

IEA - Data Enhancement Project

Questionnaire printing

Study: SC2

Population: 2

Instrument: STM_2

Student Science Achievement Test (2M)

Population 2

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1 The Sun is the only body in our solar system that gives off large amounts of light and heat. Why can we see the Moon?

- A It is reflecting light from the Sun.
- B It is without an atmosphere.
- C It is a star.
- D It is the biggest object in the solar system.
- E It is nearer the Earth than the Sun.

P2M01

2 About how long would it take a rocket ship to reach the Moon?

- A two hours
- B several hours
- C a few days
- D a light-year
- E several years

P2M02

3 A boy sitting under a tree watched a bird getting insects from between the cracks of the bark. Which drawing shows the kind of beak this bird had?

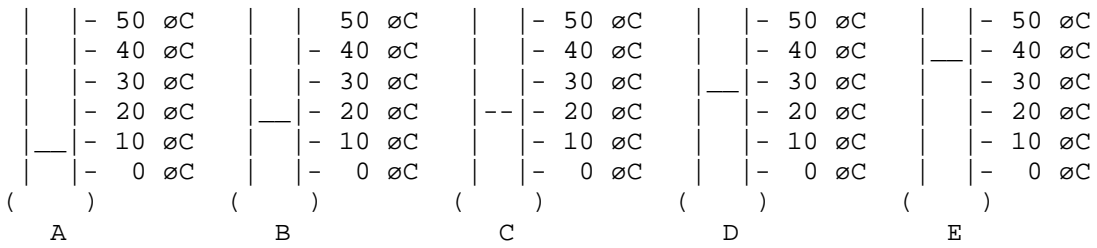
[5 pictures of birds heads with different types of beaks.]

P2M03

The next two questions refer to the following table which shows some temperature readings made at different times on three days.

	6 a.m.	9 a.m.	12 noon	3 p.m.	6 p.m.
Monday	15 °C	17 °C	20 °C	21 °C	19 °C
Tuesday	15 °C	15 °C	15 °C	10 °C	9 °C
Wednesday	8 °C	10 °C	14 °C	14 °C	13 °C

4 Which of the following shows the temperature at 6 a.m. on Wednesday?



5 On one day a cool wind began to blow. When do you think this happened?

- A Monday morning
- B Monday afternoon
- C Tuesday morning
- D Tuesday afternoon
- E Wednesday afternoon

P2M04 P2M05

6 The diagram below shows a mountain. The prevailing wind direction and average air temperatures at different elevations on both sides of the mountain are indicated.

[Picture of mountain]

Which feature is probably located at the base of the mountain on the leeward side (location X)?

- A a dry region
- B a jungle
- C a glacier
- D a large lake
- E a rain forest

P2M06

7 Fossils very similar in shape to marine shellfish which live in oceans today have been found in the rocks of high mountains. What is the most likely explanation of this?

- A The particular marine shellfish can live in the sea or on land.
- B Marine forms once had organs that enabled them to breathe atmospheric air.
- C The rocks in which the fossils were found were formed under the sea.
- D Marine forms, in certain cases, migrate on to the land.
- E Marine forms have evolved from land forms.

P2M07

8 The diagram below shows an example of interdependence among aquatic organisms. During the day the organisms either use up or give off (a) or (b) as shown by the arrows.

[Picture of aquatic organisms: a floating water plant, a fish, small water animals and a water plant with roots]

Choose the right answer for (a) and (b) from the alternatives given.

- A (a) is oxygen and (b) is carbon dioxide.
- B (a) is oxygen and (b) is carbohydrate.
- C (a) is nitrogen and (b) is carbon dioxide.
- D (a) is carbon dioxide and (b) is oxygen.
- E (a) is carbon dioxide and (b) is carbohydrate.

P2M08

9 A girl found the skull of an animal. She did not know what the animal was but she was sure that it preyed on other animals for its food. What clue led to this conclusion?

- A The eye sockets faced sideways.
- B The skull was much longer than it was wide.
- C There was a projecting ridge along the top of the skull.
- D Four of the teeth were long and pointed.
- E The jaws could move sideways as well as up and down.

P2M09

10 This question refers to the following diagram of apparatus used to show that an animal gives out carbon dioxide in respiration.

[Picture of apparatus with 4 parts.]

Part 1 contains a substance which removes carbon dioxide from the air passing through it. Parts 2 and 4 both contain a liquid which changes in appearance when carbon dioxide passes through it.

Of the following kinds of containers for the animal which one would give the quickest result?

- A a small container
- B a large container
- C a container in bright light
- D a container covered with a dark cloth
- E a container in which the air is kept moist by means of wet cotton wool

P2M10

11 Which of the cells shown below would commonly be found in the human nervous system?

[5 pictures of cells.]

P2M11

12 Animals take in oxygen and give out carbon dioxide. Ordinary air contains very little carbon dioxide.

[Picture of apparatus as first set up and
a picture of apparatus after 5 minutes.]

Which of the following can be measured with the above apparatus?

- A The rate of movement of the animal.
- B The amount of heat produced by the animal.
- C The rate of respiration of the animal.
- D The effect of carbon dioxide on the animal.
- E The amount of carbon dioxide absorbed by the animal.

P2M12

13 Which of the following statements is true about seeds?

- A Every plant produces seeds.
- B All fruits contain a large number of seeds.
- C All seeds are good to eat.
- D Every seed contains a young plant, stored food and a seed coat.
- E The food stored in seeds is always in the cotyledon.

P2M13

14 A girl wanted to learn which of three types of soil (clay, sand and loam) would be best for growing beans. She found three flower pots and filled each with a different type of soil. She then planted the same number of beans in each, as shown in the drawing. She placed them side by side on a window sill and gave each pot the same amount of water.

[3 pictures of pots each filled with a different type of soil:
loam, clay or sand. The pots have different sizes.]

Why was the experiment not a good one for the purpose?

- A The plants in one pot got more sunlight than the plants in the other pots.
- B The amount of soil in each pot was not the same.
- C One pot should have been placed in the dark.
- D Different amounts of water should have been used.
- E The plants would get too hot on the window sill.

P2M14

15 Milk kept in a refrigerator does not go sour. Why?

- A The cold changes the water of the milk into ice.
- B The cold separates the cream.
- C The cold slows down the action of bacteria.
- D The cold keeps flies away.
- E The cold causes a skin to form on the surface of the milk.

P2M15

16 The male insects in a population are treated to prevent sperm production. Would this reduce this insect population?

- A No, because the females would still lay eggs.
- B No, because the insects would still mate.
- C No, because it would not change the offspring mutation rate.
- D Yes, because it would sharply decrease the reproduction rate.
- E Yes, because the males would die.

P2M16

17 When 2 g (grams) of zinc and 1 g of sulphur are heated together, practically no zinc or sulphur remains after the compound zinc sulphide is formed. What happens if 2 g zinc are heated with 2 g of sulphur?

- A Zinc sulphide containing approximately twice as much sulphur is formed.
- B Approximately 1 g of sulphur will be left over.
- C Approximately 1 g of zinc will be left over.
- D Approximately 1 g of each will be left over.
- E No reaction will occur.

P2M17

18 Two given elements combine to form a poisonous compound. Which of the following conclusions about the properties of these two elements can be drawn from this information?

- A Both elements are certainly poisonous.
- B At least one element is certainly poisonous.
- C One element is poisonous, the other is not.
- D Neither element is poisonous.
- E Neither element need be poisonous.

P2M18

19 Paint applied to an iron surface prevents the iron from rusting.
Which one of the following provides the best reason?

- A It prevents nitrogen from coming in contact with the iron.
- B It reacts chemically with the iron.
- C It prevents carbon dioxide from coming in contact with the iron.
- D It makes the surface of the iron smoother.
- E It prevents oxygen and moisture from coming in contact with the iron.

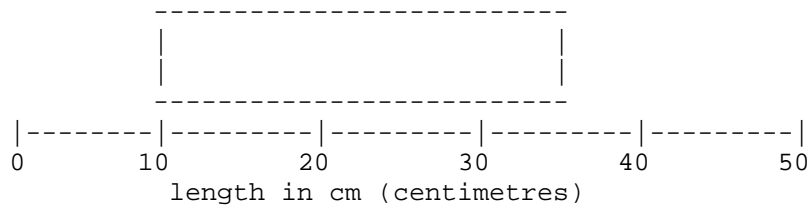
P2M19

20 Which of the following particles are gained, lost or shared during chemical changes?

- A electrons furthest from the nucleus of the atom
- B electrons closest to the nucleus of the atom
- C electrons from the nucleus of the atom
- D protons from the nucleus of the atom
- E neutrons from the nucleus of the atom

P2M20

21 How long is the block of wood shown in the diagram?



- A 10 cm
- B 20 cm
- C 25 cm
- D 30 cm
- E 35 cm

P2M21

22 Mary and Jane each bought the same kind of rubber ball. Mary said, "My ball bounces better than yours." Jane replied, "I'd like to see you prove that." What should Mary do?

- A Drop both balls from the same height and notice which bounces higher.
- B Throw both balls against a wall and see how far each ball bounces off the wall.
- C Drop the two balls from different heights and notice which bounces higher.
- D Throw the balls down against the floor and see how high they bounce.
- E Feel the balls by hand to find which is the harder.

P2M22

- 23 An iron container is weighed after the air in it has been pumped out (evacuated). Then it is filled with hydrogen gas and weighed again.

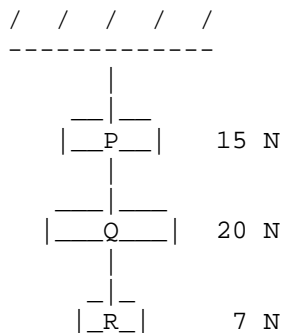
[Picture of an iron container.]

What is the weight of the container full of hydrogen compared to the weight of the evacuated container?

- A less
- B greater
- C the same
- D greater or less depending on the volume of the gas in the container
- E greater or less depending on the temperature of the gas in the container

P2M23

- 24 The objects P, Q and R of weight 15 N (newtons), 20 N and 7 N, are hung with a light thread as shown in the figure.



What is the tension in the thread between P and Q?

- A 42 N
- B 35 N
- C 27 N
- D 15 N
- E 7 N

P2M24

- 25 Using the apparatus shown in the figure below, 100 g (grams) of water at 20 °C (degrees Celsius) was poured into the outer container P and its temperature read at intervals from thermometer 2. At the same time 100 g of water at 80 °C was poured into the inner container Q and its temperature read at intervals from thermometer 1.

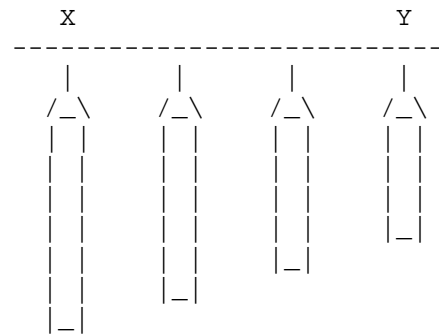
Which of the following graphs best represents the changes in the temperatures of the water in the two containers?

[1 picture of apparatus and 5 pictures of graphs]

P2M25

26 A set of chimes was made by cutting four pieces of pipe of different lengths from a long metal pipe and hanging them as shown in the picture below. Which of the pipes gave the lowest note when struck with a hammer?

- A Pipe X
- B Pipe Y
- C All gave the same note.
- D You cannot tell without trying.
- E It depends on where you hit it.



P2M26

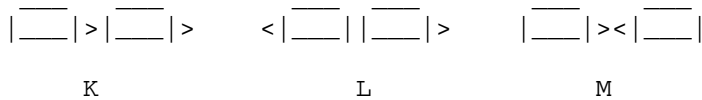
27 A cupful of water and a similar cupful of petrol were placed on a table near a window on a hot sunny day. A few hours later it was observed that both the cups had less liquid in them but that there was less petrol left than water. What does this experiment show?

- A All liquids evaporate.
- B Petrol gets hotter than water.
- C Some liquids evaporate faster than others.
- D Liquids will only evaporate in sunshine.
- E Water gets hotter than petrol.

P2M27

28 A flashlight holds two batteries. In order to make it work, in which of the following ways must we place the batteries?

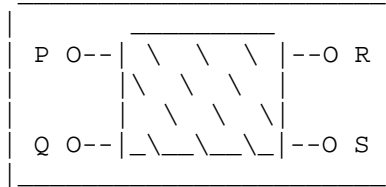
- A as in diagram K
- B as in diagram L
- C as in diagram M
- D either as in diagram L or in diagram M
- E none of these would do



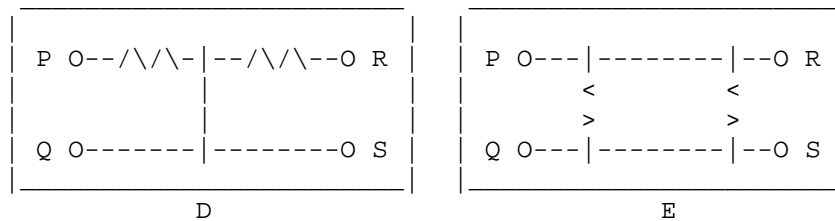
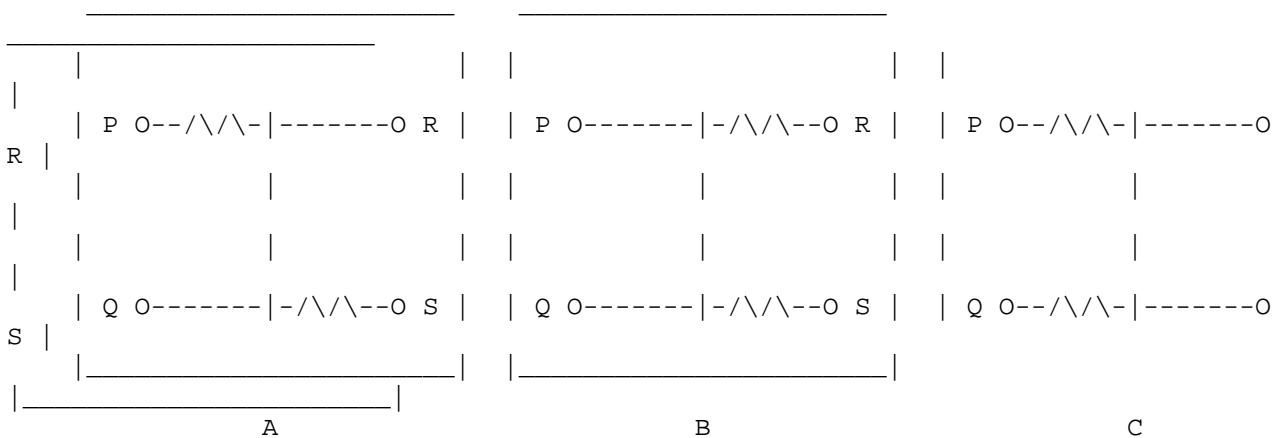
P2M28

29 The figure shows a box with four terminals: P, Q, R and S.
The following observations were made.

- 1 There is a certain amount of resistance between P and Q.
- 2 Resistance between P and R is twice that between P and Q.
- 3 There is not any appreciable resistance between Q and S.



Which of the following circuits is most likely to be within the box?
Assume that the resistances shown are equal.



P2M29

30 X, Y and Z represent three lamps in a circuit, which also includes a battery and a switch S. When the switch is open X fails to light while Y and Z do.

Which of the following circuits is it?

[Picture of five circuits]

P2M30