Q. 1. A play begins, white stage lights shine on an actress wearing a red dress. Suddenly, the lights go off and a green light is shone on the actress. The dress looks black. Why does the dress look black?

A. The dress reflects the green part of light.
B. The dress absorbs the red part of light.
C. The dress absorbs the green part of light.
D. The dress reflects the black part of light.

Q. 2. Electrical energy is used to power a lamp. How does the amount of electrical energy used compare to amount of light energy produced?

a) The amount of electrical energy used is:
   (Check one)
   (1) more than the amount of light energy produced.
   (2) less than the amount of light energy produced.
   (3) the same as the amount of light energy produced.

b) Give a reason to support your answer.

______________________________________________________________________________
______________________________________________________________________________

Q. 3. 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.
Q. 4

Which of the following is NOT a mixture?

A  Smoke
B  Sugar
C  Milk
D  Paint

Q. 5

The diagrams show nine different trials Usman carried out using carts with wheels of two different sizes and different numbers of blocks of equal mass. He used the same ramp for all trials, starting the carts from different heights.

He wants to test this idea: The higher the ramp is placed, the faster the cart will travel at the bottom of the ramp. Which three trials should he compare?

A  G, H and I
B  I, W and Z
C  I, V and X
D  U, W and X
E  H, V and Y
Q.6

The Galapagos Islands contain a number of different species of finches (birds) that are thought to have developed from one species. Some species of finches eat certain types of seeds depending on their beak depth. The diagram below shows the head of one species of finch and its beak depth.

Some of the islands have only one species living on them, while other islands have more than one species. Species 1 lives on Los Hermanos Island. Species 2 lives on Daphne Island. The two graphs below show the percentage of the population with different beak depths for each of the two species.

A. How do the beak depths of Species 1 and Species 2 compare?

Q.7

The diagram above shows a person holding a ball standing at three different places on Earth. If the person drops the ball, gravity will make it fall.

Which of the following diagrams best shows the direction the dropped ball will fall at the three different positions?
Q. 8

Which group of energy sources are ALL renewable?

(A) coal, oil, and natural gas
(B) solar, oil, and geothermal
(C) wind, solar, and tidal
(D) natural gas, solar, and tidal

Q. 9

In humans, where does the absorption of food into the bloodstream mainly take place?

(A) stomach
(B) mouth
(C) large intestines
(D) small intestines

Q. 10

Oxygen, hydrogen, and water are substances. Which of these substances are elements?

(A) oxygen, hydrogen and water
(B) oxygen and hydrogen only
(C) oxygen only
(D) water only
A king gave a jeweler a block of pure metal. He asked the jeweler to make him a crown out of the metal.

After the jeweler delivered the crown, the king observed it carefully. He thought that the jeweler might have substituted another pure metal or a mixture of metals to make the crown. He weighed the crown, and it had the same mass as the original block, 2400 grams. Still not satisfied, the king asked some scientists to help him find out what the crown was made of.

Q.11

The scientists then needed to find the volume of the crown in order to determine its density. The following equipment and materials were available for them to use.

Describe a procedure that the scientists could use to find the volume of the crown using some or all of the equipment and materials shown above. You may use diagrams to help explain your procedure.

Q.12

The scientists measured the volume of the crown five times. They computed the density for each volume measurement. Their results are shown in the table below.

<table>
<thead>
<tr>
<th>Trial</th>
<th>Volume of Crown (cm³)</th>
<th>Density of Crown (g/cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>202</td>
<td>11.88</td>
</tr>
<tr>
<td>2</td>
<td>200</td>
<td>12.00</td>
</tr>
<tr>
<td>3</td>
<td>201</td>
<td>11.94</td>
</tr>
<tr>
<td>4</td>
<td>198</td>
<td>12.12</td>
</tr>
<tr>
<td>5</td>
<td>199</td>
<td>12.06</td>
</tr>
</tbody>
</table>

A. Why did the scientists measure the volume five times?
B. The scientists reported to the king that the density of the crown was 12.0 g/cm³. Show how the scientists used their results to obtain this value for the density.

Q.13

The surface of Earth has more water than land. Write down TWO reasons why some people still do not have enough water to drink.

1. 

Q.14

Which of these daily activities can most directly help reduce air pollution in a city?

A) turning down the volume on the television
B) using biodegradable materials
C) using public transportation instead of driving
D) recycling paper

Q.15

The table below shows the results of an experiment to investigate how the length of a spring changes as different masses are hung from it.

<table>
<thead>
<tr>
<th>Mass (grams)</th>
<th>Length of Spring (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>30</td>
<td>11</td>
</tr>
<tr>
<td>40</td>
<td>12</td>
</tr>
<tr>
<td>50</td>
<td>13</td>
</tr>
<tr>
<td>60</td>
<td>13</td>
</tr>
</tbody>
</table>

Describe how the length of the spring changed as different masses were hung from it.