2024 RX ADOBE CB_RAT ITEMS
SCIENCE 10

1. According to PHIVOLCS, the Philippines is situated at the boundaries of two tectonic plates—the Philippine Sea Plate and the Eurasian Plate—both of which subduct or dive beneath the archipelago along the deep trenches along its east and west seaboard. Which conclusion aligns with the Plate Tectonic Theory based on this information?
   A. The Philippines sits in a unique tectonic setting ideal for volcanism and earthquake activity.
   B. Earthquake and volcanic activities occur in places where tectonic boundaries are found.
   C. The Philippines is situated in the "Pacific Ring of Fire" along with the other countries.
   D. The Philippine Plate is bordered mostly by convergent boundaries, forming trenches and volcanoes.
2. The theory of plate tectonics helps explain the location of volcanoes and earthquakes. Considering the theory and its relation to the distribution of geological features, which of the following statements best supports the theory?
   A. The lithosphere is divided into pieces called plates, which move around on the Earth's surface.
   B. Denser oceanic crust sinks below the less dense continental crust along subduction zones.
   C. How earthquake epicenters, active volcanoes, and major mountain belts are interconnected on continents.
   D. Fossils, glaciers, and complementary coastlines help reveal how the plates once fit together.
3. Applying the principles of plate tectonics, if the continents will continue to move at the same rate, what will be the probable location of the Philippines in approximately 100 million years from now?
   A. It will likely be moved closer to the center of the Pacific Ocean.
   B. The Philippines' position will appear to remain unchanged during that period.
   C. Minor modifications to its location will occur, and the continents will continuously move.
   D. It is likely that the Philippines will move closer to the Eurasian plate.
4. Applying knowledge of earthquake patterns and their relation to tectonic activity, what safety measures should be taken if one finds themselves in a crowded place, such as a stadium or theater, during an earthquake?
   A. Quickly find a safe exit while taking cover to protect your head.
   B. Stay in your seat and protect your head
   C. Use elevators to evacuate the building quickly.
   D. Use elevators to evacuate the building quickly.
5. Earthquakes cannot be predicted, which is why it is important to know what you should and should not do during an earthquake. The picture below shows what to do during an earthquake. What does this sign tell us?

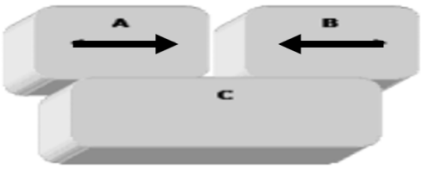
Source: http://tinyurl.com/ydzuy387

   A. Stop the car quickly and get out of the vehicle.
   B. Drive faster to outrun the earthquake for safety.
   C. Drive to the nearest building and turn off engine.
   D. Pull over to the side of the road and stay inside.
6. Which of the following is the correct sequence of information relating earthquakes, volcanoes, and mountain ranges to plate tectonic theory?

I. Tectonic activities such as earthquakes, volcanic eruptions, and the formation of mountain ranges commonly occur along the boundaries of the moving plates.
II. Their locations are distributed along the plate boundaries.
III. These geological phenomena serve as the foundation for scientists when dividing the Earth's lithosphere.
IV. All of them are created by the process of plate tectonics.
V. Plate boundaries are found at the edge of the lithospheric plates and are of three types: convergent, divergent, and conservative.

A. I, V, II, III, IV
B. V, I, II, III, IV
C. I, V, II, IV, III
D. V, I, II, IV, III

7. Plates A and B show a convergent boundary. If plate C is adjacent to both plates and does not show any relative motion, describe the motion of the plate boundary present between A and C.

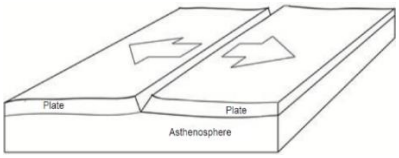


Source: Science 10_LM_Unit 1 p. 34

A. Plate C moves towards Plate A
B. Plate C moves away from Plate A
C. Plate C slide past Plate A
D. Plate C does not move

8. Which of the following statements accurately describes a convergent plate boundary, emphasizing key characteristics and geological processes?
   A. At convergent plate boundaries, two continental plates collide, resulting in the formation of deep ocean trenches and volcanic activity.
   B. Convergent plate boundaries involve the interaction between a continental plate and an oceanic plate, where the denser oceanic plate subducts beneath the continental plate, leading to the creation of deep ocean trenches and volcanic arcs.
   C. Convergent plate boundaries occur when two oceanic plates diverge, causing the formation of mountain ranges and seismic activity.
   D. Subduction zones are characteristics of divergent plate boundaries, where continental and oceanic plates move apart, causing the release of magma and the formation of new oceanic crust.
9. The continental-continental type of plate boundary is behind the formation of towering mountains and mountain ranges like" The Himalayas," which is still rising by more than 1 cm per year as India continues to move northwards into Asia, reaching the maximum elevation of 8,848 meters (Mount Everest, the highest point on Earth). If it continues to rise, what will be the height of the Himalayas after 500 years?
   A. 8,850 meters
   B. 8,851 meters
   C. 8,852 meters
   D. 8,853 meters
10. How many years will it take for the Himalayas to reach a height of 8, 860 meters?
   A. 1300 years
   B. 1200 years
   C. 1300 years
   D. 1400 years

11. Which of the following statements accurately describes the continental-continental type of convergent plate boundary, based on the formation of towering mountain ranges like the Himalaya?
    A. Continental-continental convergent boundaries involve the subduction of one continental plate beneath another, leading to the creation of deep ocean trenches and volcanic arcs.
    B. At continental-continental convergent plate boundaries, oceanic plates collide with continental plates, causing the uplift of oceanic crust and the formation of mountain ranges.
    C. The collision of two continental plates at a convergent boundary results in the crumpling and upward movement of Earth's crust, forming extensive mountain ranges.
    D. Transform-fault convergent plate boundaries contribute to the creation of towering mountain ranges, such as the Himalaya, through lateral sliding and crustal deformation.
12. Based on plate movement, seismic activity, and the creation of geological features, which of the following statements accurately describes a divergent plate boundary?
    A. Divergent plate boundaries involve the collision of two tectonic plates, resulting in the eruption of molten rock and the formation of new crust.
    B. Along divergent plate boundaries, the subduction of oceanic plates beneath continental plates creates spreading centers where relatively small earthquakes occur.
    C. Movement in narrow zones along divergent plate boundaries causes most earthquakes, and the eruption of molten rock from the mantle forms new crust.
    D. The Great Rift Valley in Africa, the Red Sea, and the Gulf of Aden are examples of convergent plate boundaries where tectonic plates collide, leading to seismic activity.
13. Oceanic-oceanic divergent plate boundary is a type of divergent plate boundary where two oceanic plates move away from each other. The following are the processes that occur along the oceanic-oceanic divergent plate boundary, **EXCEPT.**
    A. Two oceanic plates slide past each other.
    B. The divergence of plates ensures a continuous supply of new materials from the mantle.
    C. Magma sinks from the mantle to fill the gap between the plates as they diverge, and a new seafloor is formed when the magma cools and solidifies.
    D. One of the effects that are found at a divergent boundary between oceanic plates are underwater mountain ranges called oceanic ridges.
14. Plate movement causes mountains to rise where plates push together or converge, continents to fracture, and oceans to form where plates pull apart or diverge. Based on the plate movement shown in the figure, what are the possible geologic processes/events that will occur?

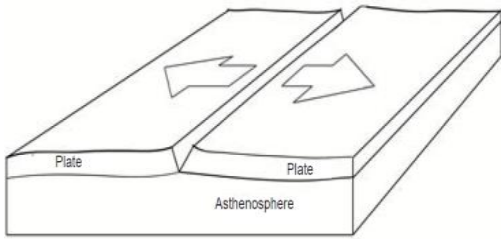


Source: http://earthsci8.wikispaces.com/

    A. There is an occurrence of earthquakes.
    B. Mountains, volcanoes, and trenches are formed.
    C. Formation of rift valley and oceanic ridge
    D. There is an occurrence of a tsunami
15. Converging oceanic plates will cause the formation of trenches, and these trenches will become sources of earthquakes. Underwater earthquakes can generate tsunamis. How do you relate to the occurrence of a tsunami?
    A. A tsunami occurred due to the volcanic eruption on the continents.
    B. A tsunami occurred due to the movement of the plates.
    C. An earthquakes that occur in the continental crust result in tsunamis.
    D. There is no relationship between the occurrence of an earthquake and a tsunami.
16. Early in the rift-forming process, streams and rivers will flow into the sinking rift valley to form a long, linear lake. As the rift grows deeper, it might drop below sea level, allowing ocean water to flow in. This will produce a narrow, shallow sea within the rift. What do you think will happen to the rift?

A. The rift can then grow shallower and become narrower.
B. The rift can then grow shallower and narrower.
C. The rift can then grow narrower and wider, and if rifting continues, a new ocean basin could be produced.
D. The rift can then grow deeper and wider, and if rifting continues, a new ocean basin could be produced.

17. Plates A and B shows a divergent boundary as shown in the figure below. What geologic features might form because of this plate movement?

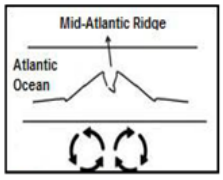


Source: http://earthsci8.wikispaces.com/

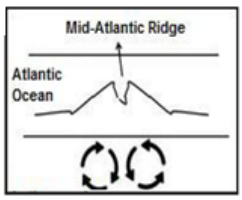
A. Mountains
B. Earthquakes
C. Rift valleys, oceanic ridges
D. Volcanoes, trenches

18. Oceanic crust and continental crust move towards each other. Denser oceanic crust undergoes the subduction process, or the bending of the crust towards the mantle. What do you think will happen during the collision of these two plates?
A. The subducted crust melts, forming magma, and the addition of volatile materials such as water will cause the magma to become less dense, hence allowing it to rise and reach the crust.
B. The molten material will rise to the surface, creating a volcanic island arc parallel to the trench.
C. Mountains are formed.
D. A new seafloor is formed when the magma cools and solidifies.

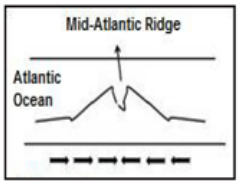
19. Convection current is one of the forces that drives the plate movements. Which of the following diagrams best illustrates the convection current in the mantle?

A. 

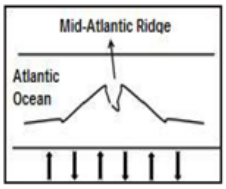
Source: Science 10_LM_Unit_1_Module 2 p.74

B. 

Source: Science 10_LM_Unit_1_Module 2 p. 74

C. 

Source: Science 10_LM_Unit_1_Module 2 p. 74

D. 

Source: Science 10_LM_Unit_1_Module 2 p. 74

20. One of the possible causes of plate movement is a force called Ridge Push. How will you describe this force?
    A. This force causes the mantle materials to rise, creating the potential for plates to move towards the ridge.
    B. This force causes the mantle materials to rise, creating the potential for plates to move away from the ridge.
    C. This force causes the mantle materials to rise, creating the potential for plates to slide past the ridge.
    D. This force causes the mantle materials to rise, creating the potential for plates to slip along the ridge.
21. The rate of formation of a new seafloor is not always as fast as the destruction of the old seafloor at the subduction zone. If subduction is faster than seafloor spreading, the ocean shrinks, but when seafloor spreading is greater than subduction, then the ocean gets wider. If the Atlantic Ocean is said to be growing at a rate of 5cm per year, what can you infer in this situation?
    A. The subduction process is occurring faster than seafloor spreading.
    B. The subduction process is occurring slower than seafloor spreading.
    C. The subduction process is occurring at the same rate with seafloor spreading.
    D. The subduction process and seafloor spreading are not happening in the Atlantic Ocean.
22. The movement of plates is mainly driven by internal heat processes, leading to geological phenomena such as earthquakes, volcanic activity, and the formation of mountain ranges. However, you've noticed that there are only specific areas which these geologic events commonly occur. Where do you think these areas and why?
    A. Geologic events are not random occurrences but are closely tied to the Earth's tectonic activity and internal processes. They are distributed along the center of the continents.
    B. Geologic events are random occurrences but are closely tied to the Earth's tectonic activity and internal processes. They are distributed along the center of the continents.
    C. Geologic events are random occurrences but are closely tied to the Earth's tectonic activity and internal processes. They are distributed along the edges of the continents.
    D. Geologic events are not random occurrences but are closely tied to the Earth's tectonic activity and internal processes. They are distributed along the edges of the continents.
23. The plates are believed to be moving slowly and that is driven by different forces. Understanding the quantitative aspects of these forces is crucial for comprehending the complex system of plate tectonics and its impact on Earth's geology. Scientists use various methods, including seismic studies, GPS measurements, and numerical modeling, to gather and analyze data related to plate movements. Below are the forces that drives plate movement, EXCEPT.
    A. Convection Current
    B. Ridge Push
    C. Ocean Push
    D. Slab Pull
24. Ridge push is a geological phenomenon that occurs primarily at mid-ocean ridges. Which of the following information best describes the mid-ocean ridge?
    A. A large landform that rises prominently above its surroundings, typically having a peak or summit.
    B. A deep and narrow depression on the ocean floor, typically associated with subduction zones at convergent plate boundaries.
    C. A continuous mountain range that runs through the center of the world's oceans, creating the longest mountain range on Earth.

D. A geological feature characterized by a long, narrow depression or trough on the Earth's surface.

25. Alfred Wegener is a German meteorologist and geophysicist who formulated the Theory of Continental Drift. He proposed that the continents were once one large landmass. He called this landmass Pangaea, a Greek word which means "All Earth." This Pangaea started to break into two smaller supercontinent called Laurasia and Gondwanaland during the Jurassic Period. These smaller supercontinents broke into the continents and these continents separated and drifted apart since then. Wegener searched for evidence to support his claim. He noticed that the Appalachian Mountains in the North America match up with a similar mountain range in Northern Europe. How does this support Wegener's theory of Continental Drift?
    A. This evidence does not support the theory of continental drift.
    B. The mountains were formed after tectonic plates had moved away from each other.
    C. The similarities provide evidence North America & Europe were connected when the mountains formed.
    D. Similar rock samples were found on the ocean floor and at the two mountain ranges indicating that they both formed around the same time.
26. Harry Hess and Robert Dietz postulated a theory which was explained and proven by evidence. According to the two scientists, under the oceans lie long mountain chains or ridges. The ocean floor crust on either side of a mid-ocean ridge shows the youngest rock closest to the ridge and the oldest rock farther from it. Also, the pattern of magnetic reversals on either side of the ridge is precisely the same as each other. Which of the following theory best describes the contribution of Hess and Dietz to support plate movement?
    A. Continental Drift Theory
    B. Continental Shift Theory
    C. Plate Tectonic Theory
    D. Seafloor Spreading Theory
27. These days, studies show that the Atlantic Ocean is growing at a rate of five centimeters per year as new seafloor is created by volcanic activity along its mid-ocean ridge. If the Atlantic Ocean is widening at a rate of 3 cm per year, how far (in kilometers) will it spread in a million years?
    A. 3 kilometers
    B. 30 kilometers
    C. 300 kilometers
    D. 3000 kilometers
28. When the Earth's magnetic field reverses, a new stripe with the new polarity begins. Such magnetic patterns led to the recognition of the occurrence of seafloor spreading, one of the pieces of evidence that support plate movement. Study the magnetic polarity map below. The rate of plate movement in centimeters per year is calculated using the formula ***Rate = distance/time.*** How far do the plates move away from each other every year?

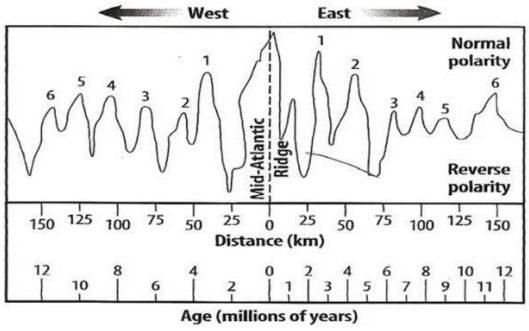


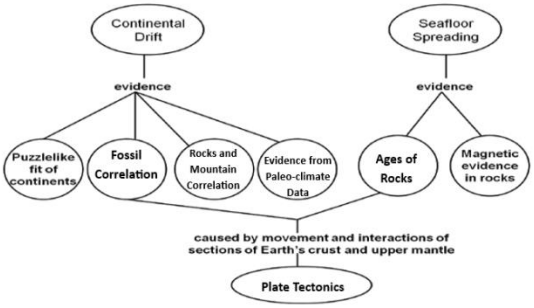
Figure 1: Magnetic polarity map

Source: http://tinyurl.com/52tnwcz3

    A. 1 cm per year
    B. 1.5 cm per year
    C. 2 cm per year

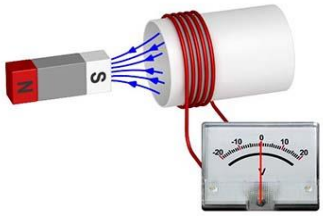
D. 2.5 cm per year

29. Alfred Wegener collected a great deal of evidence to support his claim about the Continental Drift Theory. One of these is the fossil. Fossils are preserved remains or traces of organisms (plants and animals) from the remote past. Ancient fossils of the same species of extinct plants and animals are found in rocks of the same age but are on continents that are now widely separated. For example, the freshwater reptiles Mesosaurus and Lystrosaurus. Fossils of these animals were discovered on different continents, such as in South America and Africa. It is impossible for these reptiles to swim over the vast oceans and move from one continent to another. Fossils were also found in Antarctica. What does the presence of Mesosaurus and Lystrosaurus fossils say about the initial location and position of South America, Africa, and Antarctica?
    A. The initial position of these continents was farther apart.
    B. The initial position of these continents was not connected.
    C. The initial position of these continents was closer together.
    D. The initial position of these continents had no impact on fossil distribution.
30. Below is a concept map about the continental drift, seafloor spreading, and plate tectonics.



Source: http://tinyurl.com/4twukj5c

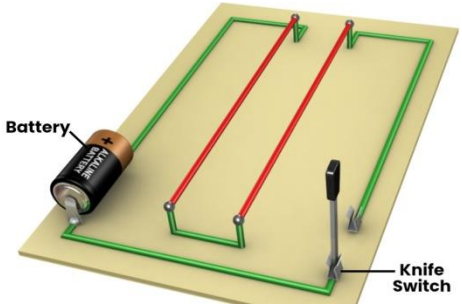
Which of the following statements do **NOT** summarize one of the lines of evidence used by Alfred Wegener to support his theory of continental drift?
    A. Glacial deposits indicate a different climatic condition.
    B. Similar fossils are found on widely separated continents.
    C. Bands of rock are older the farther their position from a mid-ocean ridge.
    D. Similar geologic formations occur on both sides of the Atlantic Ocean.
31. Results from various experiments conducted by different scientists have found a relationship between electricity and magnetism. Which of the following experiments shows their relationship?
    A. When a current was switched on through a wire, it made a compass needle turn.
    B. Current is induced only when the bar magnet does not move with respect to the coil.
    C. Two perpendicular wires carrying electric currents repel or attract each other.
    D. Maxwell's equation showed that various wavelengths of light have the same color.
32. Which of the following tells the most relevant information about the difference between electromagnetic radiation and mechanical waves?
    A. Electromagnetic radiation does not require a medium to propagate unlike mechanical waves
    B. Both mechanical waves and electromagnetic radiation can travel through a vacuum.
    C. Mechanical waves can travel at the speed of light in a vacuum, but electromagnetic radiation cannot.
    D. Both mechanical wave and electromagnetic radiation can travel through matter.
33. The picture below shows a simple setup of the copper wire and permanent magnet. When a permanent magnet is moved inside a copper wire coil, electrical current flows inside of the wire. What will happen if the number of turns of the wire is increased?



Source: http://tinyurl.com/yujettby

A. The reading on the galvanometer decreases.
B. The reading on the galvanometer increases.
C. The reading on the galvanometer stays the same.
D. The number of turns of the wire doesn't affect the current.

34. Back in 1820, Frenchman André-Marie Ampère found through experimentation that the magnetic fields created by parallel current-carrying wires interact with one another, depending on which way current was flowing in the parallel wires. Take a look at the circuit below, which includes two parallel straight wires, in red. If current flows through the circuit, what will happen to the parallel wires?



Source: http://tinyurl.com/mrkdfnam

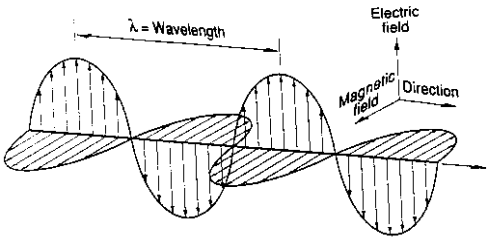
A. The current, running in the same direction in those red wires, creates magnetic fields that oppose each other, making the wires repel one another.
B. The current, running in opposing directions in those red wires, creates magnetic fields that oppose each other, making the wires repel one another.
C. As current is flowing in the same direction, the wires are attracted to one another because their magnetic fields are opposing one another, and opposites attract.
D. As current is flowing in opposite directions, the wires are attracted to one another because their magnetic fields are opposing one another, and opposites attract.

35. The statements below tell the contributions of two scientists in the concept of electromagnetic wave theory. Which of the following shows the correct sequence of information?

I. Heinrich Hertz, a German physicist, applied Maxwell's theories to the production and reception of radio waves.
II. In the 1860's and 1870's, a Scottish scientist named James Clerk Maxwell developed a scientific theory to explain electromagnetic waves.
III. He noticed that electrical fields and magnetic fields can couple together to form electromagnetic waves.
IV. The unit of frequency of a radio wave – one cycle per second –is named the hertz, in honor of Heinrich Hertz.
V. He summarized this relationship between electricity and magnetism into what are now referred to as "Maxwell's Equations."

A. II, V, III, I, IV
B. I, III, IV, II, V
C. II, III, V, I, IV
D. I, IV, II, III, V

36. Electromagnetic waves are shown by a sinusoidal graph below. Based on the graph, which of the following is **TRUE** about an electromagnetic wave?



Source: http://tinyurl.com/565dmm5j

A. EM waves are composed of oscillating magnetic and electric fields.
B. The magnetic field and direction of propagation are parallel to each other.
C. Electromagnetic wave cannot propagate through air, water, and vacuum.
D. EM waves cannot be arranged according to their various wavelengths.

37. Infrared radiation lies beyond the red end of the visible light. Identify which of following is **NOT** an application of infrared.

A. Infrared radiation is used in sterilization of water in drinking fountains.
B. Infrared remote controls are used in TVs, video, cassette recorders, and other electronic appliances.
C. Infrared scanners are used to show the temperature variation of the body. This can be used for medical diagnosis.
D. Infrared photographs taken from a satellite with special films provide useful details of the vegetation on the Earth's surface.

38. Radio waves have the longest wavelength in the electromagnetic spectrum. They are produced by making electrons vibrate in an antenna. They are used to transmit sound and picture information over long distances. Which correct sequence of events happens when radio waves travel from a transmitter to a receiver?

i. The radio waves travel through the air at the speed of light.
ii. Electrons rush up and down the transmitter, shooting out radio waves.
iii. When the radio waves hit a receiver, they make electrons vibrate inside it, recreating the original signal.

A. i, ii, iii
B. ii, i, iii
C. iii, ii, i
D. i, iii, ii

39. The sun is our main source of ultraviolet radiation. UV intensity tends to be highest during the summer months. The sun's rays are strongest at the equator where the sun is most directly overhead and where UV rays must travel the shortest distance through the atmosphere. Overexposure to UV radiation may cause skin cancer. Suntan or sunscreen lotions serve as filters to protect the body from ultraviolet radiation. Research suggests for best results, apply sunscreen approximately 30 minutes before being in the sun so that it can be absorbed by the skin and less likely to wash off when you perspire. So, if you're heading to the beach at 11 in the morning. What's the latest time you should apply sunscreen?

A. 10:00 AM
B. 10:30 AM
C. 11:00 AM
D. 11:30 AM

40. The entire archipelago of the Philippines suffers from an unreliable telecommunications and internet infrastructure. These realities hamper emergency communications and disaster risk reduction and management during all phases of a natural disaster. When a typhoon hits the country, it brought massive winds, torrential rains, and a high-powered storm surge that quickly devastated the area's infrastructure. Internet connectivity collapsed at just the time residents and disaster relief teams needed it most. Which of the following methods can solve this problem?

A. radiobroadcasting

B. satellite communications
C. television broadcasting
D. terrestrial communications

41. As the old saying goes, when you fall off your bike, dust yourself off and get right back on. But alarming research shows that it's not that easy for many children. According to studies, more than 1 million broken bones from children riding bikes are reported over the past 20 years. If a child fall from riding a bicycle, the doctor would advise the patient to do a bone scanning in order to determine whether there are bone fractures. Which of the following form of electromagnetic wave is used to diagnose if one has bone fractures?
    A. gamma ray
    B. microwave
    C. visible light
    D. x-rays
42. Read the news article below about the intensified efforts of the Philippine national and domestic airports on its battle against the COVID-19 pandemic. Then, answer the question that follows:

> Airports nationwide have stepped up measures to prevent the spread of coronavirus disease 2019 (Covid-19) which has been declared by the World Health Organization as a pandemic. All Ninoy Aquino International Airport (NAIA) terminals have implemented thermal scanning and cleaning of the premises is done regularly. Manila International Airport Authority manager Ed Monreal said, the airport is cleaned "round-the-clock, every 30 minutes". Thermal scanners are set up to check the temperature of passengers. The Civil Aviation Authority of the Philippines (CAAP), which operates 42 airports across the country, has also stepped-up measures to contain the spread of Covid-19. Sanitation of airport facilities is done every four hours. Passengers with high body temperature are given treatment by frontline responders. "We hired additional cleaners so we could sustain cleaning (the airports) every four hours. We also hired nurses to assist the DOH," CAAP spokesperson Eric Apolonio said.
>
> While every CAAP-operated airport has a medical team, hiring additional nurses were requested by area managers since they need to attend to the passengers. Disinfectants are also available in all passenger terminal buildings while CAAP employees are encouraged to observe proper hygiene and minimize physical contact. Local carriers earlier announced measures they have implemented in line with the rising Covid-19 concerns.
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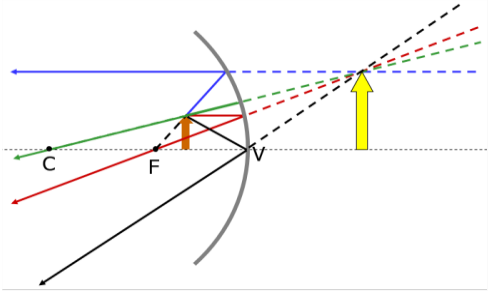
> **PH Airports Intensify Efforts VS. COVID-19**
> **By: Ma. Cristina Arayata**
> **March 12, 2020, 4:13 pm**
> **Retrieved at: https://www.pna.gov.ph/articles/1096387**
> **Retrieved date: December 12, 2023**

Since the outset of the COVID-19 pandemic, international airports have been utilizing thermal imaging devices such as camera-mounted scanners. In addition to airports, hospitals, schools, warehouses, and other high traffic locations have started to adapt the technology to their workplaces in an effort to keep employees and customers safe from the spread of the coronavirus. What form of electromagnetic wave is used in thermal imaging devices?

A. infrared radiation
B. gamma ray
C. radio wave
D. ultraviolet ray

43. Ultra-violet A and Ultra-violet B lights are important for humans in the production of Vitamin D in the skin and gives us tanning effects. What do you think is the effect of overexposure to UV?
    A. It can cause asthma
    B. Skin cancer is developed
    C. It will result to heart failure
    D. High blood pressure will occur
44. Ionizing radiation include high energy ultraviolet radiation, X-rays, and gamma rays. Which of the following explains the effects of ionizing radiation on living things?
    A. X-rays and gamma rays belong to ionizing radiation.
    B. Ionizing radiation can travel unseen and pass through air, water, and living tissue.
    C. It has enough energy to potentially cause damage to DNA and may cause eventual harm such as cancer.
    D. It is a form of radiation that acts by removing electrons from atoms and molecules of materials that include air, water, and living tissue.
45. Majority of skin cancers are caused by exposure to ultraviolet radiation. Too much exposure can cause harm to human and the environment. How can we reduce our risks of sun damage and skin cancer?
    A. Exposure to ultraviolet radiation
    B. Staying in the shade under an umbrella, tree, or other shelter.
    C. Increase the time spent near the source
    D. Do sunbathing all the time.
46. To reduce radiation exposure, there is a need for us to do/consider things. How can we reduce radiation risk?
    A. Stay near the source.
    B. Do sunbathing all the time.
    C. Increase the time spent near the source
    D. Use shielding
47. Radiation is the emission or transmission of energy in the form of waves or particles through space or through a material medium. It exists all around us, from both natural and man-made sources. What do you call the type of low-energy radiation that does not have enough energy to remove an electron (negative particle) from an atom or molecule?
    A. Non-ionizing radiation
    B. Ionizing radiation
    C. EM radiation
    D. Gamma radiation
48. Gamma rays can pass completely through the human body; as they pass through, they can cause ionizations that damage tissue and DNA. Why are high frequency electromagnetic waves like Gamma rays harmful to living things?
    A. They have less penetrating power that several inches of a dense material like lead, or even a few feet of concrete may be required to stop them.
    B. They have enough penetrating power that several inches of a dense material like lead, or even a few feet of concrete may be required to stop them.
    C. They carry very low amount of energy that enables them to penetrate and kill living cells.
    D. They carry very high amount of energy that enables them to penetrate and kill living cells.
49. Jaime is a flight attendant, and her job requires her to have a pleasant personality. Every day, before going to work, she checks her image in a plane mirror to ensure that she is satisfied by her appearance. If Jaime stands 1.5m in front of a plane mirror, what is the distance of Jaime's image from her?
    A. 1.5cm
    B. 3.0cm
    C. 4.0cm.
    D. 4.5cm

50. You are a store owner planning to enhance surveillance for better security. You're considering adding mirrors to certain areas that would give you a wide field of view in your store. Which type of mirror would you install in the store to help reduce blind spots and enhance overall security?
    A. Plane Mirror
    B. Concave Mirror
    C. Convex mirror
    D. Lens
51. A concave mirror has a focal length of 15 cm. An object is placed 30 cm in front of the mirror. Determine the image distance and describe the type of the image.
    A. The image distance (q) is 30 cm. The negative sign indicates that the image is formed on the same side as the object, thus, virtual.
    B. The image distance (q) is -30 cm. The negative sign indicates that the image is formed on the same side as the object, thus, virtual.
    C. The image distance (q) is 30 cm. The negative sign indicates that the image is formed on the same side as the object, thus, real.
    D. The image distance (q) is -30 cm. The negative sign indicates that the image is formed on the same side as the object, thus, real.
52. What is the image distance and image size if a 7.00-cm tall light bulb is placed a distance of 48 cm from a convex lens having a focal length of 15 cm?
    A. The image distance is 21.82 cm, and the image height is 3.18cm.
    B. The image distance is 12.32 cm, and the image height is 3.18cm.
    C. The image distance is 21.82 cm, and the image height is 5.81cm.
    D. The image distance is 12.32 cm, and the image height is 5.81cm.
53. The figure below shows that the object is placed between a concave mirror and its focal point. Predict the orientation, type and magnification of the image formed.



Source: http://tinyurl.com/y6cfzu25

    A. Upright, real, and enlarged
    B. Upright, real, and reduced
    C. Upright, virtual, and enlarged
    D. Upright, virtual, and reduced
54. Jose was invited to a pool party of his friend's birthday. When Jose arrived, his friends were already swimming in the pool thus making the water in the pool wavy. As he looked down on a pool, he observed that he can't see his reflection clearly. Which one of the following gives the best explanation for his observation?
    A. Light entering the water travels in a straight line
    B. Regular reflection of light happens on the surface of wavy water.
    C. Irregular reflection of light happens on the surface of wavy water.
    D. Light is reflected from the surface of water in the same direction.
55. Farsightedness, or hyperopia, is a common vision defect that makes it difficult to focus on near objects. It happens when the shape of the eye makes light focus behind the retina instead of on it. Farsightedness can be corrected using which type of lens?
    A. Converging lens
    B. Diverging lens
    C. Magnifying lens

D. Pinhole camera

56. You are in a hotel with your friend, and you need to use the elevator to transfer from the ground floor to the fourth floor. Your friend already enters the elevator without mirrors and suddenly your friend started to feel uncomfortable and having panic attacks. What do you think is the reason behind your friend's reaction?
    A. He is bored
    B. He is claustrophobic
    C. He is Problematic
    D. He is sick
57. You are a soldier, and you are on a mission in a mountainous area. You want to secure the area 100 meters away from your position. Which optical instrument will you use for surveillance?
    A. Binoculars
    B. Camera
    C. Magnifying glass
    D. Radio
58. Christmas is a season of giving so you went to the mall to buy Christmas presents for your loved ones. While trying a dress in front of a mirror, you see the reflection of the clock without numbers in your plane mirror. The image formed by the hands of the clock shows the time of 1:30 and you were worried because you're not eating your lunch yet. What is the real time?
    A. 11: 30
    B. 12:30
    C. 1:30
    D. 2:30
59. In medical examinations, when inspecting internal organs such as the intestine, doctors employ a long flexible tube inserted into the body to observe passages like the esophagus or stomach. This instrument contains a converging lens and optical fibers that transmit the image to the tube's end, where it can be viewed on a computer monitor. The concept of total internal reflection is utilized in this optical instrument. Which optical instrument does the doctor use, and how do the properties of mirrors and lenses influence its functionality?
    A. Colonoscope - The converging lens and optical fibers in this instrument utilize total internal reflection to convey images for observation on a computer monitor during internal examinations.
    B. Endoscope - Doctors use this optical instrument with a converging lens and optical fibers, employing total internal reflection, to visualize internal passages such as the esophagus or stomach on a computer monitor.
    C. Ophthalmoscope - Utilizing a converging lens and optical fibers with total internal reflection, this optical instrument allows doctors to examine the internal structures of the eye on a computer monitor.
    D. Laparoscope - Doctors employ this instrument, equipped with a converging lens and optical fibers utilizing total internal reflection, to observe internal organs like the stomach and intestines on a computer monitor during medical examinations.
60. Medical or Laboratory Technologist, analyzes various biological samples to treat or diagnose different diseases. Their main duties include getting biological samples ready to test, conducting blood tests and creating reports of their findings. Which of the following optical instrument is being used by the medical technologist to test or examine the samples like blood and urine?
    A. Binoculars
    B. Camera
    C. Endoscope
    D. Microscope

61. Sara is experiencing difficulty conceiving, and she decides to visit a reproductive health specialist. The specialist conducts a thorough examination and identifies an issue with the structure responsible for transporting eggs from the ovaries to the uterus. Which part of the

reproductive system is likely affected?
A. Fallopian tube
B. Ovaries
C. Uterus
D. Vagina

62. While browsing an online forum, a user asserts that the "sperm sac" is a crucial part of the female reproductive system. Evaluate the accuracy of this claim:
A. Accurate
B. Inaccurate
C. Symbolic representation
D. Regional terminology

63. Which of the following best describes the relationship between the male and female reproductive systems?
A. Both systems function independently of each other.
B. Both systems work together to produce a zygote, which then develops into a fetus.
C. The male reproductive system produces sperm, while the female reproductive system produces eggs.
D. The male reproductive system transports sperm to the female reproductive system, which then fertilizes the sperm.

64. Which of the following options correctly identifies potential impacts of disruptions in hormone levels on the progression or regularity of the main phases of the menstrual cycle, as well as suitable interventions to address these disruptions?
A. Delayed menstruation, increased stress, hormone replacement therapy
B. Irregular cycles, poor diet, increased physical activity
C. Shortened menstrual phases, low energy levels, meditation techniques
D. Prolonged menstruation, excessive caffeine intake, increased screen time

65. Which of the following hormones is newly discovered by Hotamisligil, which helps regulate metabolism and may play an important role in the development of both type 1 and type 2 diabetes?
A. Fabkin
B. Hemoglobin
C. Melatonin
D. Zelanin

66. Which of the following represents the main purpose of ejaculation in the male reproductive system? How does this differ from the primary role of estrogen in the female reproductive system?
A. Regulation of testosterone; Ovulation
B. Release of urine; Stimulation of ovulation
C. Release of sperm; Regulation of menstrual cycle
D. Fertilization of the egg; Maintenance of uterine lining

67. Which hormone plays a key role in providing negative feedback to the hypothalamic-pituitary system during the follicular phase of the menstrual cycle?

A. Progesterone
B. Estrogen
C. Inhibin B
D. Follicle-stimulating hormone (FSH)

68. Project EVATAR is a new digital representation of _____.
A. Skeletal System
B. Nervous System
C. Endocrine System
D. Female Reproductive System

69. During the menstrual cycle, classify two systems that collaborate intricately to regulate critical processes.
A. Digestive and Immune Systems
B. Reproductive and Nervous Systems
C. Respiratory and Circulatory Systems
D. Reproductive and Endocrine Systems

70. Suppose a boy skipped his lunch for the day. How will the hormones (glucagon) from his pancreas help his body to cope when his blood sugar level drops below normal?
A. Glucagon will signal the liver to release stored glucose into the bloodstream, raising the boy's blood sugar level.
B. Glucagon will stimulate the pancreas to produce more insulin, which will help the body's cells use glucose for energy.
C. Glucagon will break down glycogen, a complex carbohydrate stored in the liver and muscles, into glucose, which can then be used for energy.
D. Glucagon will convert glutamine, an amino acid, into glucose through a process called gluconeogenesis.

71. What is the new scientist's intervention on how to restore and enhance memory?
A. Implant brain chips to enhance memory loss.
B. Insertion of neurons in human brains via clinical operation.
C. Scientists tried to do more brain exercises such as guessing games and reading games.
D. They stimulate a brain region called the Supramammilary nucleus that can enhance NEW neurons.

72. Which of the following is a mechanism that the nervous and endocrine systems employ to maintain homeostasis in response to an increase in environmental temperature?
A. Decreased sweating.
B. Increased blood flow to the skin
C. Increased production of antidiuretic hormone (ADH)
D. Release of epinephrine

73. Examine a scenario where a mutation occurs in the DNA sequence. How might this alteration impact protein synthesis?
A. Enhance translation efficiency
B. Increase DNA replication accuracy

C. Lead to altered amino acid sequence
D. Improve post-transcriptional modifications

74. A newly discovered protein, named Cas12a2 in the DNA, is used for?
A. Visual impairment remedy.
B. Ending in unsuccessful infection.
C. Making a new pair of chromosomes.
D. Duplicating RNA strand that leads to making more protein.

75. What is the difference between mRNA and tRNA in terms of their function?
A. mRNA is involved in protein synthesis, while tRNA is involved in transcription.
B. mRNA carries genetic information from DNA to the ribosomes, while tRNA carries amino acids to the ribosomes.
C. mRNA is a structural component of ribosomes, while tRNA is involved in protein folding.
D. mRNA is involved in DNA replication, while tRNA is involved in RNA splicing.

76. In a scenario with a mutation impacting a protein's structure and function, which step in protein synthesis is most likely affected, leading to altered consequences?
A. Transcription initiation
B. mRNA splicing
C. Translation termination
D. Post-translational modification

77. How did a groundbreaking invention shed light on the relationship between mutations and changes in the structure and function of proteins?
A. Mutation has no impact on protein structure or function
B. The latest technology allows precise manipulation, highlighting the link between mutations and protein changes
C. Protein structure remains unaffected by genetic mutations
D. No advancements have been made in understanding how mutations influence protein behavior.

78. How do mutations affect protein synthesis?
A. Mutations have no effect on protein synthesis
B. Mutations can affect the rate of protein synthesis
C. Mutations can alter the amino acid sequence of proteins
D. Mutations can change the stability of proteins

79. Which of the following is an example of an analogous structure?
A. Bat wing and butterfly wing
B. Human arm and batwing
C. Human arm and whale flipper
D. Whale flipper and fish fin

80. How do fossil records relate to studying evolution?
A. Provides evidence of past life, supporting evolution.
B. Gives a bacteria that can turn animals to evolve
C. Fossils hold a new genes that support evolution
D. Evolution is related to fossil records since it shows a picture

81. Explain how genetic information contributes to the evidence for evolution in conjunction with fossil records and comparative anatomy.
A. By examining how ecological factors influence genetic variations
B. By demonstrating shared ancestry through common genetic sequences
C. By comparing the genetic makeup of organisms found in different rock layers
D. By showing similarities in body structures that align with genetic relationships

81. In a population of birds on an isolated island, researchers observe a change in the average beak size over several generations. The initial generation had primarily small beaks, but over time, the average beak size increased. To explain this occurrence, which factor is likely to have contributed to the evolution of beak size in the population?
A. Genetic drift due to a sudden decrease in population size.
B. Natural selection favors larger beaks for improved seed-cracking abilities.
C. Mutation leads to a higher occurrence of small-beaked individuals.
D. Immigration of birds with larger beaks from a nearby mainland.

82. Which of the following statements best describes how natural selection affects evolution?
A. Natural selection introduces new genetic variations into populations.
B. Natural selection causes random changes in the genetic material of an organism.
C. Natural selection leads to the depletion of genetic variation within populations.
D. Natural selection causes certain traits to become more or less common in a population over successive generations, based on their ability to enhance survival and reproductive success.

83. Which of the following lists belongs to direct economic value?
A. Sources of food, medicine, clothing, shelter.
B. Sources of food, medicine, and clothing absorb pollutants.
C. Sources of food, medicine, clothing, oxygen circulation.
D. Sources of food, medicine, clothing, spiritual meditation.

84. News is scattered around the globe of the Rafflesia flower being critically endangered. As a student, how could you use the media to protect this flower?
A. Share accurate information through social media platforms.
B. Create a documentary emphasizing the flower's importance.
C. Engage in online discussions to raise awareness.
D. All of the above.

85. How does species diversity increase the probability of adaptation and survival of organisms in changing environments?
A. By creating ecological niches for species to occupy, reducing competition for resources.
B. By increasing the chances of successful reproduction and survival due to genetic differences.
C. By providing a wider range of genetic variation, allowing species to adapt to various environmental conditions.
D. By promoting the development of complex social structures, enhancing species' ability to cope with change.

86. Which of the following choices are examples of things that can limit growth?
A. Sunshine, rain, and snow.

B. Food, space, ability to reproduce.
C. Proper irrigation and water supply.
D. Healthy soil, nutrients, and vitamins.

87. Based on the news and articles released to present, which of the following choices is true about population growth of the Philippines?
A. It remains constant.
B. It decreases as more people die.
C. The Philippines experienced rapid population growth.
D. It decreases since more Filipinos tend to move country.

88. Describe the difference between linear and exponential growth.
A. Linear growth progresses steadily at a constant rate, forming a straight line. Exponential growth, on the other hand, accelerates rapidly, creating a curved trajectory.
B. Linear growth accelerates rapidly, creating a curved trajectory. Exponential growth progresses steadily over time at a constant rate, forming a straight line.
C. Linear growth and exponential growth both exhibit steady progression over time at a constant rate.
D. Linear growth and exponential growth are unrelated and do not follow any specific pattern over time.

89. Considering suggested actions like recycling, reducing plastic use, and using renewable energy, how do these actions collectively contribute to minimizing a human impact on the environment?
A. Each action independently addresses specific environmental issues.
B. The actions are unrelated and have minimal impact on environmental sustainability.
C. The impact of these actions is negligible, and other methods are more effective for environmental sustainability.
D. Recycling, reducing plastic use, and using renewable energy are interconnected, working together to reduce overall environmental impact.
Ans: D

90. A coastal community is experiencing significant erosion due to rising sea levels and increased storm surges. Residents are concerned about the long-term effects on their homes and the local environment. What would be the most effective problem-solving approach to address the coastal erosion issue and its impact on the community?
A. Build seawalls and concrete barriers along the entire coastline to prevent erosion.
B. Relocate the entire community to a higher elevation to escape rising sea levels.
C. Implement sustainable coastal management practices, such as planting vegetation and restoring natural barriers.
D. Ignore the issue and focus on short-term solutions, such as sand replenishment.