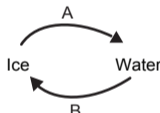
1. Which of the following is NOT a characteristic of an insect-pollinated flower?  
 (1) It contains nectar.  
 (2) Its stigma is sticky.  
 (3) Its petals are brightly coloured.  
 (4) Its stigma is long and feathery. ( )

2. Which labelled part of the flower will develop into a fruit after fertilisation?  
 (1) 1  
 (2) 2  
 (3) 3  
 (4) 4 ( )



3. Which of the following statements best explains why water is different from ice?  
 A Water has no mass.  
 B Water has no definite shape.  
 C Water has no definite volume.  
 (1) B only  
 (2) C only  
 (3) A and B only  
 (4) B and C only ( )

4. Look at the diagram below.



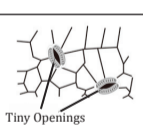
Which of the following best describes A and B?

- | A                | B            |
|------------------|--------------|
| (1) Melting      | Freezing     |
| (2) Evaporation  | Melting      |
| (3) Evaporation  | Condensation |
| (4) Condensation | Evaporation  |
- ( )

5. A complete plant system is made up of \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.  
 (1) flowers, stem; roots  
 (2) fruit, flowers; stems  
 (3) leaves, stem; roots  
 (4) leaves, stem; fruit ( )

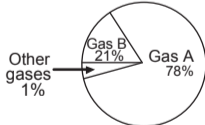
6. Which of the following statements about the roots is true?  
 (1) Roots help the plant to move from one place to another.  
 (2) Roots take in water and mineral salts from the soil.  
 (3) Roots make food for the plant.  
 (4) Roots hold the plant upright. ( )

7. The diagram below shows tiny openings called stomata that are found on the underside of leaves.



- Which of the following gives the functions of the stomata?  
 (1) Stomata allow mineral salts to be removed from the plant.  
 (2) Stomata allow exchange of gases to take place.  
 (3) Stomata take up water for the plants to use.  
 (4) Stomata trap sunlight for photosynthesis. ( )

8. Study the pie chart below.



Which of the following best represents gases A and B?

- | A            | B              |
|--------------|----------------|
| (1) Hydrogen | Oxygen         |
| (2) Nitrogen | Oxygen         |
| (3) Oxygen   | Nitrogen       |
| (4) Oxygen   | Carbon dioxide |
- ( )

9. Which of the following could conduct electricity?  
 (1) Peacock's feather  
 (2) Porcelain spoon  
 (3) Copper coin  
 (4) Pencil ( )

10. Which of the following act would help to conserve electricity?  
 (1) Leave the lights in the bedroom on while watching television in the living room  
 (2) Switch off the monitor after shutting down the computer  
 (3) Turn on the bedroom lights in the afternoon  
 (4) Turn on the air-conditioner on a cool day ( )

11. Which of the following is not an example of a pushing force?  
 (1) Kicking a coconut at the beach  
 (2) Throwing a bowling ball  
 (3) Typing on the keyboard  
 (4) Turning the door knob ( )

12. Look at the diagram below.



As the ball flew towards the goalkeeper, he blocked it with both his hands and the ball dropped onto the ground.

- Which of the following effects of force can be seen in above?  
 A A force can change the direction of a moving object.  
 B A force can change the speed of a moving object.  
 C A force can make a stationary object move.  
 D A force can stop a moving object.

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

13. Which of the following objects do not have any gravitational force acting on it?  
 A A boy lying on the floor  
 B An eagle flying in the sky  
 C A balloon rising into the air

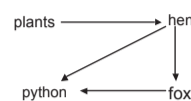
- (1) A only  
 (2) C only  
 (3) A, B and C only  
 (4) None of the above ( )

14. Which of the following statements about force is true?  
 (1) Gravitational force increases with increasing distance from the centre of the Earth.  
 (2) Friction exists when we hold a cup in our hand.  
 (3) A force can change the mass of an object.  
 (4) Magnetic force can be seen. ( )

15. Which of the following must animals do to survive a forest fire?  
 A They must hide underground.  
 B They must hide in the tree hollow.  
 C If they can, fly away from the fire.

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

16. Study the food web below.



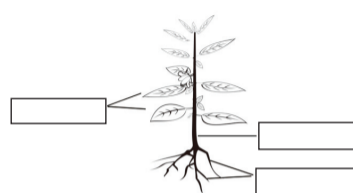
- Which of the following will not cause the population size of the foxes to increase?  
 (1) When the population of the python increases  
 (2) When the population of the plants increases  
 (3) When the population of the hens increases  
 (4) When the population of the hen remains ( )

### Booklet B (38 marks)

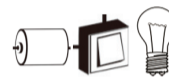
For each question from 17 to 22, fill in the blanks with suitable words or phrases. (14 marks)

17. Fill in the blanks with the words related to the reproduction of flowering plants. [3m]  
 Most flowering plants reproduce from \_\_\_\_\_. The male part of the flower produces \_\_\_\_\_ and the female part of the flower produces the egg. The process of transferring the pollen grain from the male part of the flower to the female part of the flower is known as \_\_\_\_\_.

18. Label the parts of the plants below. [3m]



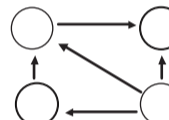
19. Using the items given below, construct a simple closed circuit. [2m]



20. Read the following description of five organisms, A, B, C and D, living in a particular habitat. [2m]

A is a prey of B and a predator of E.  
 Both B and D feed on C.

Use the information given to complete the food web below.



21. Fill in the blanks with the most suitable words. [2m]

The survival of an organism is affected by the physical characteristics of the environment, the amount of food and the presence of other organisms. When the conditions of the environment become unfavourable, the organisms may die. In order to survive, the organisms can move away from those surroundings or adapt to the new conditions.

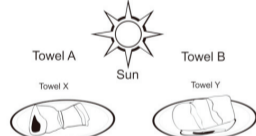
22. Study the statements below and write 'True' or 'False' in the box next to it. [2m]

- (a) The stomata can only be found on the stem of a plant.
- (b) The stomata allow for gaseous exchange to take place during photosynthesis and respiration.

For each question from 23 to 30, write your answers in the spaces provided. (24 marks)

23. (a) List the four main ways seeds are dispersed. [2m]  
 (b) What are the characteristics of the fruits which the seeds are dispersed by water? [2m]

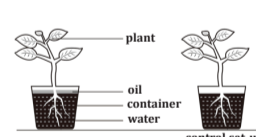
24. The diagram below shows two identical towels, A and B which have been soaked with the same amount of water. The mass of each towel were recorded at the start of the experiment.



Towel A was been rolled up and tied with a string. Towel B has been folded and placed on a tray. Both towels were placed in the field under the hot Sun. The mass of each towel, A and B, was then recorded after half an hour.

- (a) Identify two variables that have been kept constant in the experiment. [2m]  
 (b) Which towel do you think will have lesser mass? [1m]

25. Rose set up an experiment as shown in the diagram below to show that water is absorbed through the roots of the plant.

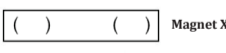


- (a) Why does Rose need to have a control set-up? [1m]  
 (b) List 2 things that Rose needs to do to the control set-up to have a fair experiment? [2m]

26. The pencil case below makes use of two pieces of magnets, A and B, to close.

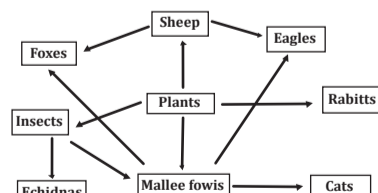


- (a) Indicate on each magnet the north pole with the letter 'N' and the south pole with the letter 'S' so that the pencil case can close tightly. [2m]



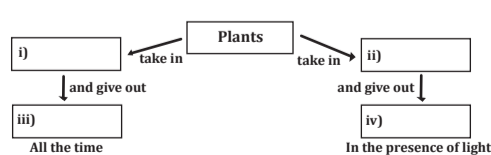
- (b) What property of magnetic force is shown here? [2m]

27. Study the food web below carefully.



- (a) Which animal(s) is/are a predator and a prey? [3m]  
 (b) What would happen to the population of the rabbits when the population of the cats decreases? [1m]

28. Fill in the boxes with the correct names of gases. [2m]

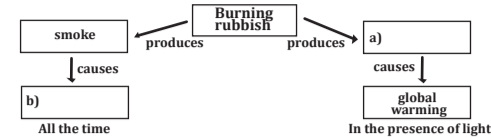


29. Study the diagram below.



- (a) Which of the labelled part of the plant holds it upright? [1m]  
 (b) Which of the labelled part of the plant provides food for the plant? [1m]

30. Fill in the blanks with appropriate words. [2m]



### ANSWERS Booklet A

- Question 1. Answer: (4). **Explanation:** The following table compares the characteristics of wind-pollinated and insect-pollinated flowers.

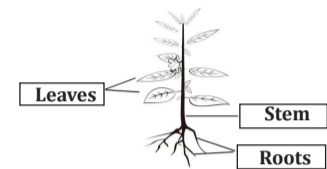
Wind-pollinated flower	Insect-pollinated flower
It contains nectar.	It does not contain nectar.
Its stigma is sticky.	Its stigma is long and feathery.
Its petals are brightly coloured.	Its petals are dull.

2. Answer: (1). **Explanation:** The following labels the parts of the flower:  
 A - anther, B - ovary, C - petal, D - ovule  
 After fertilisation, the rest of the parts of the flower will drop off except for the part labelled B which will develop into a fruit and the part labelled D will develop into seeds within the fruit.

3. Answer: (1). **Explanation:** Water has no definite shape but has a definite volume. However, ice has a definite shape and a definite volume. All matter has mass and occupies space. Only non-matter, such as light and shadow, are non-matter with no mass and does not occupy space. When ice changes to water, it undergoes a change in state from solid to liquid. This change is known as melting. When water changes to ice, it undergoes a change in state from liquid to solid. This change is known as freezing. Also, take note that the melting and freezing point of water is the same i.e. at 0°C.

4. Answer: (1). **Explanation:** When ice changes to water, it undergoes a change in state from solid to liquid. This change is known as melting. When water changes to ice, it undergoes a change in state from liquid to solid. This change is known as freezing. Also, take note that the melting and freezing point of water is the same i.e. at 0°C.

5. Answer: (3). **Explanation:** Look at the plant below. A complete plant system is made up of leaves, stem and roots.



6. Answer: (2). **Explanation:** The roots take in water and mineral salts from the soil. The leaves make food for the plant and the stem hold the plant upright so that it can get as much sunlight as possible.

7. Answer: (2). **Explanation:** Stomata are found on the underside of plants to allow for the exchange of gases to take place. For example, when the plant is carrying out photosynthesis, the stomata would allow carbon dioxide to enter the plant and oxygen to be removed from the plant. Similarly, during respiration, the stomata would allow oxygen to enter the plant and carbon dioxide to be removed from the plant.

8. Answer: (2). **Explanation:** The air is made up of a mixture of gases. It is made up of 78% nitrogen, 21% oxygen and 1% of other gases such as water vapour and carbon dioxide.

9. Answer: (3). **Explanation:** Only the copper coin can conduct electricity as the rest are non-conductor of electricity.

10. Answer: (2). **Explanation:** By switching off the monitor after shutting down the computer would help to conserve electricity. All the actions in the other options show electricity being wasted.

11. Answer: (4). **Explanation:** Turning the door knob is a combination of force of pulling and pushing. The rest of the options shows pushing force. Kicking a coconut on the beach shows a pushing force exerted by the leg on the coconut when it is being kicked around. When throwing the bowling ball, it shows the pushing force when letting go of the bowling ball on the lane. Typing on the keyboard shows the pushing force of the fingers on the keyboard.

12. Answer: (4). **Explanation:** When the goalkeeper blocked the moving ball and it fell onto the ground, it showed that a force can change the direction of a moving object, change the speed of a moving object and stop a moving object.

13. Answer: (4). **Explanation:** Gravitational force acts on ALL objects on Earth. Except that some are much stronger than others.

14. Answer: (2). **Explanation:** When holding a cup, there is friction to prevent the cup from slipping from our hands.

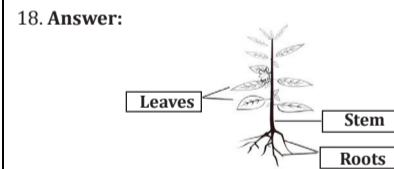
15. Answer: (3). **Explanation:** Animals must hide underground or fly away if they can to survive the forest fire. The animals must not hide in the tree hollow as the trees will get burnt in the forest fire.

16. Answer: (1). **Explanation:** When the population of the python increases, the population of the foxes would decrease as the pythons would feed on the foxes.

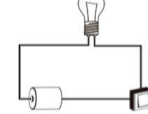
### Booklet B

17. Answer: Most flowering plants reproduce from seeds. The male part of the flower produces pollen and the female part of the flower produces the egg. The process of transferring the pollen grain from the male part of the flower to the female part of the flower is known as pollination.

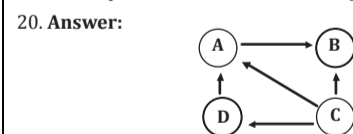
**Explanation:** Pollination is the process of transferring pollen from the anther (male reproductive organ) of a flower to the stigma (female reproductive organ) of the same flower or another flower.



19. Answer:



**Tips:** When drawing a closed circuit, always take note of all the connections. For example, the wire must be connected to each end of the battery. The wire must be connected to the metal tip and the metal side of the light bulb



21. Answer: The survival of an organism is affected by the physical characteristics of the environment, the amount of food and the presence of other organisms. When the conditions of the environment become unfavourable, the organisms may die, move away from those surroundings or adapt to the new conditions.

22. (a) The stomata can only be found on the stem of a plant.  False  
 (b) The stomata allow for gaseous exchange to take place during photosynthesis and respiration.  True

23. (a) Seeds are dispersed by wind (½m), water (½m), animals (½ m) and splitting (½ m) or explosive action. (½m)  
 (b) The fruits are able to float on water [1m]. The fruits have waterproof outer covering [1m]

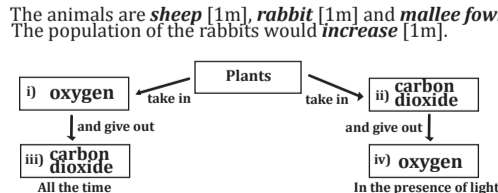
24. (a) The two variables are the amount of water [1m] soaked and the amount of sunlight [1m] received.  
 (b) Towel B [1m] will have lesser mass.

25. (a) The control set-up is used to prove that the roots of the plant take in water [1m].  
 (b) There must not be a plant [1m] and there must be a layer of oil on the water surface [1m].

26. (a) ( N ) A ( S ) Magnet A  
 ( S ) B ( N ) Magnet B

27. (b) Unlike poles [1m] of magnets attract [1m].

28. (a) The animals are sheep [1m], rabbit [1m] and mallee fowl [1m].  
 (b) The population of the rabbits would increase [1m].



29. (a) A [1m]  
**Explanation:** It is known as the stem.

- (b) B [1m]  
**Explanation:** It is known as the leaves whereby they are able to carry out photosynthesis.

