



Preparation for the Caribbean Primary Exit Assessment

Guide #1 | Science Multiple Choice

Who are you?

If you are in grade 5 or 6 and will be taking the next Caribbean Primary Exit Assessment created by the Caribbean Examination Council, then this packet is for you. This packet has past exam questions which have been solved with explanations to help you learn how to solve similar questions. Completing this packet will increase your chances of passing the exam with the highest possible score.

Who are we?

This packet was created by the Caribbean Education Project, a team of students and teachers from universities in the United States and the Caribbean. Our goal is to help you with your preparations for the next exam and to help you better understand each topic. We want you to achieve your best score on the exam. If you are not clear on concepts after reading the material, ask your parent or guardian for help. If they cannot help, ask another family member or a friend. If no one can help you, then ask your parents to send us a message on Facebook or WhatsApp or e-mail us.

- To reach us through Facebook, go on Facebook and search for “Shawn Shivdat.” Then send me a message using Facebook Messenger.
- To reach us by WhatsApp, save this number “Shawn Shivdat, +1 404-406-9638” and message me on WhatsApp.
- To reach us by e-mail, send a message to this e-mail address: info@caribed.org.

Keep in contact

If you are using this packet to prepare, we would like to hear from you. Please keep in touch with us so we can help you with any questions you may have. We can also provide updates when future materials are posted. Send us your name and contact information through WhatsApp, Facebook Messenger, or e-mail (listed above), or send a picture of this sheet filled out through WhatsApp, Facebook Messenger, or e-mail.

Name: _____

Parent’s phone number: _____

Parent’s e-mail address: _____

**PLEASE SHARE THIS GUIDE WITH OTHERS WHO MAY BENEFIT
FROM USING IT.**



How to use this guide:

1. The following pages have a total of 50 past exam questions. Try to answer these questions in the prescribed 75 minutes. If you are not able to answer a question, skip it and go on to the next question. When you are done answering all the questions, you can return to the ones you are having trouble with during your remaining time.
2. It is okay if you were not able to answer all the questions correctly on your first try. Keep practising the questions, and you will get better. Soon, you will be able to answer all the questions in the 75 minutes. (**TIP:** Practise makes you perfect, so keep practising.)
3. Answers to all the questions are on the pages immediately after the practise test. When you finish answering the questions, compare your answers to the answers on these pages.
4. Mark the questions which you got wrong.
5. Read our guide to solving each question. Even for questions you got correct, read the explanations we provided because you will likely learn something from them. Our explanations provide valuable information which can provide you with additional tricks to solve other problems.
6. Always read the instructions for each question carefully before attempting to answer. Also, read the question itself carefully and pay attention to what the question is asking you to do before attempting to answer it.
7. We provide the answers to all the questions in the practise exams to help you. Do not look at the answers before you attempt the questions. If you look at the answers before, you will not learn a lot from this packet. So, do we have a deal? Okay, I heard you say yes.
8. Once you have finished reading the work kit, complete the additional practise questions. Do not refer to the attached answers until you have attempted each problem.





CARIBBEAN EXAMINATION COUNCIL
CARIBBEAN PRIMARY EXIT ASSESSMENT
SCIENCE

1 hour 15 minutes

Hey students, for the purposes of practice, you can ignore the instructions listed in steps 3-5 below about shading circles on an answer sheet. We have included that here so you will be familiar with these instructions on exam day.

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

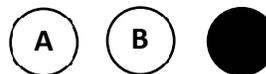
1. This examination has **50** questions. You have 1 hour 15 minutes to answer them.
2. Each question has four possible answers: (A), (B), and (C). Read each question carefully then choose the correct answer.
3. On your answer sheet, find the number that matches the question you intend to answer.
4. Shade the circle which has the same letter A, B, or C next to the answer you have chosen.

Sample Question

Which part of the flower contains the pollen grains?

- (A) Style
- (B) Ovary
- (C) Anther

Sample Answer



The correct answer is “Anther”, so (C) has been shaded.

5. If you want to change your answer, erase it completely before you fill in your new choice.
6. When the supervisor tells you to begin, turn the page and work as quickly and as carefully as you can.
7. If you try a question and find that you cannot answer it, leave it and go on to the next one.
You may return to that question later.
8. The answer sheet has more spaces than there are questions on this test. Do NOT shade any of the extra spaces.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.



- 1.** Sam observes dark, low clouds in the sky. He can conclude that the weather will be
 - (A) sunny
 - (B) rainy
 - (C) windy

- 2.** The amount of water vapour which is present in the atmosphere is called
 - (A) moisture
 - (B) humidity
 - (C) temperature

- 3.** Donna observes that the water level in her fish tank has fallen. The change is due to
 - (A) evaporation
 - (B) conservation
 - (C) condensation

- 4.** Which of the following types of soil retains the greatest amount of water?
 - (A) Clay
 - (B) Sand
 - (C) Loam

- 5.** Which of the following materials should be added to a poor soil type to make it better for growing crops?
 - (A) Clay
 - (B) Sand
 - (C) Humus

- 6.** Which of the following is an example of a NON-REVERSIBLE change?
 - (A) Burning
 - (B) Freezing
 - (C) Condensation



7. When water vapour rises into the atmosphere, it condenses. The condensed moisture is known as

- (A) rain
- (B) snow
- (C) clouds

8. The movement of soil particles, by the wind, from an area with no vegetation to another area is called soil

- (A) erosion
- (B) engineering
- (C) landscaping

9. The rocks found in a volcanic region are MOST likely

- (A) igneous
- (B) metamorphic
- (C) sedimentary

10. After a bush fire, replanting trees on a hillside will

- (A) increase flooding
- (B) prevent soil erosion
- (C) encourage soil erosion

11. The sun does NOT provide the earth with

- (A) light
- (B) heat
- (C) oxygen

12. George wanted to get a closer look at the moon. He used a

- (A) telescope
- (B) periscope
- (C) microscope



13. Which of the following statements describes the movement of the sun, earth and moon?

- (A) The sun and the moon revolve around the earth.
- (B) The sun revolves around the moon; the moon revolves around the earth.
- (C) The moon revolves around the earth; the earth revolves around the sun.

14. Three things that produce light are

- (A) sun, stars, fire
- (B) sun, mirror, tin
- (C) sun, moon, stars

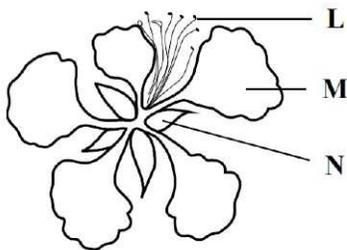
15. In which of the following conditions will tomato seeds germinate fastest?

- (A) Dry cotton wool in a container in a refrigerator
- (B) Dry cotton wool in a container in a cupboard
- (C) Wet cotton wool in a container in a cupboard

16. Seeds found in fleshy fruits are usually dispersed by

- (A) wind
- (B) water
- (C) animals

Question 17 refers to the diagram below which shows the external parts of a flower.



17. Which structure of the flower represents the stamen?

- (A) L
- (B) M
- (C) N



Question 18 refers to the diagrams below.



Snake



Earthworm



Frog

18. Which animal does NOT have a skeleton inside its body?

- (A) Frog
- (B) Snake
- (C) Earthworm

19. Which part of the flower protects it when it is in the bud?

- (A) Petal
- (B) Sepal
- (C) Stamen

Questions 20-22 refer to the following diagram of an open pea pod shown below.



20. Structure Z is used to

- (A) protect the flower
- (B) attract birds and bees
- (C) grow into a new plant

21. From which part of the flower does Structure Y develop?

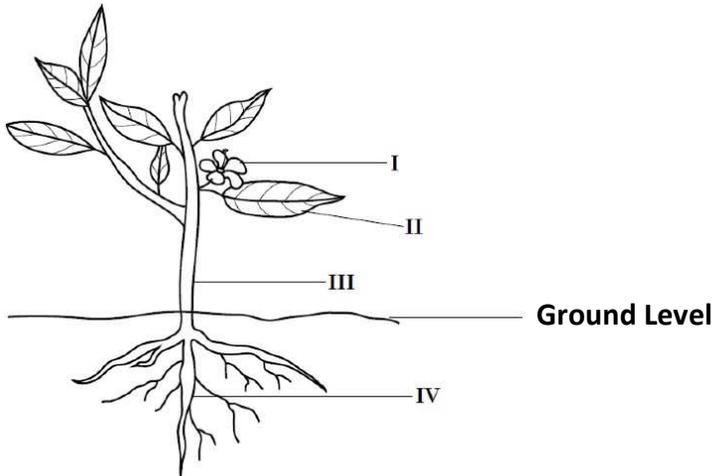
- (A) Petal
- (B) Ovary
- (C) Anther



22. The pea is MOST likely dispersed by

- (A) fire
- (B) water
- (C) explosive action

Questions 23-24 refer to the diagram of a plant.



23. The MAIN function of the structure labelled II is to

- (A) make food
- (B) absorb water
- (C) attract insects

24. Which labelled structures represent the shoot system of the plant?

- (A) I, III, IV
- (B) I, II, III
- (C) II, III, IV

25. Which of the following statements about the roots of plants is FALSE?

- (A) Some roots are good to eat.
- (B) Mango trees have tap roots.
- (C) Plants store water and oxygen in their roots.



26. Which order below correctly describes the life cycle of a butterfly?

- (A) Egg → pupa → larva → adult
- (B) Egg → larva → pupa → adult
- (C) Pupa → larva → egg → adult

27. Ana liked an unusual plant and wanted to get a plant identical to the one she liked. What is the BEST method of propagating this plant?

- (A) Use cuttings
- (B) Make grafts
- (C) Use budding

28. Which of the following systems is responsible for taking gases out of the body?

- (A) Circulatory
- (B) Respiratory
- (C) Reproductive

29. Which of the following words does NOT relate to volcanoes?

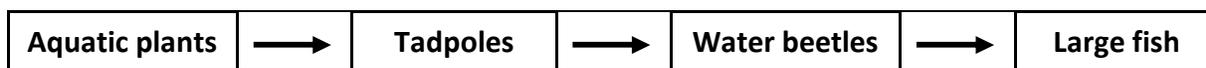
- (A) Lava
- (B) Crater
- (C) Cirrus

30. The MAIN organs of the nervous system are the

- (A) brain, heart, intestine
- (B) brain, spinal cord, nerves
- (C) spinal cord, arteries, veins



Questions 31-32 refer to the diagram of a food chain below.



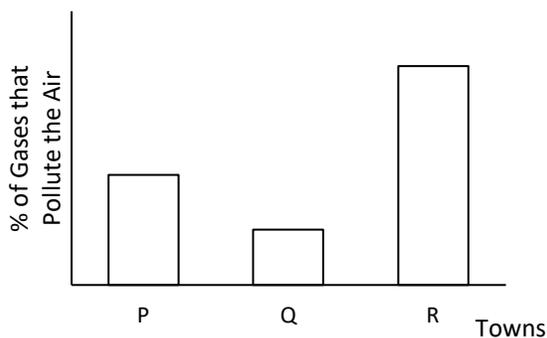
31. Which organism in the food chain is a producer?

- (A) Large fish
- (B) Water beetles
- (C) Aquatic plants

32. If all the tadpoles die, which organisms in the food chain will be directly affected?

- (A) Large fish and water beetles
- (B) Aquatic plants and water beetles
- (C) Aquatic plants and water beetles

Questions 33-35 refer to the graph below which shows the percentage of gases given off by vehicles which pollute the air in three towns, P, Q and R.



33. In Towns P and R a large number of persons are MOST likely to suffer from

- (A) sore throat
- (B) back pain
- (C) breathing difficulties

34. The amount of pollution which is present in Town R may be **decreased** by persons riding

- (A) bicycles
- (B) trains
- (C) motorcycles



35. Which town has the LEAST amount of pollution?

- (A) P
- (B) Q
- (C) R

Question 36 refers to the table below which shows three ways in which Mrs. James plans to dispose of waste materials.

Method	Material	Disposal Method
1	Tree leaves, vegetable peels	Composting
2	Plastic bags, vegetable peels	Recycling
3	Tree leaves, plastic bags	Landfill

36. Which disposal method is MOST appropriate for the materials given?

- (A) 1
- (B) 2
- (C) 3

Questions 37-38 refer to the table below which shows the effects of different materials used in a closed electrical circuit.

Material	Bulb lights up	Bulb does not light up
Cotton		✓
Plastic		✓
Copper wire	✓	
Steel	✓	
Wood		✓

37. Which of the following materials are conductors?

- (A) Cotton and plastic
- (B) Copper wire and steel
- (C) Cotton, plastic and wood

38. Which of the following materials may be used to prevent electrical shock?

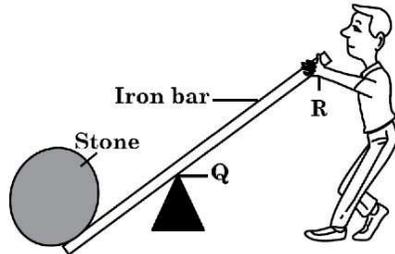
- (A) Plastic
- (B) Steel
- (C) Copper wire



39. Which of the following statements about magnets is FALSE?

- (A) Every magnet has two poles.
- (B) A south pole attracts a north pole.
- (C) The magnetic force is weakest at the poles.

Questions 40-41 refer to the diagram below, which shows a boy using a lever to move a heavy stone.



40. What should the boy do to lift the stone off the ground?

- (A) Lift the iron bar at R.
- (B) Push down the iron bar at R.
- (C) Remove the wedge-shaped object at Q.

41. The point Q is called the

- (A) effort
- (B) anchor
- (C) fulcrum

42. Which of the following tools can BEST be used to place a 20-litre drum on a truck?

- (A) A spade
- (B) A crowbar
- (C) An inclined plane

43. Which of the following is the unit of force?

- (A) Joule
- (B) Newton
- (C) Degree

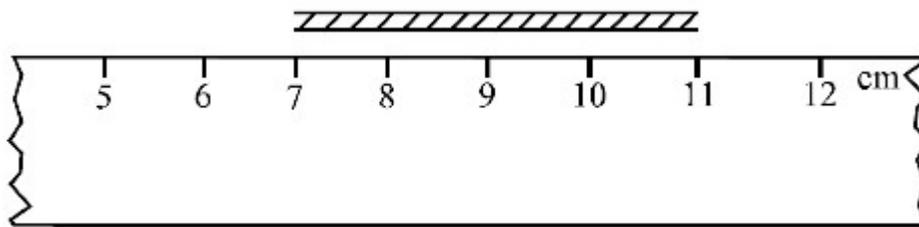


44. A covered pot half-filled with water, was placed over a fire. After a few minutes, the cover was removed and droplets of water were seen on the inside of the cover. The BEST explanation for the droplets is that
- (A) water bubbled onto the cover
 - (B) steam condensed on the cover
 - (C) the water rose to the level of the cover

45. Which of the following sequences represents a good safety practice when using an electric kettle?

- (A) Fill kettle → dry hands → plug in kettle
- (B) Plug in kettle → fill kettle → dry hands
- (C) Dry hands → plug in kettle → fill kettle

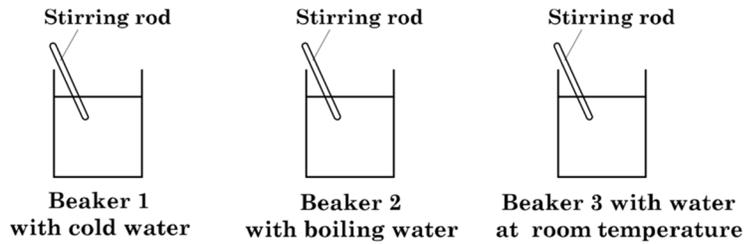
Question 46 refers to the following diagram which shows a ruler and a piece of string.



46. The length of the string, in cm, is

- (A) 4
- (B) 5
- (C) 7

Questions 47-49 refer to the diagrams below.

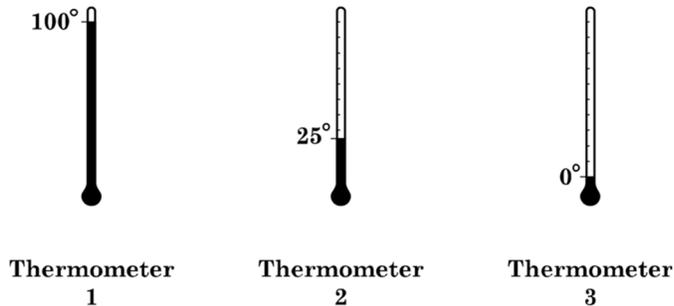


47. Five grams of sugar were added to each beaker and stirred at the same rate.

In which beaker will the sugar dissolve the fastest?

- (A) Beaker 1
- (B) Beaker 2
- (C) Beaker 3

48. A thermometer was later placed in each of the beakers; the temperature readings are shown below.



Which of the thermometers above would indicate the temperature in Beaker 2?

- (A) 1
- (B) 2
- (C) 3

49. The mass of sugar which was added to the beakers was MOST likely measured using a

- (A) ruler
- (B) balance
- (C) thermometer



50. Equal amounts of sand, sugar and salt are added to three separate containers with water at 100°C. Each mixture is stirred for two minutes then allowed to stand.

Which of the following predictions is accurate?

- (A) All three substances will dissolve at the same rate.
- (B) The sugar and salt will dissolve but the sand will not.
- (C) The sugar and sand will both dissolve but the salt will not.

END OF TEST

IF YOU FINISH BEFORE TIME IS UP, CHECK YOUR WORK ON THIS ASSESSMENT.



ANSWER EXPLANATIONS

QUESTION 1 ANSWER EXPLANATION

1. Sam observes dark, low clouds in the sky. He can conclude that the weather will be

- (A) sunny
- (B) rainy
- (C) windy

Weather is the state of the atmosphere at a certain place and time. To describe the weather, we look at the heat, dryness, wind, rain, sunshine, and other factors. In the question, Sam observes **dark, low clouds in the sky**, which does not indicate sunny weather. When the weather is **sunny**, there are fewer clouds and the sky is bright. Therefore, we can eliminate **A**. Next, let's look at **B**. When the weather is **rainy**, the clouds in the sky fill with water droplets. These water droplets make the clouds heavy, which causes them to be **low** in the sky. The water droplets also block out the sunlight, which causes the clouds to be **dark**. This description matches Sam's observations, showing that **B** is correct. We use the word **windy** to describe the weather when there are gusts and blasts of wind in different directions. But the question does not mention Sam observing any type of wind. Therefore, we can eliminate answer choice **C**. **Answer choice B is correct.**

QUESTION 2 ANSWER EXPLANATION

2. The amount of water vapour which is present in the atmosphere is called

- (A) moisture
- (B) humidity
- (C) temperature

This question is asking us to give the term that matches the definition provided. To do this, we have to look carefully at the fact that this question is asking about water vapour in the atmosphere. **Moisture** is water vapour that is condensed on a surface. However, this question is asking for water vapour in the atmosphere, so **A** is incorrect. **Temperature** is the degree of intensity of heat, essentially how hot or how cold something is. The question does not mention heat or cold, therefore **C** is incorrect. **Humidity** is the quantity of water vapour in the atmosphere or as a gas. This matches the definition that the question gives us. **Answer choice B is correct.**

QUESTION 3 ANSWER EXPLANATION

3. Donna observes that the water level in her fish tank has fallen. The change is due to

- (A) evaporation
- (B) conservation
- (C) condensation

The question is asking which of the three answer choices accurately explains why the water level of Donna's fish tank fell. To answer this question, we have to think about where the water could have gone. The question does not mention that someone touched or emptied the tank, so it is most likely that the water in the fish tank turned into water vapour and went into the air. **Conservation** is how something is saved or stored somewhere. If the water was conserved, it would not have moved or left the fish tank and the water level would have remained the same. That is why **B** is incorrect. **Condensation** is the process by which water vapour from the air cools down and turn into a liquid. If condensation took place, the water level in Donna's fish tank would have risen and not fallen. Therefore, **C** is incorrect. **Evaporation** is the process by which water heats up and changes from a liquid to a gas or vapour. When water becomes a vapour or gas it can travel to the atmosphere. As the amount of water vapour increases, the amount of liquid water decreases. Based on this explanation, we can clearly see how evaporation could have caused the water level in Donna's fish tank to fall. **Answer choice A is correct.**



QUESTION 4 ANSWER EXPLANATION

4. Which of the following types of soil retains the greatest amount of water?

- (A) Clay
- (B) Sand
- (C) Loam

Water retention is affected by the particle size of the soil. The smallest particles can retain the most amount of water, medium-size particles retain a moderate amount and the largest particles retain the least amount of water. **Sand** has larger particles which makes it harder for it to hold water, and **loam**, has medium sized particles so it holds some water, but not as much as clay. Thus, we can eliminate both **B** and **C**. Out of the three choices, clay has the smallest, finest particle size, making it the best to retain the most amount of water. **Answer choice A is correct.**

Questions 5 ANSWER EXPLANATION

5. Which of the following materials should be added to a poor soil type to make it better for growing crops?

- (A) Clay
- (B) Sand
- (C) Humus

Plants can only grow well if they are planted in good soil. **Clay** holds water and is high in nutrients, which is good for plant growth. The problem is, clay soils are prone to waterlogging, which is what happens when water gets stuck in the soil and can't move. Waterlogging can deprive plant roots of oxygen, which prevents plants from growing. Therefore, **A** is incorrect. **Sand** has a hard time holding water and various nutrients, due to its larger particles, making it bad for plant growth. Therefore, **B** is incorrect. **Humus** is the organic component of soil, formed by the decomposition of leaves and other plant material. The leaves and plant materials are high in nutrients, making humus ideal for better growth of crops. Also, humus tends not to waterlog, making it more ideal than clay. **Answer choice C is correct.**

QUESTION 6 ANSWER EXPLANATION

6. Which of the following is an example of a NON-REVERSIBLE change?

- (A) Burning
- (B) Freezing
- (C) Condensation

A non-reversible change is a change that cannot be undone. We can undo **freezing** by heating. One example of this is water. If you freeze water to ice, you can melt it back to water using fire or heat. Therefore, **B** is incorrect. **Condensation** is the process by which gas or vapour becomes a liquid. This process can be reversed by evaporation, a process where a liquid becomes a gas or vapour. Therefore, **C** is incorrect. **Burning** something or setting it on fire cannot be reversed. For example, if you burn a piece of paper, you cannot get that same piece of paper again. **Answer choice A is correct.**

QUESTION 7 ANSWER EXPLANATION

7. When water vapour rises into the atmosphere, it condenses. The condensed moisture is known as

- (A) rain
- (B) snow
- (C) clouds

This question tests our knowledge of the water cycle. **Rain** is the liquid droplets of water that fall from the sky. It is a type of **precipitation**, which is the release of water from the sky as a liquid or solid. Precipitation occurs when the condensed water vapour in the clouds becomes too heavy and has to fall from the atmosphere. This question asks us to identify the condensed moisture that stays in the atmosphere, so **A** is incorrect. **Snow** is another form of precipitation, like rain. Therefore, **B** is incorrect. **Clouds** are collections of condensed water vapour that float in the atmosphere. **Answer choice C is correct.**



QUESTION 8 ANSWER EXPLANATION

8. The movement of soil particles, by the wind, from an area with no vegetation to another area is called soil

- (A) erosion
- (B) engineering
- (C) landscaping

Engineering is the process of creating something by man or machine. This question does not mention a man or a machine, so **B** is incorrect. **Landscaping** is the process of changing a piece of land. Like engineering, this is also usually done by a man or a machine, which does not match with what the question is asking. Therefore, **C** is incorrect. **Erosion** is a process where a natural force like wind, water or other natural factors wear away at a rock or soil. The particles that are eroded from the rock or the soil are transported to another area. The definition of erosion matches the description the question gives us. **Answer choice A is correct.**

QUESTION 9 ANSWER EXPLANATION

9. The rocks found in a volcanic region are MOST likely

- (A) igneous
- (B) metamorphic
- (C) sedimentary

Metamorphic rocks are often found in mountain ranges, where particles are pressed together by high pressure. This often occurs deep in the Earth and not in volcanic regions. Thus, **B** is incorrect. **Sedimentary** rocks are made from different particles of rock called sediments. They are often found near rivers and lakes, so **C** is incorrect. **Igneous** rocks form when magma, or molten rock, cools and crystallizes around a volcano. Since the rocks in the question are found in a volcanic region, they are most likely igneous rocks. **Answer choice A is correct.**

QUESTION 10 ANSWER EXPLANATION

10. After a bush fire, replanting trees on a hillside will

- (A) increase flooding
- (B) prevent soil erosion
- (C) encourage soil erosion

Replanting trees is an important step in recovering from a bush fire. The trees provide a new habitat for animals and take excess carbon dioxide out of the air. The roots of the trees hold the soil together which protects the land and water around the area. Now that we know more about why we replant trees, we can answer the question.

It does not make sense that we would see **increased flooding**, especially after a fire. Thus, we can eliminate **A**. As we have discussed, soil erosion is a dangerous and harmful consequence of bush fires. Thus, **C** must be incorrect. When the tree roots hold the soil together, they protect the land and water in the area by **preventing soil erosion**. They hold the soil so tightly that it can't slip away. **Answer choice B is correct.**

QUESTION 11 ANSWER EXPLANATION

11. The sun does NOT provide the earth with

- (A) light
- (B) heat
- (C) oxygen

The sun is a star at the center of the solar system. The sun provides the earth with **light** and **heat**, which is one of the primary reasons why we can live on earth. It is the most important source of energy for life on earth. However, the sun does not provide oxygen, we get our oxygen from the plants and trees on this earth. The question is asking what the sun does **NOT** provide, and that is oxygen. **Answer choice C is correct.**



QUESTION 12 ANSWER EXPLANATION

12. George wanted to get a closer look at the moon. He used a

- (A) telescope
- (B) periscope
- (C) microscope

This question is asking us what type of tool to use, so it is important to know the function of each instrument listed. A **periscope** is a tool that lets us see above, around or even through an object or obstacle. It does not make objects appear closer, so **B** is incorrect. A **microscope** is a tool that lets us see very small objects, like cells and bacteria. This would not let George see the moon since it is a large object and it is too far away. Thus, **C** is incorrect. A **telescope** is a tool designed to let us see objects that are far away. Using lenses and mirrors, telescopes make objects seem closer to us. George is trying to look at the moon, which is far away, so he should use a telescope. **Answer choice A is correct.**

QUESTION 13 ANSWER EXPLANATION

13. Which of the following statements describes the movement of the sun, earth and moon?

- (A) The sun and the moon revolve around the earth.
- (B) The sun revolves around the moon; the moon revolves around the earth.
- (C) The moon revolves around the earth; the earth revolves around the sun.

To answer this question, it is important to know that the sun is the center of our solar system. This means that all planets, including the earth, revolve around the sun. This eliminates answer choices **A** and **B**. Now let's talk about the moon's movement relative to the earth. The moon revolves around the earth because the earth has a stronger gravitational pull. **Answer choice C is correct.**

QUESTION 14 ANSWER EXPLANATION

14. Three things that produce light are

- (A) sun, stars, fire
- (B) sun, mirror, tin
- (C) sun, moon, stars

The **sun** gives off light as it is the main source of energy and light on earth. **Stars** are another source of light through reactions within itself, in other words, a star is a ball of fire, and fire gives off light through a term called **incandescence**, the effect of heat on carbon atoms. This means that **A** is correct. A mirror and the moon do not produce light because they reflect light. The moon reflects the sun's light which is why at night it appears bright. Tin does not produce light because it is a metal, but it could reflect light. **Answer choice A is correct.**

QUESTION 15 ANSWER EXPLANATION

15. In which of the following conditions will tomato seeds germinate fastest?

- (A) Dry cotton wool in a container in a refrigerator
- (B) Dry cotton wool in a container in a cupboard
- (C) Wet cotton wool in a container in a cupboard

Seeds germinate fastest with certain resources. These resources include water, oxygen and mild temperatures. A **refrigerator** is too cold for a seed to germinate. Also, a seed cannot germinate without water, so **dry cotton wool** would not be ineffective. Thus, we can eliminate answer choice **A**. The temperature in a **cupboard** should be mild enough for seeds to germinate. However, the use of dry cotton wool makes answer choice **B** incorrect. Answer choice **C** has the ideal temperature of a cupboard and the water supply of **wet cotton wool**, making answer choice **C** the best option. **Answer choice C is correct.**



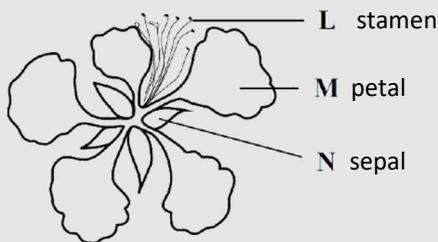
QUESTION 16 ANSWER EXPLANATION

16. Seeds found in fleshy fruits are usually dispersed by

- (A) wind
- (B) water
- (C) animals

Fleshy fruits are fruits that have a peel or skin covering the contents of the fruit, such as a peaches, tomatoes or cranberries. Since the seeds are inside the fruit, there is no way for wind or water to transport the seeds. Thus, we can eliminate answer choices **A** and **B**. This means that the seeds must be dispersed by animals. When an animal eats the fruit, they also eat the seeds. As the animal moves around, the seeds are transported until the animal digests them and releases them through feces. After the seeds are digested, they can germinate in new locations. Thus, **answer choice C is correct.**

Questions 17 refers to the diagram below which shows the external parts of a flower



QUESTION 17 ANSWER EXPLANATION

17. Which structure of the flower represents the stamen

- (A) L
- (B) M
- (C) N

The letter **M** indicates the **petal**. The petals of a flower surround the reproductive parts of the flower and are brightly coloured. This means that answer choice **B** is incorrect. Letter **N** indicates the **sepal**. The sepals are the smaller leaf like structures underneath the petals. They protect flower buds and often support the petals when in bloom. Answer choice **C** indicates the sepal, not the stamen, so it is incorrect. The **stamen** is the male reproductive part of a flower. It is a long, slender stalk with an anther at the top. In the diagram, the stamen is labelled as **L**, represented by answer choice **A**. **Answer choice A is correct.**

Questions 18 refers to the diagrams below



Snake



Earthworm



Frog

QUESTION 18 ANSWER EXPLANATION

18. Which animal does NOT have a skeleton inside its body?

- (A) Frog
- (B) Snake
- (C) Earthworm



A skeleton is a hard structure made of bone that supports a body shape. If an animal has a skeleton, it will have a distinct shape and distinct body parts like a head, tail or legs. A **frog** has a distinct shape and can use its legs and arms to jump. This means that it has a skeleton. Thus, answer choice **A** is incorrect. **Snakes** can move very quickly and powerfully. They also have a distinct head shape, which proves that they have a skeletal structure. Therefore, **B** is incorrect. **Worms** do not have skeletons. They have flexible, long bundles of muscle which is why they are able to move and dig underground. We can also tell that they lack skeletons because they don't have a distinct body structure. **Answer choice C is correct.**

QUESTION 19 ANSWER EXPLANATION

19. Which part of the flower protects it when it is in the bud

- (A) Petal
- (B) Sepal
- (C) Stamen

This question is related to question 17. It asks us to identify a part of the flower by reading the description. To answer this question, it might be helpful to look at the reference diagram for question 17. The **stamen** is the male reproductive organ which has a pollen development organ called the anther at the tip. The stamen also has a stalk like structure that transports water and nutrients. The function of the stamen does not match what we are looking for so answer choice **C** is incorrect. The **petal** is responsible for attracting pollinators, such as bees or birds. But it does not protect the flower in its bud stage. Thus, **A** is incorrect. The **sepal** is a defensive organ that encloses and protects the reproductive structures during the bud stage. This best matches the description. **Answer choice B is correct.**

Questions 20, 21 and 22 refer to the following diagram of an open pea pod shown below.



QUESTION 20 ANSWER EXPLANATION

20. Structure Z is used to

- (A) Protect the flower
- (B) Attract birds and bees
- (C) Grow into a new plant

Structure Z is a pea in the pea pod. The peas contain seeds and develop to develop into a new plant. This means that **answer choice C is correct.**

QUESTION 21 ANSWER EXPLANATION

21. From which part of the flower does Structure Y develop

- (A) Petal
- (B) Ovary
- (C) Anther

Structure Y (see the diagram above) is pointing to the pericarp of the plant. The pericarp is the part of a fruit formed from the wall of the ripened ovary. This means that **answer choice B is correct.**



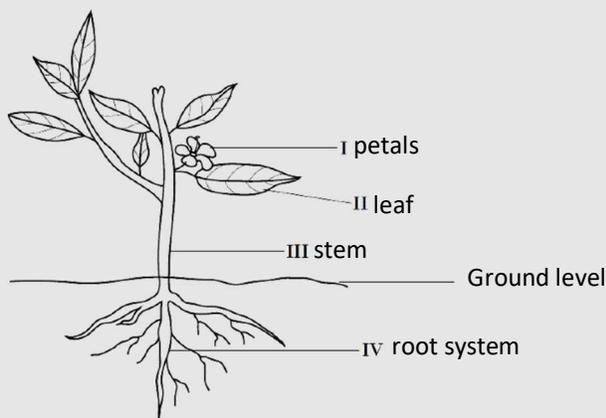
QUESTION 22 ANSWER EXPLANATION

22. The pea is most likely dispersed by

- (A) fire
- (B) water
- (C) explosive action

Immediately, we can eliminate answer choice **A**, because fire will harm the pea rather than helping it grow. **Dispersion by water** is more suited for those plants that have tough exteriors such as nuts, coconuts, and acorns. Pea plants would not use this method because they have a soft exterior. Thus, answer choice **B** is incorrect. **Explosive action** is a rapid plant movement where a fruit can fling its seeds away when they are ripe. Pea pods do this by drying up over time, which makes the pods twist and suddenly open. When the pod bursts open, the seeds fly out in all directions. Explosive action seems like the best answer. **Answer choice C is correct.**

Questions 23-24 refer to the diagram of a plant.



QUESTION 23 ANSWER EXPLANATION

23. The MAIN function of the structure labelled II is to

- (A) make food
- (B) absorb water
- (C) attract insects

This question requires us to know the different parts and functions of a plant. Structure II is the **leaf**, which has many very important functions. The **most important** is making food for the plant.

B talks about absorbing water, which is the primary role of the root system (IV on the diagram). The root system takes moisture from the soil and uses it to hydrate the plant. Since absorbing water is not the leaf's main role, **B** is incorrect. **C** talks about attracting insects, which is the primary role of the petals (I on the diagram). Petals are brightly coloured, which attracts the attention of insects and other pollinators such as birds. Petals also protect the organs behind them. Since the leaves do not work to attract insects, answer choice **C** is incorrect. Leaves contain a special component called **chloroplasts**. Chloroplasts use water, sunlight and carbon dioxide to make food and nutrients for the plant. This process is called photosynthesis and it is the primary way for plants to get food. **Answer choice A is correct.**

QUESTION 24 ANSWER EXPLANATION

24. Which labelled structures represent the shoot system of the plant?

- (A) I, III, IV
- (B) I, II, III
- (C) II, III, IV



There are two different systems that exist in a plant. The first system is called the **shoot system**, which is above ground and includes organs such as leaves, buds, stems, flowers and fruits. The second system is called the **root system**, which includes parts of the plant that are below the ground such as roots. **A** and **C** both include IV, which is part of the root system, not the shoot system. This means that **A** and **C** are incorrect. Since this question is asking for the shoot system, we only want to look for the parts of the plant that are above ground. That includes I, II, III, which is the flower, leaf, and stem. **Answer choice B is correct.**

QUESTION 25 ANSWER EXPLANATION

25. Which of the following statements about the roots of plants is FALSE?

- (A) Some roots are good to eat.
- (B) Mango trees have tap roots.
- (C) Plants store water and oxygen in their roots.

A is asking whether it is good to eat roots. As a matter of fact, there are roots that are completely okay to eat. For example, carrots are a very popular food around the world and they are root vegetables. Since this question is asking which option is **false**, answer choice **A** is incorrect. **B** is asking whether mango trees have tap roots. Tap roots are the main, dominant roots of a tree. Mango trees have tap roots and smaller roots that branch off of them. Since this question is asking which option is **false**, answer choice **B** is incorrect. **C** is asking whether a plant can store water and oxygen in its roots. While all plants do absorb water and nutrients, some plants store water in their roots while others do not. For example, cacti are able to store water in their roots. While some plants can store water in their roots and some cannot, all plants are unable to store oxygen. Instead, they continuously release oxygen in a process called photosynthesis. Since this statement is untrue, **C** is the best answer. **Answer choice C is correct.**

QUESTION 26 ANSWER EXPLANATION

26. Which order below correctly describes the life cycle of a butterfly?

- (A) Egg → pupa → larva → adult
- (B) Egg → larva → pupa → adult
- (C) Pupa → larva → egg → adult

Butterflies undergo a transformation called **metamorphosis** in their life cycle. They begin this life cycle **eggs**. Over time, these eggs hatch and **larvae** emerge from the eggs. These are known as **caterpillars** and they resemble worms. After eating and growing, the larva's skin hardens and turns into a **pupa**. The pupa is a hardened shell that protects the larva from danger. Eventually, a butterfly emerges from the pupa as a mature adult. **C** is incorrect because the life cycle of a butterfly begins with an egg. **A** is incorrect because when eggs hatch, they emerge as larva/caterpillars before turning into pupa. **B** is accurately reflecting the lifecycle of a butterfly, as described above. **Answer choice B is correct.**

QUESTION 27 ANSWER EXPLANATION

27. Ana liked an unusual plant and wanted to get a plant identical to the one she liked. What is the BEST method of propagating this plant?

- (A) Use cuttings
- (B) Make grafts
- (C) Use budding

Ana wants to get an exact identical plant to one she already has so she must choose a method that uses **only parts of her original plant**. If she uses another plant, she might not end up with the exact identical plant that she wants. In **cutting propagation**, parts of a plant are cut off – either the stem, roots, or leaves – and then planted that can then grow into an identical second plant. The plant that originally gets cut grows back the missing parts and one plant turns into two. **Grafting** involves cutting a part of a different plant and combining the two together that would result in a plant that is not identical to the original plant. **Budding** is similar to grafting where a bud is taken and combined with a different plant which results in a different plant to the original one.

Cutting propagation is a method that uses only the original plant to grow an identical plant. **Answer choice A is correct.**



QUESTION 28 ANSWER EXPLANATION

28. Which of the following systems is responsible for taking gases out of the body?

- (A) Circulatory
- (B) Respiratory
- (C) Reproductive

The **circulatory** system is involved with your heart and the movement of blood, not the movement of gas out of your body. Thus, answer choice **A** is incorrect. The **reproductive** system is involved with reproduction and the production of hormones that your body needs to grow. This does not match our description so answer choice **C** is incorrect. The **respiratory system** is made up of organs that are responsible for breathing in oxygen and exhaling waste gas. This is the system that allows you to breathe and take in oxygen from the air around you. Every time you breath out, you are exhaling waste gases from the inside of your body that allows your body to maintain a balance between breathing in and out. This best matches the description that we are given. **Answer choice B is correct.**

QUESTION 29 ANSWER EXPLANATION

29. Which of the following words does NOT relate to volcanoes?

- (A) Lava
- (B) Crater
- (C) Cirrus

Volcanoes are openings on the surface of the Earth that allow **magma and lava** to “erupt” from the Earth’s core. Usually, these eruptions are so violent they reshape entire landscapes and ecosystems from the surrounding environment. After the eruption, a huge **crater** or hole in the ground can be formed on the leftover landscape. **Cirrus** is in reference to “cirrus clouds” which are hair-like wispy clouds that are found in the higher layers of clouds. Since Cirrus has nothing to do directly with volcanoes, **answer choice C is correct.**

QUESTION 30 ANSWER EXPLANATION

30. The MAIN organs of the nervous system are the

- (A) brain, heart, intestine
- (B) brain, spinal cord, nerves
- (C) spinal cord, arteries, veins

The **nervous system** is responsible for the functions that control everyday life. This includes thinking, feeling, and telling the different parts of your body to move. The main organs of the nervous system are the brain, the spinal cord and the nerves. The heart is part of the **circulatory** system. It is responsible for pumping blood throughout your body. It is not directly involved in moving your body through sending of signals. Your arteries and veins are involved in the specific channels that connect the heart to the different parts of the body. They are responsible for moving blood to the different organ systems. **Answer choice B is correct.**

Question 31-32 refers to the diagram of a food chain below.



QUESTION 31 ANSWER EXPLANATION

31. Which organism in the food chain is a producer?

- (A) Large fish
- (B) Water beetles
- (C) Aquatic plants



Producers are organisms that are able to make their own food without having to prey on other animals. Producers can get their energy from the power of the sun and then convert that into food for themselves. The best example of a producer is a plant. Plants are able to convert the Sun's energy into nutrients and grow without eating other organisms. This food chain begins on the left with aquatic plants. The arrows indicate which organisms consume others. For example, Tadpoles eat Aquatic Plants, and then Water beetles eat Tadpoles. Producers will always be on the bottom of the food chain because they do not consume other living things. Thus, the producers in this chain are the aquatic plants, showing that **answer choice C is correct**.

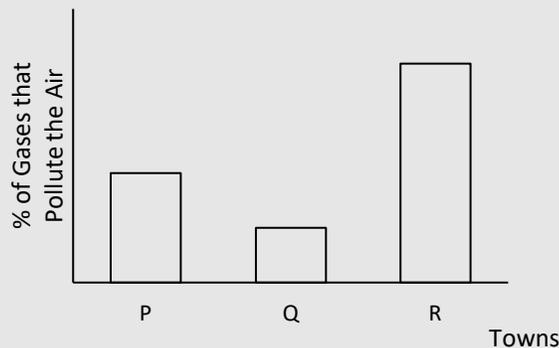
QUESTION 32 ANSWER EXPLANATION

32. If all the tadpoles die, which organisms in the food chain will be directly affected?

- (A) Large fish and water beetles
- (B) Aquatic plants and water beetles
- (C) Aquatic plants and water beetles

Described in the explanation for #31, the way the food chain is drawn is with the arrows pointed towards the organism does the consuming at each level. Since the **tadpoles** have arrows pointing from the **aquatic plants**, that means the tadpoles are consuming the aquatic plants. The tadpoles play an important role in making sure that the ecosystem from being overrun with too many plants. There is another arrow that points from the tadpoles to **water beetles**, meaning that water beetles are the organisms that feed on tadpoles. If there were suddenly no tadpoles in the food chain, the aquatic plants would be able to grow without anyone feeding on them. Additionally, if there are suddenly no tadpoles in the food chain, the water beetles would have nothing to eat and feed on, causing them to starve. Therefore, if all tadpoles die aquatic plants would grow and be affected and the water beetles would be affected as well. **Answer choice B is correct**.

QUESTIONS 33-35 refer to the graph below which shows the percentage of gases given off by vehicles which pollute the air in three towns, P, Q and R.



QUESTION 33 ANSWER EXPLANATION

33. In Towns P and R a large number of persons are MOST likely to suffer from

- (A) sore throat
- (B) back pain
- (C) breathing difficulties

Air pollution is directly related with health conditions that can affect the **respiratory system**. Just like it is hard to breathe with a lot of dust or smoke in the air, the % of gases that pollute the air in the different towns can make it harder to breathe in that specific town. **Sore throats** are often caused by infections rather than air pollution and irritation. Since sore throats and air pollution are less likely to be related, **A** is incorrect. **Back pain** is a very unlikely result of air pollution, so we can rule out answer choice **B** as well. **Breathing difficulties** are one of the most common effects of higher percentage of air pollutants in a given area. **Answer choice C is correct**.



QUESTION 34 ANSWER EXPLANATION

34. The amount of pollution which is present in Town R may be decreased by persons riding

- (A) bicycles
- (B) trains
- (C) motorcycles

Air pollution is most commonly caused by the releasing of harmful gases into the air/atmosphere. For things that require the burning of a specific fuel (example. Gasoline or diesel), dangerous and harmful chemicals are released into the air as byproducts that can damage the atmosphere around you as well as cause health conditions in the people around. **Trains** require the burning of a fuel source that power the train along the tracks at a very fast speed. When these fuels are used, dangerous gases are released into the air that pollute it. Therefore, **B** is incorrect. **Motorcycles** also require gasoline or fuel in order for the engine to move the wheels at a very fast speed. When the fuel burns, harmful chemicals are released into the air as well. Therefore, **C** is incorrect. **Bicycles** do not require any sort of fuel in order for the person riding one to move forward. Bicycles are green and are only powered through the power of your legs without the need to release harmful gasses into the air. In order to reduce the amount of air pollution in Town R, more people can switch to using bicycles instead of motorcycles to decrease the amount of dangerous gases being released into the air. **Answer choice A is correct.**

QUESTION 35 ANSWER EXPLANATION

35. Which town has the LEAST amount of pollution?

- (A) P
- (B) Q
- (C) R

A bar graph is a type of chart that uses bars to represent numbers. This question requires us to know how to properly read them. Every bar graph consists of an **x-axis** and a **y-axis**. The x-axis is a horizontal line that runs along the bottom of the graph. On the x-axis we will find information about what categories or **variables** are being studied. In the diagram above, we can see that this graph is telling us information about towns, specifically Town P, Town Q and Town R. The y-axis is a vertical line that runs down the side or the middle of the graph. The y-axis always measures something specific. For example, the y-axis on the graph above tells us the **percentage of gases that pollute the air**. As the line gets higher, so do the possible percentages of gas pollution. Thus, by looking at how high the bars go, we can make general conclusions about the percentages of gas pollution in each town. Now that we know a little more about bar graphs, we can answer the question. The bar for Town R is the highest, which suggests that Town R has the highest percentage of gases that pollute the air. The bar for Town P is lower than the bar for Town R but higher than the bar for Town Q. This means that the percentage of gases that pollute the are lower in Town P are between the percentages for Town R and Town Q. The bar for Town Q is the lowest, which means that is has the last amount of pollution. **Answer choice B is correct.**

QUESTION 36 refers to the table below which shows three ways in which Mrs. James plans to dispose of waste materials.

Method	Material	Disposal Method
1	Tree leaves, vegetable peels	Composting
2	Plastic bags, vegetable peels	Recycling
3	Tree leaves, plastic bags	Landfill

QUESTION 36 ANSWER EXPLANATION

36. Which disposal method is MOST appropriate for the materials given?

- (A) 1
- (B) 2
- (C) 3



This question is testing our knowledge of various disposal methods. **Recycling** involves utilising plastics and other different recyclables to be recreated into different products. This can create byproduct pollutants and organic material is generally unable to be recycled. **B** states that plastic bags can be disposed of through recycling which is correct. However, vegetable peels cannot be recycled. This means that **B** is incorrect. **Landfill** disposal is generally the least efficient form of garbage disposal because it creates a large amount of hazardous waste and releases pollutants into the air. **C** states that tree leaves are disposed in landfills which is incorrect. The most appropriate method of disposal for tree leaves is composting. Plastic bags also don't belong in landfills because they can be recycled. This means that answer choice **C** is incorrect. **Composting** uses organic materials to provide nutrients for different soils that saturate the soil with different nutrients that allow nutrients to be recycled by other existing plants without any sort of pollutant waste. **A** is correct because tree leaves and vegetable peels are both organic materials that are both good materials for composting. **Answer choice A is correct.**

QUESTIONS 37-38 refer to the table below which shows the effects of different materials used in a closed electrical circuit.

Material	Bulb lights up	Bulb does not light up
Cotton		✓
Plastic		✓
Copper wire	✓	
Steel	✓	
Wood		✓

QUESTION 37 ANSWER EXPLANATION

37. Which of the following materials are conductors?

- (A) Cotton and plastic
- (B) Copper wire and steel
- (C) Cotton, plastic and wood

Conductors are materials that can allow electricity to pass through them easily. Good conductors are often metals such as copper, steel, iron, or aluminum. A good way to know if a material is a conductor is by testing whether or not it can cause a bulb to light up. If the material does not let electricity pass through it, the bulb will not light up, which means that it is not a conductor. If the material does let electricity pass through it, the bulb will light up and the material is a conductor. By looking at the table, we can see that cotton, plastic and wood did not cause the bulb to light up, which means that they are not conductors. Thus, any answer choice that contains those materials must be incorrect. Using this reasoning, we can eliminate answer choices **A** and **C**. The only two materials that did cause the bulb to light up were the copper wire and the steel, meaning that they are the only two conductors. These materials are in answer choice **B**, which means that **answer choice B is correct.**

QUESTION 38 ANSWER EXPLANATION

38. Which of the following materials may be used to prevent electrical shock?

- (A) Plastic
- (B) Steel
- (C) Copper wire

Electric shock is what happens when a current of electricity passes through a conductor and comes into contact with a person's skin. Since conductors are materials that allow electricity to pass through them easily, they are not safe to handle in the presence of high amounts of electricity. Therefore, in order to prevent an electric shock, we would use something that is **not** a conductor. From the table above, we know that copper wire and steel are conductors because they caused the bulb to light up. Thus, we should start by eliminating any answers that mention copper wire or steel. **B** mentions steel, and **C** mentions copper wire, which means that they can both be eliminated. This only leaves **A**, plastic. Looking at the table, we can see that plastic is not a conductor because it did not cause the bulb to light up. Since plastic is the only non-conductor option, **answer choice A is correct.**



QUESTION 39 ANSWER EXPLANATION

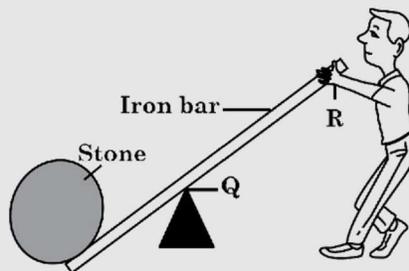
39. Which of the following statements about magnets is FALSE?

- (A) Every magnet has two poles.
- (B) A south pole attracts a north pole.
- (C) The magnetic force is weakest at the poles.

Magnets are objects made of rocks or metals. They emit an invisible force that can either attract or repel other magnets. Each magnet has two “poles” – a north pole and a south pole. When two of the same poles are next to each other, the magnets will repel. For example, if two North poles are next to each other, they will be repelled. When a North and a South pole are near each other, they will be attracted. There are a lot of magnets in the world around us. In fact, the earth is one giant magnet!

It is true that **every magnet has two poles**. This means that **A** is incorrect because we are looking for the false answer. A magnets’ opposite poles will attract each other. A north pole will always be attracted to a south pole the same way a south pole is always attracted to a north pole. **B** is a true statement and therefore not the correct answer. The magnetic force of a magnet is the strongest at the poles where they have the strongest attraction and repelling forces. **Choice C** is a false statement because it says that the magnetic force is weakest at the poles where it is the strongest. **Answer choice C is correct.**

Questions 40-41 refer to the diagram below, which shows a boy using a lever to move a heavy stone.



QUESTION 40 ANSWER EXPLANATION

40. What should the boy do to lift the stone off the ground?

- (A) Lift the iron bar at R.
- (B) Push down the iron bar at R.
- (C) Remove the wedge-shaped object at Q.

A lever is a straight rigid object like a board or a bar that pivots on a turning point called a fulcrum (labelled Q). Levers make it easier to lift heavy things. Examples of levers include seesaws, pliers, crowbars, wheelbarrows, and tweezers. In order to lift the stone off of the ground, the boy must push down on his side so that the opposite side underneath the stone moves upward. By pushing down at R, the iron bar pivots at Q and moves the stone upwards along with the iron bar. **A** states that the boy should **lift the bar at R**. If the boy did this, the stone would just roll off the other side. Since he wants to lift the stone off of the ground, answer choice **A** is incorrect. **C** states that the boy should remove the wedge-shaped object at Q. If that object is removed, the iron bar will be flat on the ground and the stone will not move. This means that answer choice **C** is incorrect. **B** states that the boy should **push down the iron bar at R**. If the boy pushes down, the opposite side of the iron bar will move upward and lift the stone. This is the outcome that the boy wants. **Answer choice B is correct.**

QUESTION 41 ANSWER EXPLANATION

41. The point Q is called the

- (A) effort
- (B) anchor
- (C) fulcrum

The lever is composed of a straight rigid object that is pivoted on a turning point called a fulcrum. In this case, point Q is the fulcrum that allows the bar to move up and down on opposite sides. **Effort** is the amount of work that the boy does in order to lift the stone. Think about running as an example. When you are running, you can feel the effort that you put in to move quickly. But it is not a physical object. The item at point Q is a physical object that you can see and touch. Therefore, answer choice **A** is incorrect. An **anchor** is an object that holds something in place. One good example of this is the anchor on a boat, which stops the boat from moving. The object at point Q cannot be an anchor because the iron bar on top of it can move freely. Thus, answer choice **B** is incorrect. A **fulcrum** is the turning point on a lever. It allows a rigid object to balance on it and move in order to lift something. In the diagram, this is exactly what point Q does. It lets the iron bar on top of it move so that the boy can lift the stone. **Answer choice C is correct.**

QUESTION 42 ANSWER EXPLANATION

42. Which of the following tools can BEST be used to place a 20-litre drum on a truck?

- (A) A spade
- (B) A crowbar
- (C) An inclined plane

In order to answer the question, you must first look at what each of the answer choices refer to. A **spade** is a tool used for digging. It is very similar to a shovel. This tool would not be very useful on lifting a very heavy object onto a truck as the question is asking for. Thus, answer choice **A** is incorrect. A **crowbar** is an object similar to an iron rod with a hooked end. It is usually used for pulling two objects apart. It works a lot like the back end of a hammer, which is used for removing nails. A crowbar can be classified as a lever if placed along a fulcrum. However, crowbars are not very big, so they are not the most useful option for lifting a very heavy and large object onto a truck. Thus, answer choice **B** is incorrect.

An **inclined plane** is a type of simple machine that can also be referred to as a ramp. Inclined planes are flat surfaces where one is higher than the other, which makes it easier to move a heavy object upward or downward. Moving an object up and down an inclined plane requires less work than lifting an object straight off the ground. This is because it is generally easier to slide something than to lift it. Since a very heavy load needs to be moved onto a truck, an inclined plane would be the best choice. A person could just push the drum up the inclined plane instead of picking it up. **Answer choice C is correct.**

QUESTION 43 ANSWER EXPLANATION

43. Which of the following is the unit of force?

- (A) Joule
- (B) Newton
- (C) Degree

Force is the pushing or pulling on an object that occurs when two objects interact with each other. When this interaction stops, the force stops as well. A force can make things move, change speed, or even change shape. A **joule** is a unit of work or energy that is named after a British scientist. A **degree** is usually referred to in regard to angles between two different points or in other terms of temperature.

A **newton** is named after the physicist Isaac Newton that coined the term that calculates the amount of **force** needed to accelerate one kilogram per second squared. This then refers to the amount of force in the system acting on an object which is being asked in the question. **Answer choice B is correct.**



QUESTION 44 ANSWER EXPLANATION

44. A covered pot half-filled with water, was placed over a fire. After a few minutes, the cover was removed and droplets of water were seen on the inside of the cover. The BEST explanation for the droplets is that

- (A) water bubbled onto the cover
- (B) steam condensed on the cover
- (C) the water rose to the level of the cover

When a pot filled with water is placed over a fire, the water inside it will get hotter and hotter until it reaches a temperature that makes it turn into a gaseous state. At this point in time, the water inside is boiling and some of the liquid is turning into gas and rising upwards in the form of steam. Normally, this steam will just go up into the air and cool down once it reaches more air however the question has a pot being covered. The steam has nowhere to go in the question since it is being blocked by the cover.

Answer choice **A** states that the water physically was able to splash onto the cover. While this may seem plausible, this is usually not the case as the bubbles are most likely unable to bubble directly onto the cover from a large distance away beneath the lid. **C** states that the water physically rose to the level of the cover. When the water in the pot is being boiled, the liquid form of water decreases as more of it boils away and starts turning into steam. This way, the water level in the pot decreases over time rather than rising to the level of the cover. The water would not be able to rise to the level of the cover as it is being boiled off.

Answer choice **B** states that the steam condensed on the inside of the cover. This explanation makes sense because it addresses the steam having no direction to go. When the steam rises and is trapped in the pot, it wants to escape however as it accumulates onto the top portion of the pot on the cover, many of the water molecules bunch together and end up reverting back to a liquid state when it touches the cooler surface of the pot cover. A lot of water molecules can then form together with the source of water being the rising steam. **Answer choice B is correct.**

QUESTION 45 ANSWER EXPLANATION

45. Which of the following sequences represents a good safety practice when using an electric kettle?

- (A) Fill kettle → dry hands → plug in kettle
- (B) Plug in kettle → fill kettle → dry hands
- (C) Dry hands → plug in kettle → fill kettle

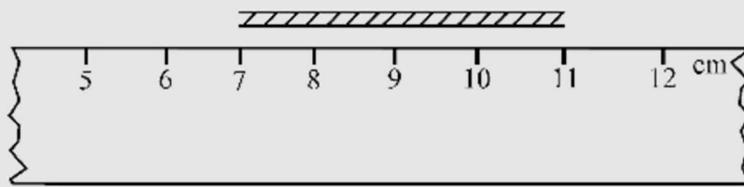
The most important part of handling electrical appliances is to not get electrocuted. Since water is a very good conductor of electricity, most electrical appliances must be kept away from any sort of wet surfaces that can accidentally serve as a point of contact that you can touch. Therefore, the safest approach is to separate any sort of moisture and liquid away from the electrical component of the kettle.

Answer choice **B** first states to plug in the kettle. The problem with this is that the second step is to fill the kettle while it is plugged in. Since the electrical kettle is already plugged into the outlet, getting any sort of water near the electrical outlet can cause bodily harm and risk of being electrocuted. This is the problem with this answer choice as it is dangerous to handle an electrical appliance that is plugged in with water. **C** has a similar issue. Drying your hands off first is a good plan however plugging in the kettle and then exposing it to water afterwards is still a risk of electrical shock. The kettle should not be plugged in to the outlet before being exposed to water

Answer choice **A** states that filling the kettle must occur first, which will be in contact with water since your hands will get wet as well. Therefore, after filling the kettle it states that drying your hands is the next step since there may still be water on your hands that can be dangerous when touching electrical grounds such as the outlet. Finally, the last step is to plug in the kettle safely after your hands have been dried in order to avoid the possibility of electrical shock. **Answer choice A is correct.**



Question 46 refers to the following diagram which shows a ruler and a piece of string.



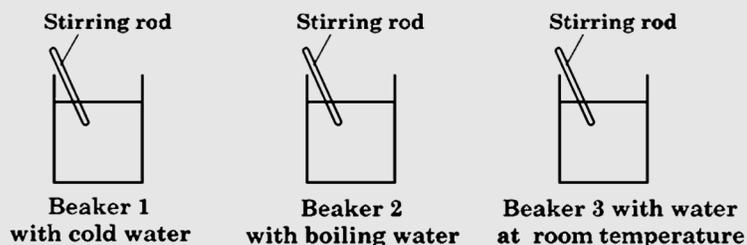
QUESTION 46 ANSWER EXPLANATION

46. The length of the string, in cm, is

- (A) 4
- (B) 5
- (C) 7

A good way to approach questions like this is to use mathematics. The length of string starts at 7 cm on the ruler and then ends at 11 cm. Beyond counting the amount of gaps it fills from 7-8,8-9,9-10,10-11, you can also use math and subtract 7 cm from 11 cm to get a length of 4 cm. **Answer choice A is correct.**

Questions 47-49 refer to the diagrams below.



QUESTION 47 ANSWER EXPLANATION

47. Five grams of sugar were added to each beaker and stirred at the same rate.
In which beaker will the sugar dissolve the fastest?

- (A) Beaker 1
- (B) Beaker 2
- (C) Beaker 3

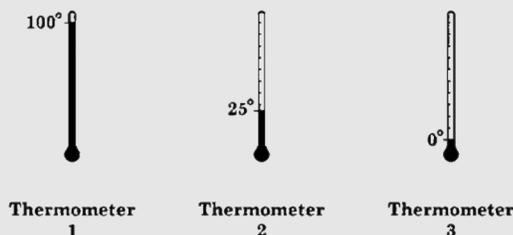
The rate at which something is dissolved into the water is dependent on the temperature of the water as well as how quickly/rapidly you are stirring the sugar and water together. Since the question states that each of the beakers are stirred at the same rate, the only thing that can affect the rate at which the sugar can dissolve is the temperature of the water. Beaker 1 is filled with cold water, beaker 2 with boiling water, and beaker 3 with room temperature water.

The rate at which the sugar melts is dependent on the amount of energy put into each beaker. By stirring the beaker, the amount of energy increases in the beaker. In the same fashion, by increasing the heat energy in each beaker a similar effect can be achieved. Since the boiling water has the most energy because of the heat (boiling), the sugar dissolves faster in the hottest beaker. **Answer choice B is correct.**



QUESTION 48 ANSWER EXPLANATION

48. A thermometer was later placed in each of the beakers; the temperature readings are shown below.



Which of the thermometers above would indicate the temperature in Beaker 2?

- (A) 1
- (B) 2
- (C) 3

A **thermometer** is a tool used to measure the temperature of a particular object. Since this question is in reference to the diagram that describes beaker two as “boiling”. That must mean that the temperature of the water must be very high or greater than the other beakers that are not boiling. In this picture given in the question, the only thermometer that is describing a temperature higher than the others is thermometer 1. **Answer choice A is correct.**

QUESTION 49 ANSWER EXPLANATION

49. The mass of sugar which was added to the beakers was MOST likely measured using a

- (A) ruler
- (B) balance
- (C) thermometer

The **mass** of an object is the amount of matter an object contains. Similar to weight, this property of an object is measured with a scale. A **ruler** is usually used to measure length of objects. Since this question is concerned with the mass or the quantity of the object, a ruler is not suitable to measure the amount of mass added to each beaker. A **balance** is an object used to measure the weight or mass of an object. This is the most suitable device to measure the amount of mass/sugar added to the beakers. A **thermometer** is an object used to measure how hot or cold the target is. Since mass only concerned with the amount of matter in the given object, temperature is not related to the mass of an object. **Answer choice B is correct.**

QUESTION 50 ANSWER EXPLANATION

50. Equal amounts of sand, sugar and salt are added to three separate containers with water at 100°C. Each mixture is stirred for two minutes then allowed to stand.

Which of the following predictions is accurate?

- (A) All three substances will dissolve at the same rate.
- (B) The sugar and salt will dissolve but the sand will not.
- (C) The sugar and sand will both dissolve but the salt will not.

This question is asking you what happens when you put sand, sugar and salt in water and mix it. First, think of times when you have seen any of these mixtures. At the beach, you see sand and water. Do they mix? No, the sand stays on the ocean floor. So, when you mix it with water it will not dissolve. At the beach, you also know that the water is salty. You cannot see the salt because it is dissolved in the water. Therefore, when you mix it with the water in the cup, it will dissolve. You put sugar in water sometimes when you make tea or coffee. When you mix it, the sugar doesn't float or sink, it dissolves. **Answer choice B is correct.**

