



Preparation for the National Grade Six Assessment

Guide #2 | Science Multiple Choice

Who are you?

If you are in grade 5 or 6 and will be taking the next National Grade Six Assessment, 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 40 past exam questions. Try to answer these questions in the prescribed 70 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 practicing the questions, and you will get better. Soon, you will be able to answer all the questions in the 70 minutes. (**TIP:** Practice makes you perfect, so keep practicing.)
3. Answers to all the questions are on the pages immediately after the practice 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 practice 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.





MINISTRY OF EDUCATION
NATIONAL GRADE SIX ASSESSMENT
PRACTICE TEST
SCIENCE
PAPER 1
2013

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

1 hour and 10 minutes

READ THESE INSTRUCTIONS CAREFULLY BEFORE YOU ATTEMPT TO ANSWER THE QUESTIONS.

- WRITE YOUR CANDIDATE NUMBER ON THE ANSWER SHEET AND UNDERLINE THE SUBJECT.**
- This test has **40** questions. You are required to answer **ALL** questions. Four responses are given for each question. The responses are **A, B, C** and **D**. Only **ONE** response is correct.
- If you are not sure of the answer to a question, then choose the one which you think is **BEST**. On your answer sheet, shade the letter you have chosen.
- BE SURE THAT THE QUESTION NUMBER IN THE BOOKLET IS THE SAME AS THE ONE YOU HAVE USED ON YOUR ANSWER SHEET.**

Here is an example done for you.

1. Carbon dioxide is a

- | | |
|--------------|-------------|
| (A) mixture. | (B) liquid. |
| (C) gas. | (D) solid. |

ANSWER SHEET

1. A B C D

Note: the letter **C** is shaded on the answer sheet because **gas**, the correct answer, is next to **C**.

- If you make a mistake, erase the shaded letter cleanly, then shade the letter next to the answer you have now chosen.
- REMEMBER**, each answer **MUST** only be shown by the shading on your **Answer Sheet**.
- Remember only **ONE** answer must be provided for each question.

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



1. An animal with a backbone is the

- (A) spider.
- (B) lobster.
- (C) centipede.
- (D) snake.

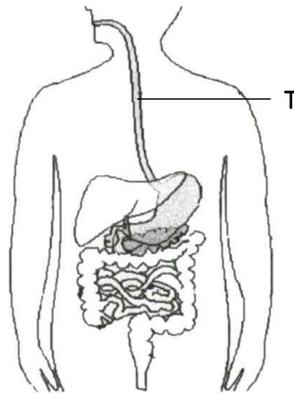
2. A monocotyledonous plant is the

- (A) mango.
- (B) ochro.
- (C) corn.
- (D) bora.

3. One way in which the body gets rid of waste products is by

- (A) perspiring.
- (B) dieting.
- (C) walking.
- (D) inhaling.

The diagram below shows the digestive system of humans. Study it, then answer **question 4**.



4. The part labelled "T" is called the

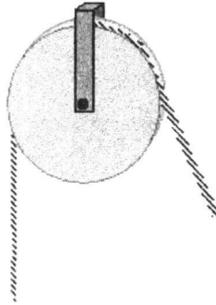
- (A) oesophagus.
- (B) liver.
- (C) intestine.
- (D) stomach.



5. An example of domestic waste is

- (A) used syringes.
- (B) old tyres.
- (C) banana skin.
- (D) scrap iron.

The diagram below shows a simple machine in use. Study it, then answer **question 6**.



6. The simple machine shown above is an example of a/an

- (A) inclined plane.
- (B) pulley.
- (C) lever.
- (D) wedge.

7. The effect of gravity on objects is to

- (A) pull them apart.
- (B) push them higher.
- (C) reduce their mass.
- (D) pull them down.

8. The process in which water vapour is changed to clouds is called

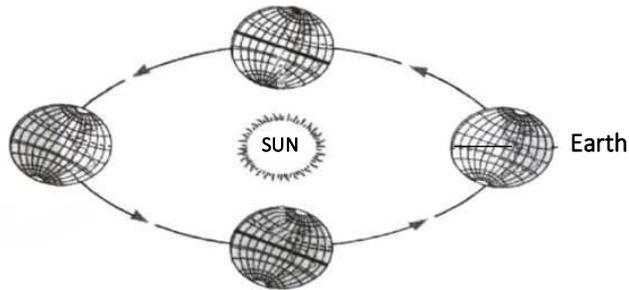
- (A) evaporation.
- (B) precipitation.
- (C) condensation.
- (D) transpiration.



9. The phases of the Moon occur in _____ days.

- (A) 2
- (B) 14
- (C) 28
- (D) 56

Study the diagram, then answer **question 10**.



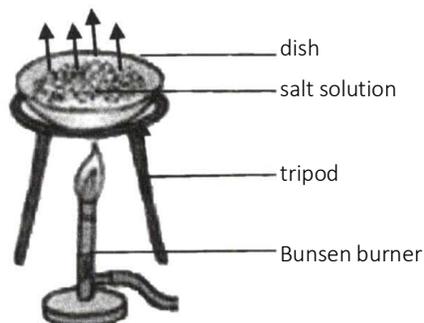
10. The journey of the Earth as shown above is known as

- (A) revolution.
- (B) eclipsing.
- (C) rotation.
- (D) spinning.

11. Which material is an electrical insulator?

- (A) Aluminium
- (B) Iron
- (C) Copper
- (D) Rubber

The diagram below shows a method of separating substances using heat. Study it, then answer **question 12**.



12. The method shown above is called

- (A) evaporation.
- (B) filtration.
- (C) distillation.
- (D) sedimentation.

13. Vertebrates can be identified by common features such as

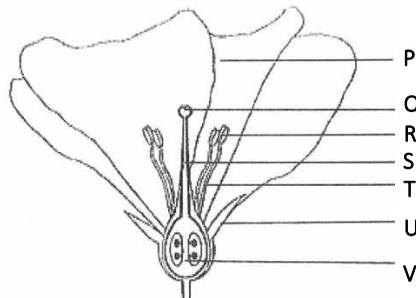
- (i) body covering (ii) breathing method (iii) number of legs

- (A) (i) and (ii) only
- (B) (ii) and (iii) only
- (C) (i) and (iii) only
- (D) (i), (ii) and (iii)

14. Which is **not** a characteristic of reptiles?

- (A) Body is covered with scales.
- (B) They breathe by gills.
- (C) They inhale oxygen.
- (D) They are cold blooded.

The diagram below shows a section of a flower. Study it, then answer **questions 15 to 17**.



15. Pollen is produced in the part labelled

- (A) Q.
- (B) R.
- (C) S.
- (D) T.

16. The parts of the flower that are responsible for fertilization are

- (A) P, Q and R.
- (B) Q, S and V.
- (C) P, R and T.
- (D) R, S and T.

17. One function of the part labelled **U** is to

- (A) protect the ovules.
- (B) attract insects.
- (C) produce nectar.
- (D) protect the flower bud.

18. All are parts of the human digestive system **except**

- (A) colon.
- (B) pancreas.
- (C) alveoli.
- (D) liver.

19. Soil erosion is **not** caused by

- (A) overgrazing.
- (B) strong winds.
- (C) planting trees.
- (D) running water.



20. The soil type that contains small particles and retains a lot of water is called

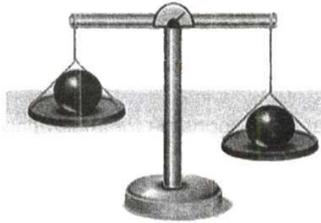
- (A) loam.
- (B) clay.
- (C) gravel.
- (D) sand.

21. Which waste materials stated below are biodegradable?

(i) Newspaper (ii) Plastic bottle (iii) Glass bottle (iv) Fruit skins

- (A) iii and iv
- (B) i and ii
- (C) ii and iii
- (D) i and iv

The diagram below shows an instrument in use. Study it, then answer **question 22**.



22. The instrument is used to measure

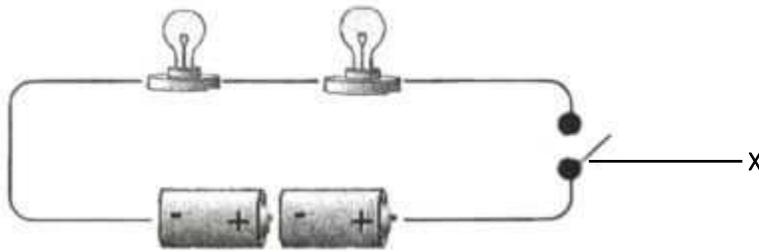
- (A) weight.
- (B) distance.
- (C) mass.
- (D) volume.

23. The relationship between the Earth and the Moon is that the

- (A) Earth is the Moon's satellite.
- (B) Earth gives the Moon light.
- (C) Earth spins around the Moon.
- (D) Moon is the Earth's satellite.



Study the diagram below, then answer **questions 24 and 25**.



24. The lamps and the battery are

(i) connected in parallel. (ii) connected in series. (iii) parts of a simple circuit.

- (A) i only
- (B) ii only
- (C) i and ii
- (D) ii and iii

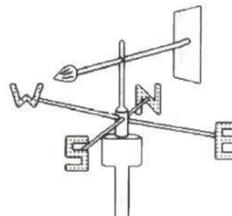
25. If the part labelled **X** is closed

- (A) the lamps will light.
- (B) the lamps will not light.
- (C) only one lamp will light.
- (D) the current will not flow.

Study the diagrams below then answer **questions 26 to 28**.



A



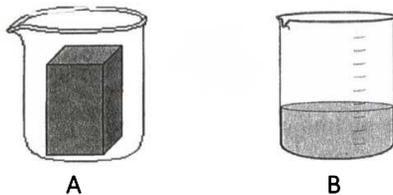
B

- 26.** The names of the instruments **A** and **B** are _____ respectively.
- (A) anemometer and wind vane
 - (B) barometer and wind cock
 - (C) anemometer and barometer
 - (D) wind vane and wind cock
- 27.** Diagram **B** shows that the wind is blowing in a/an _____ direction.
- (A) northerly
 - (B) southerly
 - (C) easterly
 - (D) westerly
- 28.** Diagram A is measuring the _____ of the wind.
- (A) direction
 - (B) distance
 - (C) speed
 - (D) volume
- 29.** To measure changes in the weather a meteorologist does **not** use a/an
- (A) anemometer.
 - (B) hygrometer.
 - (C) barometer.
 - (D) ammeter.



The diagrams below show substances in two containers. Study them carefully, then answer **questions 30 and**

31.



30. Which property best describes the substance in diagram **A**?

- (A) Particles are very large.
- (B) Particles are closely packed together.
- (C) It can be poured into another container.
- (D) It does not have a definite shape.

31. Which property does **not** describe the substance in diagram **B**?

- (A) Its molecules move constantly.
- (B) It must be stored.
- (C) It takes the shape of the container.
- (D) It can be poured.

32. Electrical wires are often covered with a layer of **plastic** because plastic

- (A) conducts electricity.
- (B) breaks the flow of the current.
- (C) serves as an insulator.
- (D) is resistant to heat.



The features below describe a certain animal. Study them carefully, then answer **question 33**.

- i. Body covered with fine hair**
- ii. Has wings**
- iii. Breathes by lungs**
- iv. Is warm blooded**

33. The animal is most likely a

- (A) moth.
- (B) manatee.
- (C) bat.
- (D) honeybee.

34. The functions of the reproductive system of living things are

(i) production of sex cells (ii) fertilization (iii) development of embryo (iv) circulation of hormones.

- (A) (i), (ii) and (iii)
- (B) (i), (iii) and (iv)
- (C) (ii), (iii) and (iv)
- (D) (i), (ii), (iii) and (iv)

The diagrams below show three examples of food. Study them, then answer **question 35**.



Milk



Cheese



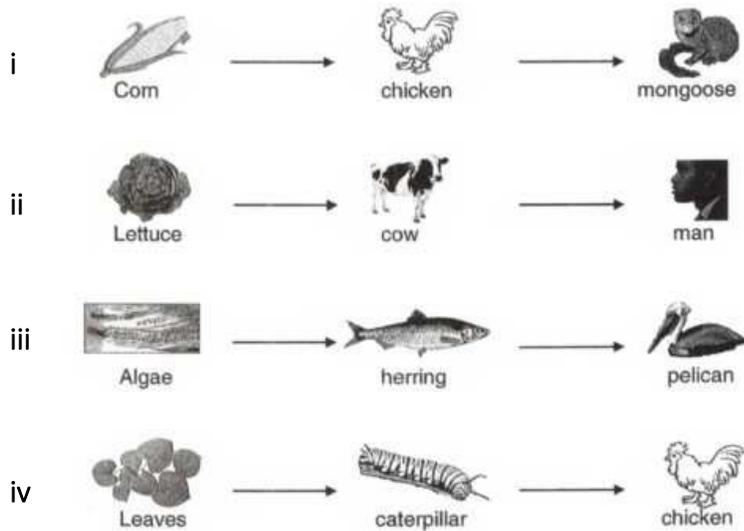
Meat

35. In which group would you place the foods shown?

- (A) Carbohydrates
- (B) Proteins
- (C) Vitamins
- (D) Fats



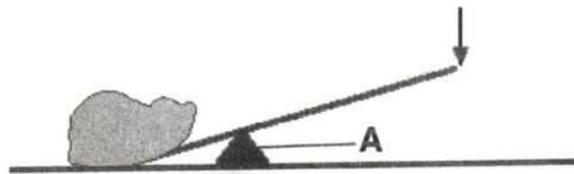
Study the food chains below, then answer **question 36**.



36. Which is **true** based on the information given above?

- (A) Corn, lettuce and caterpillar are consumers.
- (B) The pelican, leaves and algae are producers.
- (C) The mongoose, chicken and man are consumers.
- (D) The cow, herring and man are producers.

The diagram below shows a simple machine in use. Study it, then answer **question 37**.



37. The part labelled **A** is called the

- (A) fulcrum.
- (B) lever.
- (C) effort.
- (D) load.



38. The Sun appears to rise in the east because the

- (A) Sun moves from east to west.
- (B) Sun moves from west to east.
- (C) Earth spins from east to west.
- (D) Earth spins from west to east.

39. Which gas found in the atmosphere is used to make fertilizers and explosives?

- (A) Oxygen.
- (B) Hydrogen.
- (C) Nitrogen.
- (D) Freon.

40. The renewable sources of energy are obtained from

(i) crude oil. (ii) wind. (iii) solar. (iv) hydropower.

- (A) (i), (ii) and (iii)
- (B) (ii), (iii) and (iv)
- (C) (i), (iii) and (iv)
- (D) (i), (ii), (iii) and (iv)

END OF TEST

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



ANSWER EXPLANATIONS

QUESTION 1 ANSWER EXPLANATION

1. An animal with a backbone is the

- (A) spider.
- (B) lobster.
- (C) centipede.
- (D) snake.

This problem requires you to recognize the key differences between invertebrates (animals without a backbone) and vertebrates (animals with a backbone).

Invertebrates either have a soft body, like worms and jellyfish, or a hard outer casing covering their body, like spiders and crabs. Since they do not have a backbone, these animals are small and slow moving.

Vertebrates have backbones so they are able to be bigger in size.

Looking at the answer choices, three of the animals listed are much smaller than the fourth animal. **Answer choice D is correct.**

QUESTION 2 ANSWER EXPLANATION

2. A monocotyledonous plant is the

- (A) mango.
- (B) ochro.
- (C) corn.
- (D) bora.

This problem requires you to identify the characteristics of a plant of the class monocotyledons. Flowering plants are divided into two classes: monocotyledons (monocots) and dicotyledons (dicots). The main distinction is the number of cotyledons (the part of the seed that will grow into the leaves) present in the seed embryo.

Monocots have only one cotyledon. Dicots have two cotyledons. Thus, a monocot embryo gets everything from a single source (i.e. the one cotyledon) and it is a simpler plant. Another distinction is that monocots have parallel-veined leaves while dicots have "net-veined" leaves, which means they have the familiar leaves with centre veins and branching veins running from it.

From the second distinction (pattern of veins), you can eliminate mango, ochro, and bora since they have net-veined leaves. You are left with corn, which does have parallel-veined leaves. **Answer choice C is correct.**

QUESTION 3 ANSWER EXPLANATION

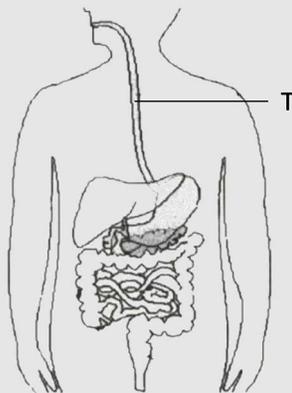
3. One way in which the body gets rid of waste products is by

- (A) perspiring.
- (B) dieting.
- (C) walking.
- (D) inhaling.

Since the problem is asking for a way the body gets rid of waste products, you need to identify the process in which the body releases something. This eliminates "dieting" and "inhaling" since neither one involves a release of something from the body. Next, consider the characteristics of "waste products." Usually, waste smells unpleasant. This eliminates "walking" since walking may release energy, but it does not release anything that smells foul. Perspiring, on the other hand, is another term for sweating and a release of sweat often does smell bad. The waste product would be sweat. **Answer choice A is correct.**



The diagram below shows the digestive system of humans. Study it, then answer **question 4**.



QUESTION 4 ANSWER EXPLANATION

4. The part labelled “T” is called the
- (A) oesophagus.
 - (B) liver.
 - (C) intestine.
 - (D) stomach.

This problem requires you to know the features of the digestive system. The part labelled **T** appears to be a long tube that connects the mouth to the rest of the digestive system. From process-of-elimination, we know that it cannot be answer choice **D** since the human stomach lies near our belly button, not connected to our mouth.

The stomach’s main function is to digest (breakdown) food. The intestine’s main function is to absorb nutrients and water. The liver’s main function within the digestive system is to process the nutrients absorbed from the small intestine.

From this information, we can eliminate answer choices **C** and **B**. Since food must be broken down to smaller particles before entering the intestines and this is done in the stomach, the intestine cannot be **T** because **T** starts from the mouth as shown, not from the stomach. Answer choice **B** can be eliminated since the liver is a part of the digestive system after nutrients from food digested have passed the small intestine. We are left with oesophagus, which is the canal that connects the throat to the stomach. **Answer choice A is correct.**

QUESTION 5 ANSWER EXPLANATION

5. An example of domestic waste is
- (A) used syringes.
 - (B) old tyres.
 - (C) banana skin.
 - (D) scrap iron.

This problem requires you to understand the distinction between a typical domestic waste and a typical commercial waste.

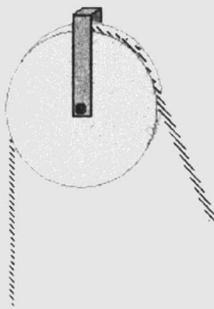
Domestic means related to the home. Commercial means related to business.

Domestic waste is waste that is generated at home; commercial waste can be defined as any waste other than domestic waste. Commercial waste is typically waste created by a business.

Banana skins are a common waste product at home while used syringes (think hospital/medical facility), old tyres (think automobile repair shop) and scrap irons (think junk yard or recycling centre) are most likely commercial waste. **Answer choice C is correct.**



The diagram below shows a simple machine in use. Study it, then answer **question 6**.



QUESTION 6 ANSWER EXPLANATION

6. The simple machine shown above is an example of a/an

- (A) inclined plane.
- (B) pulley.
- (C) lever.
- (D) wedge.

A lever consists of a beam or rigid rod that pivots at a fixed hinge called a fulcrum. An example of a lever is a seesaw or wheelbarrow. Neither of those look like the picture above, so answer choice **C** is eliminated. An inclined plane is a flat ramp tilted at an angle so one end is higher than the other. A wedge is a triangular shaped tool that is made up of two inclined planes. Wedges are used to separate two objects (like an axe), lift up an object, or hold an object in place. Because answer choices **A** and **D** involve flat surfaces, these choices can be eliminated. A pulley is a grooved wheel and a rope that is used to lift heavy loads to high places. The only machine listed that uses a wheel is a pulley, and the diagram is showing a wheel. **Answer choice B is correct.**

QUESTION 7 ANSWER EXPLANATION

7. The effect of gravity on objects is to

- (A) pull them apart.
- (B) push them higher.
- (C) reduce their mass.
- (D) pull them down.

This problem requires you to understand the concept of gravity. When you jump into the air, what happens? Eventually, you will land back on the ground. This is due to the force of gravity. From this, you can see that gravity pulls objects down towards the Earth. Answers **A**, **B**, and **D** do not reflect this idea. **Answer choice D is correct.**

QUESTION 8 ANSWER EXPLANATION

8. The process in which water vapour is changed to clouds is called

- (A) evaporation.
- (B) precipitation.
- (C) condensation.
- (D) transpiration.

Right away, you can eliminate answer choice **D** because transpiration is the process of water movement through a plant; it neither involves clouds nor a change of physical state of the water.

Next, recognize that “precipitation” is commonly associated with raining and snowing. Since the process we are looking for is when water vapour turns into clouds, not when rain or snow fall to the ground, answer choice **B** can be eliminated.

Evaporation is the process in which a liquid turns into a gas. Since the process we are looking for is starting with water vapour, which is a gas, we can eliminate answer choice **A**. Condensation is the process by which water vapour is turned into clouds. **Answer choice C is correct.**



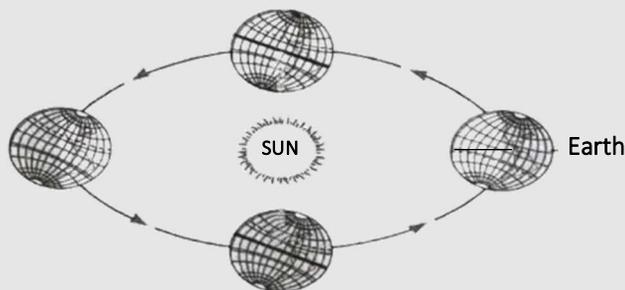
QUESTION 9 ANSWER EXPLANATION

9. The phases of the Moon occur in _____ days.

- (A) 2
- (B) 14
- (C) 28
- (D) 56

The phases of the Moon occur in a moon cycle, which is the time it takes for the Moon to complete one full orbit around Earth. The length of a moon cycle is the same as the amount of days between full moons. Full moons appear every month, thus, the moon cycle is about a month in length. **Answer choice C is correct** because 28 days is the closest option to 1 month.

Study the diagram, then answer **question 10**.



QUESTION 10 ANSWER EXPLANATION

10. The journey of the Earth as shown above is known as

- (A) revolution.
- (B) eclipsing.
- (C) rotation.
- (D) spinning.

The diagram shows the journey of Earth around the Sun. You can eliminate answer choice **B** since “eclipsing” means the act of a celestial body blocking the light from or to another celestial body. Also, since this happens at specific locations, it is not a journey or a movement.

Rotation and spinning describe the action of rotating around an axis or centre. The Earth’s rotation is the spinning movement of the Earth around its own centre axis (the north and south poles). The diagram shows the Earth moving around the Sun, so answers **C** and **D** can be eliminated.

A revolution is a movement around an orbit. The Earth revolves around the Sun in such an orbit. This process takes about one year and is the reason why we have four different seasons. The diagram shows where those four seasons occur as the Earth makes its revolution around the Sun. **Answer choice A** is correct.

QUESTION 11 ANSWER EXPLANATION

11. Which material is an electrical insulator?

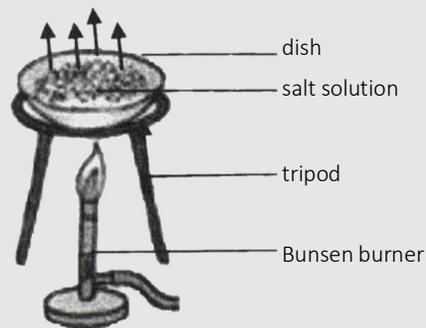
- (A) Aluminium
- (B) Iron
- (C) Copper
- (D) Rubber



Insulators are used to protect us from the dangerous effects of electricity flowing through conductors. Insulators are often the material that cover electrical cords. Thus, to be a good insulator, the material must be highly resistant towards the flow of charge.

The material for a good insulator must have electrons that are bound tightly so that they do not move easily. This would restrict the flow of electricity. On the other hand, metals are excellent conductors because metal atoms have outer electrons that can move freely. We know that metals conduct electricity and that's why electrical plugs have metal at the ends. Electrical plugs have rubber or plastic around the rest as insulators to protect us from the electrical current. We know that answer choices **A**, **B**, and **C** are metals, so they are not good electrical insulators. **Choice D is the correct answer.**

The diagram below shows a method of separating substances using heat. Study it, then answer **question 12**.



QUESTION 12 ANSWER EXPLANATION

12. The method shown above is called

- (A) evaporation.
- (B) filtration.
- (C) distillation.
- (D) sedimentation.

The diagram shows a salt solution on a dish that is heated to separate substances. Since the diagram is not using a filter to separate substances, answer choice **B** can be eliminated. Since the diagram is trying to separate substances using heat, we can eliminate answer choice **D** because sedimentation is using gravity to remove suspended solids from water.

Distillation is a procedure by which two liquids with different boiling points are separated. Since the diagram shows a salt solution, the substances that are being separated using heat are most likely a solid and a liquid, so we can eliminate answer choice **C**. **Answer choice A is correct.** Evaporation is used to separate a solid substance that has been dissolved in water using a heat source, tripod and evaporating dish. In this case, the diagram shows the separation of the salt from the water by evaporating the water in the dish from the mixture.

QUESTION 13 ANSWER EXPLANATION

13. Vertebrates can be identified by common features such as

- (i) body covering (ii) breathing method (iii) number of legs

- (A) (i) and (ii) only
- (B) (ii) and (iii) only
- (C) (i) and (iii) only
- (D) (i), (ii) and (iii)

This problem requires you to recognize the key differences between invertebrates (animals without a backbone) and vertebrates (animals with a backbone).

For this question, try to think of different examples of vertebrates in your head and check to see which of the three features they all have. Dogs, snakes, and birds are examples of vertebrates. From these animals, we can eliminate (iii) since these examples of vertebrates do not have the same number of legs. The only answer choice without (iii) is answer choice **A**. All the other examples of vertebrates have a body covering and a breathing method. **Answer choice A is correct.**



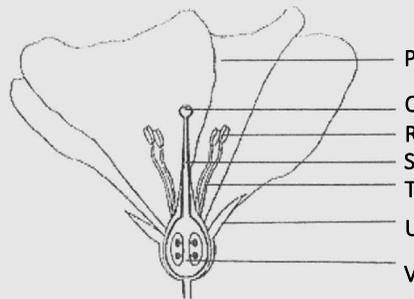
QUESTION 14 ANSWER EXPLANATION

14. Which is **not** a characteristic of reptiles?

- (A) Body is covered with scales.
- (B) They breathe by gills.
- (C) They inhale oxygen.
- (D) They are cold blooded.

This question is testing your knowledge of reptiles. Without knowing if the other three answer options are true, we can identify that answer choice **B** is definitely not true since common reptiles are lizards and snakes, which do not live in bodies of water so they do not need gills to breathe. Lizards and snakes are both covered in scales, inhale oxygen and are cold blooded. **Answer choice B is correct.**

The diagram below shows a section of a flower. Study it, then answer **questions 15 to 17**.



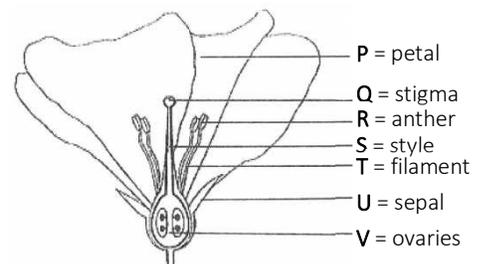
QUESTION 15 ANSWER EXPLANATION

15. Pollen is produced in the part labelled

- (A) Q.
- (B) R.
- (C) S.
- (D) T.

Q is the stigma, R is the anther, S is the style, and T is the filament. Pollen is important for pollination, the act of transferring pollen grains from the male part of one flower to the female part of another flower.

The male part of the flower is the anther and filaments while the female parts are pistils, which include the stigma and style. Pollen is produced by the male part, so answer choices **A** and **C** can be eliminated. Between the anther and the filament, consider which part of the flower will be more effective at brushing against a visiting pollinator, like a bird, so that the pollinator can carry the pollen to other flowers. Since the anther (R) will more likely touch a pollinator because it is higher from the centre of the flower, **answer choice B is correct.**



QUESTION 16 ANSWER EXPLANATION

16. The parts of the flower that are responsible for fertilization are

- (A) P, Q and R.
- (B) Q, S and V.
- (C) P, R and T.
- (D) R, S and T.



The female parts of a flower are responsible for fertilization; the male parts produce and store pollen while the female parts accept the pollen to fertilize an egg. As in human reproduction, ovaries are where eggs are stored in plant fertilization. Since ovaries store eggs necessary for reproduction, flowers likely want to protect it from visiting pollinators so they would store it as deeply tucked inside the flower petals as possible while using the petals as shields. Thus, in the diagram, “V” is pointing to the ovaries. Answer choice **B** is the only answer option that contains V (ovaries) as a choice. **Answer choice B is correct.** The stigma, “Q,” is responsible for the reception of pollen which is essential to fertilization. The style, “S,” connects the stigma to the ovaries.

QUESTION 17 ANSWER EXPLANATION

17. One function of the part labelled **U** is to

- (A) protect the ovules.
- (B) attract insects.
- (C) produce nectar.
- (D) protect the flower bud.

Flower part **U** (the sepal) looks like it is pointing to small petals/leaves; this should give us a clue into its function.

U is too small, especially compared to the petals for it to be the part of the flower that attracts insects so we can eliminate answer choice **B**. Nectar is produced inside flower petals since pollinators fly into the centre of the flower to eat it. **U** is outside of the petals, so we can eliminate answer choice **C**. Ovules are located near the ovaries, which is V on the diagram. V appears to be protected by walls of plant material already, so it is unlikely **U** works to protect the ovules; we can eliminate answer choice **A** too. **Answer choice D is correct.** **U**, located outside of the flower petals, can protect the flower before it blooms.

QUESTION 18 ANSWER EXPLANATION

18. All are parts of the human digestive system **except**

- (A) colon.
- (B) pancreas.
- (C) alveoli.
- (D) liver.

Without knowing the function of these parts of the body, we know that the colon, pancreas, and liver are all located relatively near each other near the stomach while the alveoli are in our lungs. Thus, we can infer from its location that the alveoli are not a part of the human digestive system.

Answer choice C is correct. The colon removes water from digested food. The pancreas plays an essential role in converting the food we eat into fuel for the body's cells. The liver's main job within the digestive system is to process the nutrients absorbed from the small intestine. Alveoli are an important part of the respiratory system whose function it is to exchange oxygen and carbon dioxide molecules to and from the bloodstream.

QUESTION 19 ANSWER EXPLANATION

19. Soil erosion is **not** caused by

- (A) overgrazing.
- (B) strong winds.
- (C) planting trees.
- (D) running water.

Soil erosion is defined as the wearing away of topsoil. Topsoil is the top layer of soil and is the most fertile because it contains the most organic, nutrient-rich materials. From this definition, we can eliminate answer choices **A**, **B**, and **D** since these things most obviously displace the top layer of soil. Overgrazing causes soil erosion because it removes the ground cover (the grasses) and exposes the soil to wind and water erosion. Strong winds remove the topsoil by blowing it away and eroding the soils. Running water can carry soil away and deposit it elsewhere, eroding the soil.

Planting trees help prevent soil erosion because tree roots stabilize the soil and tie the soil layers together to prevent soil displacement. **Answer choice C** is correct.



QUESTION 20 ANSWER EXPLANATION

20. The soil type that contains small particles and retains a lot of water is called

- (A) loam.
- (B) clay.
- (C) gravel.
- (D) sand.

The question is looking for the type of soil that is the most moist (“retains a lot of water”) and is smooth in texture (“small particles”). Right away, you can eliminate answer choice **C** because gravel is made up of small stones, and they are definitely not as smooth as clay, loam, or sand.

Now, let’s consider sand versus clay. Given that you can likely separate small particles of sand but cannot separate small particles of clay, it makes sense that sand particles are larger than clay particles. Since loam consists of sand and clay, we can assume that its texture is somewhere between that of sand and clay. Also, when you touch clay, it is often moister than sand. **Answer choice B is correct.**

QUESTION 21 ANSWER EXPLANATION

21. Which waste materials stated below are biodegradable?

(i) Newspaper (ii) Plastic bottle (iii) Glass bottle (iv) Fruit skins

- (A) iii and iv
- (B) i and ii
- (C) ii and iii
- (D) i and iv

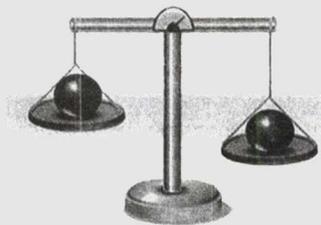
Biodegradable materials are products that decompose naturally through temperature, sunlight or the processes of bacteria, fungi, moulds and other living organisms in a process known as composting.

The main appeal of plastic and glass products is that they are durable. This makes these durable materials uncommon targets for bacteria, which then makes them non-biodegradable.

Newspaper and fruit skins on the other hand are much less durable. Fruit skins will alter in appearance within days after lying around and newspapers will also fade and change in colour within a relatively short period of time. Thus, (i) and (iv) are biodegradable.

Answer choice D is correct.

The diagram below shows an instrument in use. Study it, then answer **question 22**.



QUESTION 22 ANSWER EXPLANATION

22. The instrument is used to measure

- (A) weight.
- (B) distance.
- (C) mass.
- (D) volume.



The instrument rests objects on opposite sides and allows gravity to impart a relative measurement. From this observation, we can eliminate answer choice **B** (distance) and also answer choice **D** since volume is a measurement of how much space a substance or object occupies.

Weight is typically measured with a scale and can be measured without comparing two objects since it is the force that exists between the object you are weighing and planet Earth. Mass, on the other hand, is constant no matter the magnitude of the force of gravity (i.e. mass is the same on the Earth as it is on the Moon). Thus, to measure mass, you need to compare the unknown mass to a known mass. This instrument is comparing two things to each other and not measuring the force of gravity on it. This instrument is called a balance and it measures mass. **Answer choice C is correct.**

QUESTION 23 ANSWER EXPLANATION

23. The relationship between the Earth and the Moon is that the

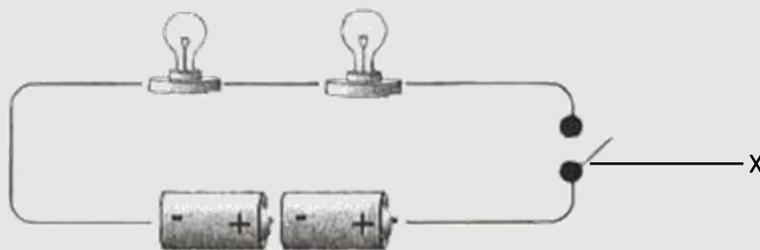
- (A) Earth is the Moon's satellite.
- (B) Earth gives the Moon light.
- (C) Earth spins around the Moon.
- (D) Moon is the Earth's satellite.

A natural satellite is any celestial body in space that orbits around a larger body. From this definition, answer choices **A** and **C** are the same answer and incorrect because (1) they cannot both be correct since we can only pick one answer, and (2) the Earth orbits the Sun, not the Moon.

Also, planets do not give off light like the Sun because in order to generate light, planets need to have nuclear fusion. This can only happen at very high temperature and pressure (which is not safe for a planet where there is life). Furthermore, we know that the Earth is not bright like the Sun. The Earth and the Moon both get their light from the Sun. Thus, answer choice **B** can also be eliminated.

Answer choice D is correct. The Moon is the Earth's only natural satellite and revolves around the Earth.

Study the diagram below, then answer **questions 24 and 25**.



QUESTION 24 ANSWER EXPLANATION

24. The lamps and the battery are
(i) connected in parallel. (ii) connected in series. (iii) parts of a simple circuit.

- (A) i only
- (B) ii only
- (C) i and ii
- (D) ii and iii

Components connected in series are connected along a single conductive path where the current flows in one continuous, smooth direction. Components connected in parallel are connected along multiple paths so that the current can split up. The picture above shows one single, continuous path of current, so the lamps and battery are (ii) connected in series. A simple circuit definition is a closed loop of a conductor that electrons can travel around. This circuit is not closed because the switch (the part labelled **X**) is open. **Answer choice B is correct.**



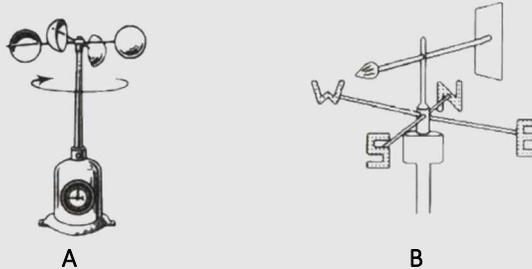
QUESTION 25 ANSWER EXPLANATION

25. If the part labelled **X** is closed

- (A) the lamps will light.
- (B) the lamps will not light.
- (C) only one lamp will light.
- (D) the current will not flow.

If the part labelled **X** is closed, the circuit will be closed and electrical current can flow continuously through the circuit path. Thus, all lamps that are a part of the circuit will light since the current will flow through all of them in the loop. **Answer choice A is correct.** The lamps will not light if the part labelled **X** (the switch) is open because the current would not flow, so answer **B** is incorrect. Answer **C** cannot happen unless the circuit is connected in parallel.

Study the diagrams below then answer **questions 26 to 28.**



QUESTION 26 ANSWER EXPLANATION

26. The names of the instruments **A** and **B** are _____ respectively.

- (A) anemometer and wind vane
- (B) barometer and wind cock
- (C) anemometer and barometer
- (D) wind vane and wind cock

Wind vane and wind cock are the same instrument. They spin and point in the direction from which wind is coming. Given that instrument **B** has labels and an arrow to show direction, we can infer that it is a wind vane or wind cock. Barometers are instruments that measure atmospheric pressure and anemometers measure wind speed.

Instruments **A** and **B** are not the same since instrument **A** does not have parts to show direction like instrument **B** does. From this, we can eliminate answer choice **D** since we said the wind vane is the same as a wind cock.

A barometer does not need a component that rotates. Since instrument **A** and **B** both have a component that rotates, neither is a barometer. This eliminates answer choices **B** and **C**.

Instrument **A** has a component that rotates. That is necessary for an anemometer since wind would cause the instrument to spin and the speed to be recorded. Thus, **A** must be an anemometer. **Answer choice A is correct.**

QUESTION 27 ANSWER EXPLANATION

27. Diagram **B** shows that the wind is blowing in a/an _____ direction.

- (A) northerly
- (B) southerly
- (C) easterly
- (D) westerly

A wind vane spins and points in the direction from which the wind is coming. Diagram **B** shows the arrow pointing towards "S" which denotes South. Thus, **answer choice B is correct.**



QUESTION 28 ANSWER EXPLANATION

28. Diagram A is measuring the _____ of the wind.

- (A) direction
- (B) distance
- (C) speed
- (D) volume

We have determined in question 26 that the instrument is an anemometer (see explanation above for why it is an anemometer). Anemometers measure wind speed. Without knowing this, we can figure this out because the instrument has a component that is rotating. A component that is rotating can be used to measure speed since the speed of the wind affects the speed of the rotation of the device. Diagram B measures wind direction, not Diagram A. Diagram A also does not measure distance or volume because in order to measure either of those, something that measures length would be needed. **Answer choice C is correct.**

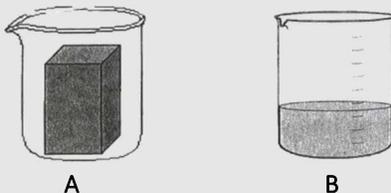
QUESTION 29 ANSWER EXPLANATION

29. To measure changes in the weather a meteorologist does **not** use a/an

- (A) anemometer.
- (B) hygrometer.
- (C) barometer.
- (D) ammeter.

An anemometer measures wind speed. A barometer measures atmospheric pressure. An ammeter measures the current in a circuit. A hygrometer is a weather instrument used to measure the amount of humidity in the atmosphere. From these definitions, ammeter is the least likely instrument to be used to measure changes in weather since it measures electrical current, which is not a typical factor in weather changes, unlike wind speed, atmospheric pressure, and humidity. **Answer choice D is correct.**

The diagrams below show substances in two containers. Study them carefully, then answer **questions 30 and 31**.



QUESTION 30 ANSWER EXPLANATION

30. Which property best describes the substance in diagram A?

- (A) Particles are very large.
- (B) Particles are closely packed together.
- (C) It can be poured into another container.
- (D) It does not have a definite shape.

Looking at diagram A, we can identify that the object is a solid since it does not take the shape of the container that holds it. It has a definite shape. Because it is not a liquid, answer choices C and D can be eliminated. Particles are very, very small and cannot be seen by the naked eye. Since it is a solid, we can assume that the particles are closely packed together to keep its shape as a block. This eliminates answer choice A. **Answer choice B is correct.**

QUESTION 31 ANSWER EXPLANATION

31. Which property does **not** describe the substance in diagram B?

- (A) Its molecules move constantly.
- (B) It must be stored.
- (C) It takes the shape of the container.
- (D) It can be poured.



Looking at diagram **B**, we can identify that the object is a liquid since it takes the shape of the container that holds it. Thus, we can eliminate answer choices **C** and **D**. The reason liquid takes the shape of the container that holds it is because its molecules are moving more freely than they would be in a solid. In fact, they are always moving which is why they have the properties of a liquid so, we can also eliminate answer choice **A**. **Answer choice B is correct.** We can't say for sure if this liquid must be stored just by looking at it; for example, water is a liquid and does not need to be stored.

QUESTION 32 ANSWER EXPLANATION

32. Electrical wires are often covered with a layer of **plastic** because plastic

- (A) conducts electricity.
- (B) breaks the flow of the current.
- (C) serves as an insulator.
- (D) is resistant to heat.

Electrical wires have currents running through them when they are plugged into an electricity source. Touching electric current can give us an electric shock, yet we are still able to hold power cords (e.g. computer chargers) even when they are plugged into a source. We can do this because of the layer of plastic covering them. Thus, this layer of plastic must prevent the electric current flowing through the wire from contacting our skin. This matches the role of an insulator which is material that resists electric current. **Answer choice C is correct.** Answer choice **D** is not true because heat can melt plastic, so it is not resistant. Answer choice **A** is not true because if plastic were to conduct electricity, power cords would be dangerous to hold. Answer choice **B** is not true because breaking the flow of the current would prevent the electric wires from working effectively. It does not make sense to cover electrical wires with something that would prevent the wires from functioning.

The features below describe a certain animal. Study them carefully, then answer **question 33**.

- i. Body covered with fine hair**
- ii. Has wings**
- iii. Breathes by lungs**
- iv. Is warm blooded**

QUESTION 33 ANSWER EXPLANATION

33. The animal is most likely a

- (A) moth.
- (B) manatee.
- (C) bat.
- (D) honeybee.

This question is testing your knowledge on different types of animals. Moths and honeybees have bodies covered in fine hair, wings, and are warm blooded, but they do not have lungs. Thus, we can eliminate answers **A** and **D**. Manatees are marine mammals, so while they are warm blooded and breathe by lungs, they do not have wings. Answer choice **B** is eliminated. Thus, the animal is most likely a bat. A bat has a body covered with fine black hairs, has wings to fly, breathes by lungs, and is warm blooded. Try to picture these animals and use process of elimination when answering these types of questions. **Answer choice C is correct.**

QUESTION 34 ANSWER EXPLANATION

34. The functions of the reproductive system of living things are

(i) production of sex cells (ii) fertilization (iii) development of embryo (iv) circulation of hormones.

- (A) (i), (ii) and (iii)
- (B) (i), (iii) and (iv)
- (C) (ii), (iii) and (iv)
- (D) (i), (ii), (iii) and (iv)



This problem requires you to understand the important factors of reproduction. To reproduce, living things need sex cells, fertilization of the sex cells to form an embryo, development of the embryo, and the circulation of reproductive hormones. Living things need sex cells in order to pass on their genes and maintain the same number of chromosomes. They allow organisms to pass on SOME of their genes instead of ALL of their genes so that the children can be a combination of the genes from both the mom and the dad. Fertilization is necessary for reproduction in order to combine the genes of both the mom and the dad. An embryo is an early stage of development of a multicellular organism. At one point, you were an embryo! The circulation of hormones is an important function of the reproductive system because it is what allows you to go through puberty and is what allows us and all living things to reproduce. Thus, **answer choice D is correct.**

The diagrams below show three examples of food. Study them, then answer **question 35.**



Milk



Cheese



Meat

QUESTION 35 ANSWER EXPLANATION

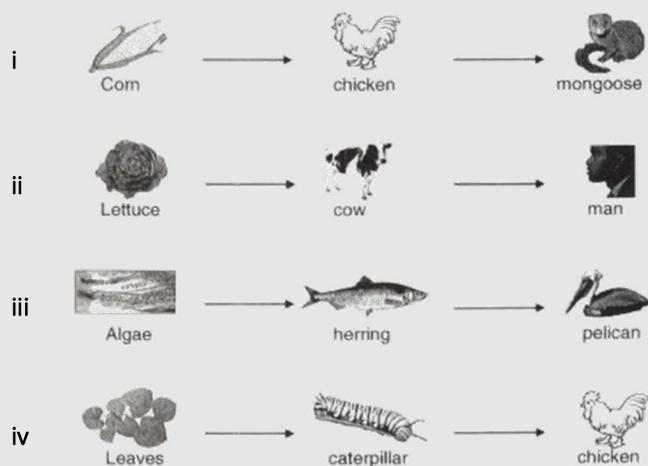
35. In which group would you place the foods shown?

- (A) Carbohydrates
- (B) Proteins
- (C) Vitamins
- (D) Fats

This question is testing your knowledge of food groups. Right away you can eliminate answer **C** since vitamins are not a food group. Carbohydrates, choice **A**, are the body's main source of energy. The fruit, vegetable, dairy, and grain food groups all contain carbohydrates. Sugars, starches and fibres are also carbohydrates. So, while milk contains carbohydrates, cheese and meat do not. Fats, choice **D**, also give you energy and help absorb certain vitamins. Foods that contain fats include meats, poultry, seafood, and eggs. Cheese, however, does not contain very much fat.

Proteins are often called the body's building blocks. They are used to build and repair tissue and even help you fight off infections! Your body uses extra protein to give you energy. These protein foods include seafood, lean meat, poultry, eggs, beans, soy products, nuts, and dairy. Protein is found in milk, cheese, and meat. **Answer choice B is correct.**

Study the food chains below, then answer **question 36.**



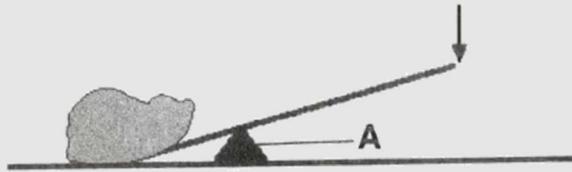
QUESTION 36 ANSWER EXPLANATION

36. Which is **true** based on the information given above?

- (A) Corn, lettuce and caterpillar are consumers.
- (B) The pelican, leaves and algae are producers.
- (C) The mongoose, chicken and man are consumers.
- (D) The cow, herring and man are producers.

This problem requires you to understand the difference between a consumer and a producer. Producers synthesize food for the entire ecosystem through the process of photosynthesis. On the diagram, since corn, lettuce, algae, and leaves are being eaten by other parts of the food chain, they are producers. Plants are almost always producers. The animals that eat producers are consumers. Thus, the chicken, cow, herring, caterpillar, mongoose, man, and pelican are consumers. **Answer choice C is correct.**

The diagram below shows a simple machine in use. Study it, then answer **question 37**.



QUESTION 37 ANSWER EXPLANATION

37. The part labelled **A** is called the

- (A) fulcrum.
- (B) lever.
- (C) effort.
- (D) load.

This problem requires you to identify parts of a lever. The part labelled **A** seems to function as the pivot point around which the board that the rock lies on rests on, is supported by and turns on. Thus, **A** is the fulcrum. **Answer choice A is correct.** Answer choice **B** is incorrect because the lever is the rigid bar resting on the fulcrum. Answer choices **C** and **D** are incorrect because effort and load are forces, not a part of the instrument. The load would be the rock in this case. The effort, or force, would be the arrow pushing down on the lever.

QUESTION 38 ANSWER EXPLANATION

38. The Sun appears to rise in the east because the

- (A) Sun moves from east to west.
- (B) Sun moves from west to east.
- (C) Earth spins from east to west.
- (D) Earth spins from west to east.

The Sun does not move around the Earth since the Sun is the centre of the Solar System. The Earth moves around the Sun. Thus, we can eliminate answer choices **A** and **B**. Now consider that the Sun appears to rise in the east so from the view on Earth, the Sun appears to move east to west across the sky. If the Sun appears to move east to west, then Earth must be moving in the opposite direction when we are viewing it from outer space. Earth is moving west to east. The Sun rises in the east because the Earth is moving towards the east from the west. **Answer choice D is correct.**



QUESTION 39 ANSWER EXPLANATION

39. Which gas found in the atmosphere is used to make fertilizers and explosives?

- (A) Oxygen.
- (B) Hydrogen.
- (C) Nitrogen.
- (D) Freon.

Nitrogen (N_2) and oxygen (O_2) are the most common gases found in the atmosphere. We can eliminate answer choices **B** and **D** because hydrogen and Freon are not found in high concentrations in the atmosphere.

Plants use nitrogen to make energy, so it is often used in fertilizers. Nitrogen is a major component of chlorophyll, the compound by which plants use sunlight energy to produce sugars from water and carbon dioxide. N_2 is much more stable than O_2 because N_2 has a triple bond connecting the nitrogen atoms while O_2 has a double bond connecting the oxygen atoms. Triple bonds are stronger than double bonds. When N_2 forms, it releases a huge amount of energy, which is why it is used to make explosives. To remember this, think of the N (for nitrogen) in TNT, a common explosive. **Answer choice C is correct.**

QUESTION 40 ANSWER EXPLANATION

40. The renewable sources of energy are obtained from

(i) crude oil. (ii) wind. (iii) solar. (iv) hydropower.

- (A) (i), (ii) and (iii)
- (B) (ii), (iii) and (iv)
- (C) (i), (iii) and (iv)
- (D) (i), (ii), (iii) and (iv)

This is testing your knowledge of renewable energy sources. Renewable energy sources are energy sources that are always being replenished. They can never be depleted and there is an infinite amount of them. Natural resources such as coal, petroleum (crude oil) and natural gas take thousands of years to form naturally and cannot be replaced as fast as they are being consumed. On the other hand, wind (ii) is always available. We will never just run out of wind. The same goes for solar energy (iii). The Sun will not disappear. Hydropower (iv) is power that comes from the energy of falling or fast-moving water. Again, our source of water is practically infinite. Therefore, wind, solar, and hydropower are all renewable resources. **Answer choice B is correct.**

