1. Study the graph below and then find the alternative that is incorrect.

![Graph showing global energy use by percentage for Oil, Coal, and Plant and animal material.]

A. In a few years to come oil could become a scarce of energy.
B. The use of coal is a greater source of energy than plant and animal matter but less than that of oil.
C. The total percentage of global energy that is supplied by these three sources is 70%.
D. The use of plant and animal matter as a source of energy is half of that of the use of coal.

2. The diagram alongside represents an earthquake. Which of the following statements about earthquakes is false?

![Diagram of an earthquake showing epicentre and shock waves.]

A. The point on the earth's surface, vertically above the seismic focus is called the epicentre.
B. A seismograph is used to record the intensity and time of occurrence of an earthquake.
C. The intensity of an earthquake is measured on the Richter scale.
D. Global warming is not one of the reasons for increased seismic activity.
3. Study the circuit diagram below showing two bulbs in series. Predict what would happen if the same two bulbs were connected in parallel.

A. Resistance decreases and current increases.
B. Resistance increases and current decreases.
C. Both the resistance and current decreases.
D. Both the resistance and current increases.

4. The graph below that shows the average yearly temperature on Earth from 1900 to 1990.

A possible reason why this change occurred is due to:

A. seasonal changes
B. changes in air pressure
C. global warming
D. increase in human population

5. A train passes a stationary observer. Which of the following best describes how the amplitude and the apparent frequency of the sound waves heard by the observer change as the train moves away?

A. Both the amplitude and the apparent frequency increase.
B. The amplitude of the sound waves increases, and the apparent frequency decreases.
C. The amplitude of the sound waves decreases, and the apparent frequency increases.
D. Both the amplitude and the apparent frequency decrease.

6. What is the reading on the ammeter shown in the diagram? (the needle is represented by the thick solid line).

A. 120 A
B. 12 A
C. 1.2 A
D. 0.12 A

7. Which of these is an instrument used to measure atmospheric pressure?

A. barometer
B. thermometer
C. odometer
D. luxmeter
8. A rocket was fired above a seaside town to call out the lifeboat crew. The rocket exploded, giving out light and sound at the same time. Lucy was outside the town. She ...

   A. heard the bang first  
   B. saw the flash first  
   C. heard the bang and saw the flash at the same time  
   D. heard the bang but did not see the flash.

9. The diagram alongside shows how the energy of flowing water is converted into electricity.

Which of the following associations is incorrect?

   A. Water in dam – potential energy  
   B. Flowing water – kinetic energy  
   C. Rotating water wheel – electrical energy  
   D. Dynamo – electrical energy

10. In which circuit/s will the bulb glow?

   A. 3 and 4  
   B. 2, 3 and 4  
   C. 4 only  
   D. 2 only

11. To relieve indigestion, which occurs as a result of an excess chemical produced in the stomach, one normally takes antacid tablets which neutralizes the chemical in the stomach. The chemical and the antacid tablet respectively, are

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>TABLET</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>acid</td>
</tr>
<tr>
<td>B</td>
<td>base</td>
</tr>
<tr>
<td>C</td>
<td>acid</td>
</tr>
<tr>
<td>D</td>
<td>base</td>
</tr>
</tbody>
</table>
12. A geologist finds a rock and breaks it into two pieces to examine the crystals inside. The two pieces of the rock are then labeled Sample A and Sample B. Sample A is twice as large as Sample B. Which of the following statements is true?

A. A sample A is denser than Sample B.
B. A sample B is denser than Sample A.
C. A sample A and Sample B have the same density.
D. A sample A and Sample B are both less dense than the original rock.

13. Which of the following is NOT a characteristic of a compound?

A. has different properties from the element that formed it.
B. pure substances made of two or more elements.
C. different samples have different properties.
D. can be represented by a chemical formula

14. Study the diagram below showing the concentration of DDT in the environment. Which statement is incorrect?

A. The producers contain the least concentration of DDT.
B. Primary consumers have lower concentrations of DDT than tertiary consumers.
C. As one moves through the food chain the concentration of DDT decreases.
D. The organisms most affected by the DDT is the fish eagle and cormorants

15. A substance has a freezing point of $-36^\circ C$ and a boiling point of $356^\circ C$. At what temperature, would this substance be in its liquid state?

A. $-100^\circ C$
B. $-50^\circ C$
C. $80^\circ C$
D. $375^\circ C$

16. The table contains information about five metals a, b, c, d and e.

<table>
<thead>
<tr>
<th>Metal</th>
<th>How it reacts with cold water</th>
<th>How it reacts with hot water</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>No reaction</td>
<td>Extremely slow</td>
</tr>
<tr>
<td>b</td>
<td>No reaction</td>
<td>No reaction</td>
</tr>
<tr>
<td>c</td>
<td>Hardly at all</td>
<td>Slowly</td>
</tr>
<tr>
<td>d</td>
<td>Slowly</td>
<td>Quickly</td>
</tr>
<tr>
<td>e</td>
<td>Quickly</td>
<td>Very violently</td>
</tr>
</tbody>
</table>

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The order of the metals from most reactive to least reactive is ...

A. b ; a ; c ; d ; e  
B. e ; d ; c ; a ; b  
C. b ; d ; c ; a ; e  
D. e ; d ; a ; b ; c

17. Study the diagram showing the water cycle and find the alternative that best describes the processes represented by numbers 1, 2, 3 and 4

```
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>evaporation</td>
<td>Transpiration</td>
<td>condensation</td>
<td>precipitation</td>
</tr>
<tr>
<td>B</td>
<td>transpiration</td>
<td>Condensation</td>
<td>evaporation</td>
<td>precipitation</td>
</tr>
<tr>
<td>C</td>
<td>precipitation</td>
<td>Evaporation</td>
<td>transpiration</td>
<td>condensation</td>
</tr>
<tr>
<td>D</td>
<td>condensation</td>
<td>Precipitation</td>
<td>evaporation</td>
<td>transpiration</td>
</tr>
</tbody>
</table>
```

18. Trump observed water being heated in 3 kettles and drew the graph below to record his results.

How many degrees of heat respectively will it require for the water in kettle A, B and C to start to change from a liquid to a gaseous state?

A. 40°, 60°, 20°  
B. 40°, 80°, 20°  
C. 60°, 40°, 80°  
D. 20°, 60°, 40°
19. Which of the following statements are not correct?

i. wood burning is a physical change
ii. iodine turns blue black on a slice of potato is a chemical change
iii. copper and zinc combining to brass is a chemical change
iv. sugar dissolves in water is a physical change
v. melting of ice to form water is a chemical change

A. i, iii and v  
B. i, ii and v  
C. ii, iii and iv  
D. i, iii and iv

20. Which of the following nuclear emissions moved away from the cathode, towards the anode, in the experiment that helped Thomson to discover the electron?

A. alpha particles  
B. beta particles  
C. gamma particles  
D. positrons

21. In the following investigation cells were cut so that half the cell fragment contained a nucleus and the other half did not. The fragments with nuclei were separated from the fragments without nuclei. One hundred fragments from each group were placed in containers under uniform conditions.

*The table below indicates the results.*

<table>
<thead>
<tr>
<th>Number studied</th>
<th>Number of non-nucleated fragments</th>
<th>Number of nucleated fragments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number survived – Day 1</td>
<td>80</td>
<td>79</td>
</tr>
<tr>
<td>Number survived – Day 2</td>
<td>60</td>
<td>74</td>
</tr>
<tr>
<td>Number survived – Day 3</td>
<td>30</td>
<td>72</td>
</tr>
<tr>
<td>Number survived – Day 4</td>
<td>3</td>
<td>72</td>
</tr>
</tbody>
</table>

What is a reasonable conclusion to the data provided in the above table?

A. Any cell fragment will eventually die.  
B. Twice as many cells will grow if each is cut in half.  
C. The size of the cell fragment determines the amount of time it will live.  
D. A nucleus is necessary for the continued life of a cell.
22. The drawings alongside represent four different plant types

Which of the plants show the following characteristics respectively?

<table>
<thead>
<tr>
<th></th>
<th>Dicotyledon plant</th>
<th>Flowerless plant</th>
<th>Non-seed plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

23. The diagram below shows the amount of energy in the cereal food eaten by a cow in a certain time. It also shows the amount of energy used to make new tissue.

What percentage of the energy taken in by the cow is found in new tissue?

A. 92%
B. 8%
C. 10%
D. 100%

24. Respiration is a chemical process that releases energy from food molecules and generates body heat. The proportion of energy used for respiration is ...

A. lower in the deer due to it maintaining a constant body temperature
B. higher in the deer due to it maintaining a constant body temperature
C. higher in the deer due to it being a herbivore
D. equal in both since they are both herbivores

25. Study the food web alongside. If a farmer did not plant corn one year, which organism in the food web would be MOST affected?
26. Specimens of three plants, X, Y and Z are grown under different conditions, giving the following results.

<table>
<thead>
<tr>
<th>Plant</th>
<th>Occasional watering</th>
<th>Regular watering</th>
<th>Frequent Watering</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>wilts</td>
<td>grows well</td>
<td>grows poorly</td>
</tr>
<tr>
<td>Y</td>
<td>grows well</td>
<td>grows well</td>
<td>Dies</td>
</tr>
<tr>
<td>Z</td>
<td>dies</td>
<td>wilts</td>
<td>grows well</td>
</tr>
</tbody>
</table>

A hydrophyte and a xerophyte respectively, are represented by ...

A. X and Y  
B. Z and Y  
C. Z and X  
D. Y and Z

27. Study the following food web and answer the question based on it.

As illustrated above, tertiary consumers are represented by ...

A. Lice and insect eating birds.  
B. Hawks and insects  
C. Wild cats and spiders  
D. Frogs and owls.

28. Study the drawings of four different types of plants shown below. Of these plants, which ones reproduce by spores?
29. Which one of the following pairs shows only insects?

A. A and B
B. C and D
C. A and D
D. B and C

30. Competition for light, nutrients and space is most severe between

A. closely related organism growing in different niches
B. closely related organisms growing in the same area/niche
C. distantly related organisms growing in the same habitat
D. distantly related organisms growing in different niches.