# Test Bank for Exploring Physical Geography 2nd Reynolds

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***Exploring Physical Geography, 2e* (Reynolds)**
**Chapter 2 Energy and Matter in the Atmosphere**

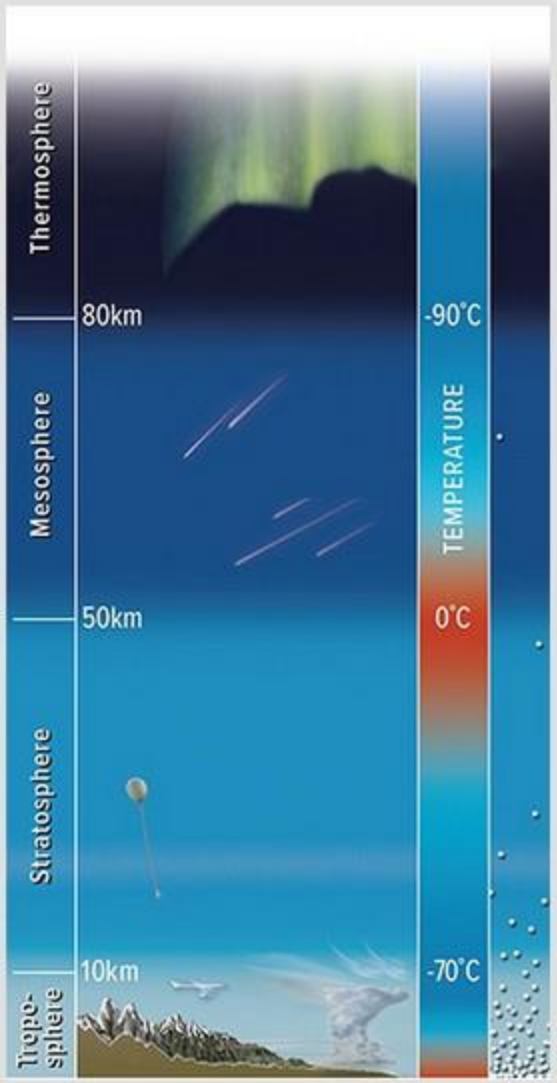
1) The most common gas in the atmosphere is
A) oxygen ($O_2$).
B) carbon dioxide ($CO_2$).
C) nitrogen ($N_2$).
D) methane ($CH_4$).

Answer: C
Section: 02.01 What Is the Atmosphere?
Topic: Atmosphere
Bloom's: 1. Remember; 2. Understand
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2) What atmospheric layer is the home of weather, has the greatest density of gas molecules, and has a decrease in temperature with height?



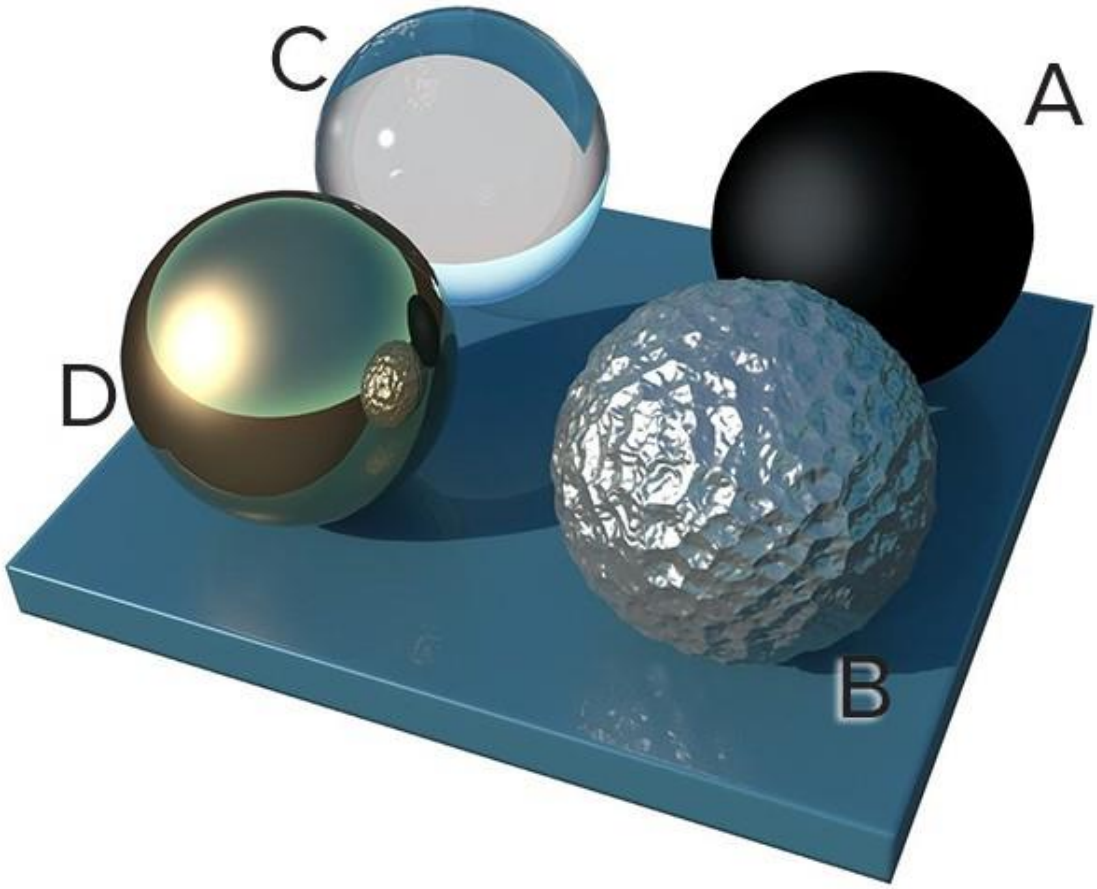

A) Thermosphere
B) Mesosphere
C) Stratosphere
D) Troposphere

Answer: D
Section: 02.01 What Is the Atmosphere?
Topic: Atmosphere
Bloom's: 3. Apply; 4. Analyze
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3) Which of the following objects is best at absorption of incoming light and the emission of heat?



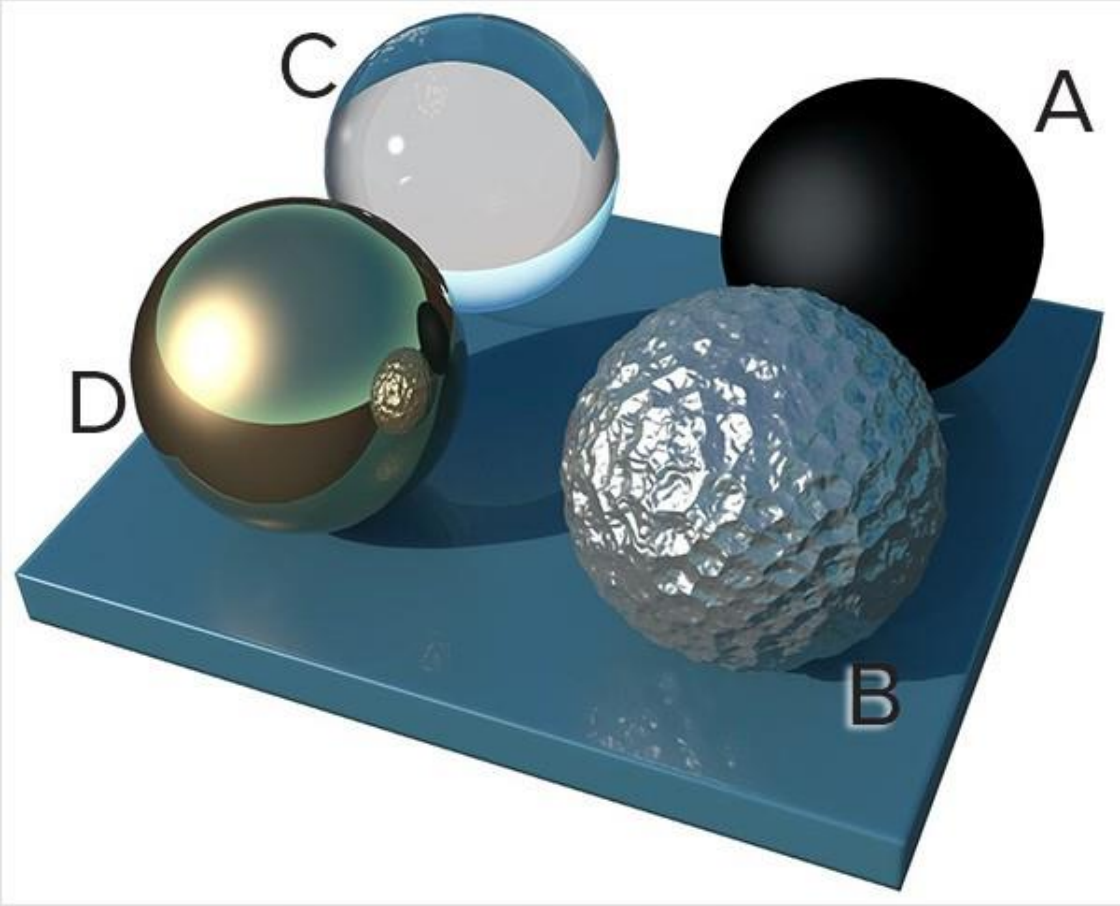

A) A
B) B
C) C
D) D

Answer: A
Section: 02.01 What Is the Atmosphere?
Topic: Atmosphere
Bloom's: 3. Apply; 4. Analyze
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4) Which of the following objects would be best at scattering light?




A) A
B) B
C) C
D) D

Answer: B
Section: 02.01 What Is the Atmosphere?
Topic: Atmosphere
Bloom's: 3. Apply; 4. Analyze
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Accessibility: Keyboard Navigation

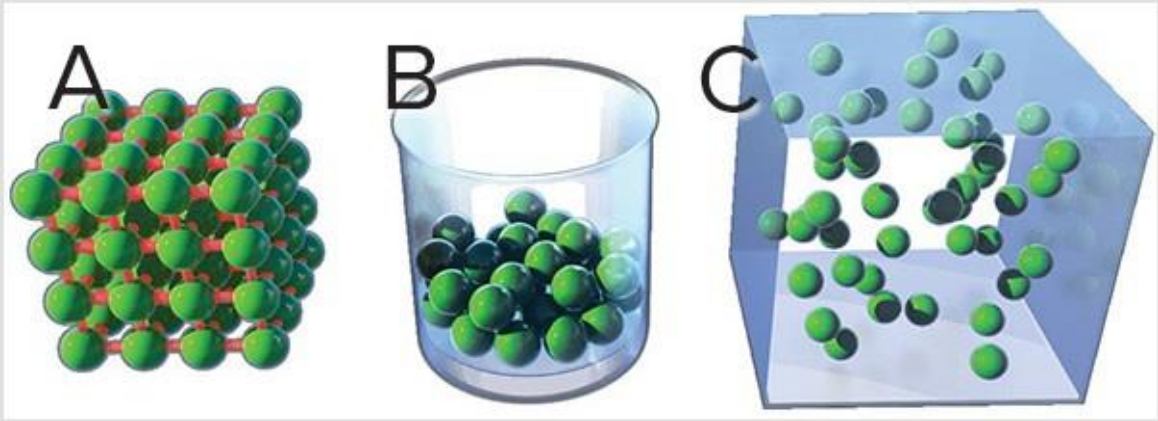

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5) Potential energy would best be expressed when
A) pulling or pushing an object.
B) atoms moving at 200 km/hr.
C) atoms moving at 500 km/hr.
D) changing a liquid to a gas.

Answer: D
Section: 02.02 What Is Energy and How Is It Transmitted?
Topic: Energy and Mechanisms of Energy Transfer
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

6) Which of the following images represents matter in the gaseous state, with the greatest kinetic energy?




A) A
B) B
C) C

Answer: C
Section: 02.02 What Is Energy and How Is It Transmitted?
Topic: Energy and Mechanisms of Energy Transfer
Bloom's: 3. Apply; 4. Analyze
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7) Burning the bottom of your feet burned when walking on hot beach sand is due to
A) conduction.
B) convection.
C) radiation.
D) advection.

Answer: A
Section: 02.02 What Is Energy and How Is It Transmitted?
Topic: Energy and Mechanisms of Energy Transfer
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

8) When making macaroni and cheese, you notice the noodles rising and falling in the boiling water. This is best explained through the process of
A) conduction.
B) convection.
C) radiation.
D) advection.

Answer: B
Section: 02.02 What Is Energy and How Is It Transmitted?
Topic: Energy and Mechanisms of Energy Transfer
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

9) The surface temperatures of a metal plate, piece of wood, and piece of plastic were measured with an infrared thermometer. The surrounding air was 20°C. Which object's surface recorded the lowest temperature?
A) Metal plate
B) Wood
C) Plastic
D) All measured the same.

Answer: D
Section: 02.03 What Are Heat and Temperature?
Topic: Heat and Temperature
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10) The only temperature scale that relates changes in internal energy to the absolute amount of heat gained or lost by a system is the
A) Fahrenheit scale.
B) Celsius scale.
C) Centigrade scale.
D) Kelvin scale.

Answer: D
Section: 02.03 What Are Heat and Temperature?
Topic: Heat and Temperature
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

11) Which of the following temperature combinations are correct for the freezing point of water, room temperature, and the boiling point of water?
A) 32°, 77°, 273
B) 0°, 77°, 373
C) 32°, 298°, 373
D) 273, 298, 373

Answer: D
Section: 02.03 What Are Heat and Temperature?
Topic: Heat and Temperature
Bloom's: 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

12) The mercury thermometer operates on the principle of
A) liquid expansion and contraction.
B) energy emission from a surface.
C) thermoelectric principles.

Answer: A
Section: 02.03 What Are Heat and Temperature?
Topic: Heat and Temperature
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13) Which of the following involves energy storage in the water molecule in the form of latent heat?
A) Melting, evaporation, sublimation
B) Freezing, condensation, deposition
C) Melting, freezing, condensation, deposition
D) Condensation, evaporation, deposition, sublimation

Answer: A
Section: 02.04 What Is Latent Heat?
Topic: Latent Heat and States of Water
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

14) Which of the following involves the release of latent heat back into the environment?
A) Evaporation
B) Deposition
C) Melting
D) Sublimation

Answer: B
Section: 02.04 What Is Latent Heat?
Topic: Latent Heat and States of Water
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
Gradable: automatic
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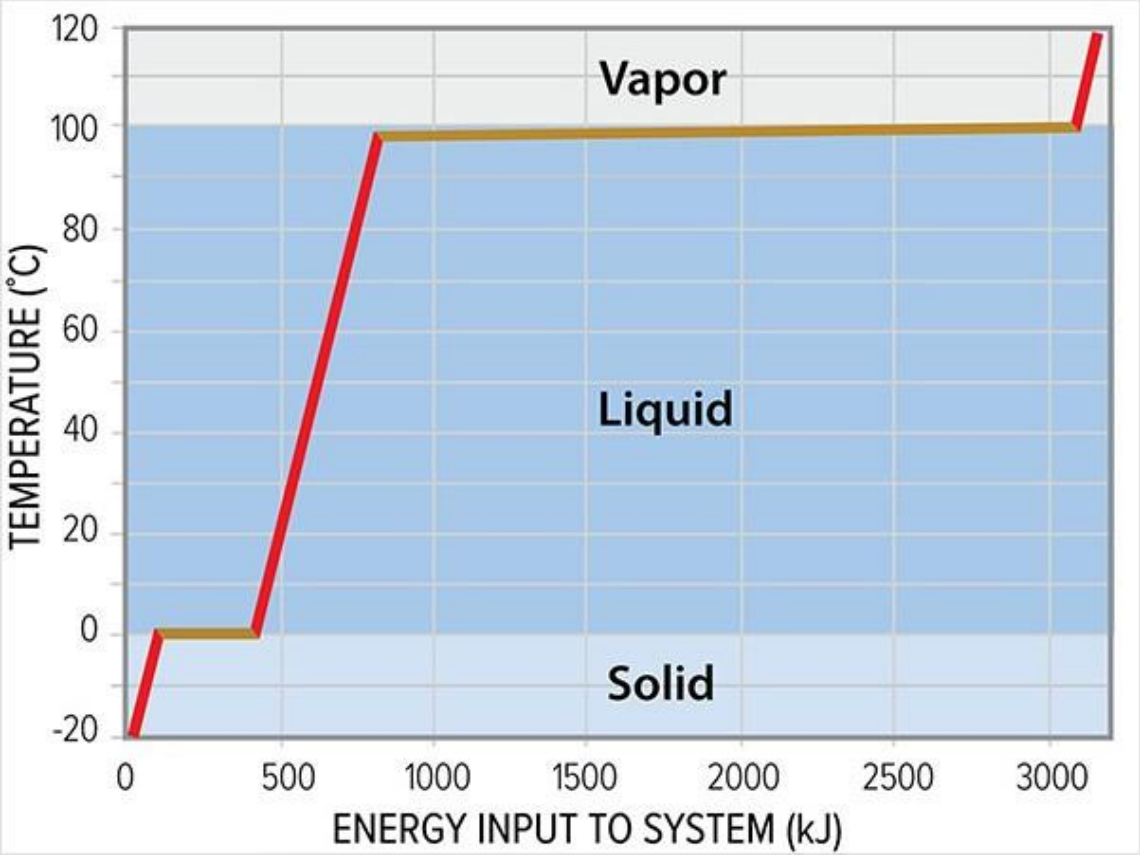
15) All of the following involve the input of energy except.
A) melting.
B) evaporation.
C) freezing.
D) sublimation.

Answer: C
Section: 02.04 What Is Latent Heat?
Topic: Latent Heat and States of Water
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16) From this graph, one should conclude that




A) most of the energy input into the system goes toward changing temperature, not changing state.
B) most of the energy input into the system goes toward a more ordered, rigid, molecular structure.
C) none of these options are correct.
D) most of the energy input into the system goes toward changing state, not changing temperature.

Answer: D
Section: 02.04 What Is Latent Heat?
Topic: Latent Heat and States of Water
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
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17) Which of the following is true regarding phase changes?
A) Energy is released when going from higher to lower energy state.
B) Energy is required to go from a higher to lower energy state.
C) All phase changes involve the release of energy.
D) All phase changes require energy absorption.

Answer: A
Section: 02.04 What Is Latent Heat?
Topic: Latent Heat and States of Water
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

18) All of the following will warm the local environment except
A) deposition.
B) evaporation.
C) freezing.
D) condensation.

Answer: B
Section: 02.04 What Is Latent Heat?
Topic: Latent Heat and States of Water
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

19) Electromagnetic radiation
A) is composed of interacting electrical and magnetic fields.
B) is visible in all its forms.
C) radiates out in confined planes or straight lines.
D) is composed entirely of waves.

Answer: A
Section: 02.05 What Is Electromagnetic Radiation?
Topic: Electromagnetic Radiation
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20) The speed with which an electromagnetic wave travels is its
A) plane of magnetic component.
B) frequency.
C) wavelength.
D) amplitude.

Answer: B
Section: 02.05 What Is Electromagnetic Radiation?
Topic: Electromagnetic Radiation
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
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21) The height of an electromagnetic wave it its
A) plane of electrical component.
B) frequency.
C) amplitude.
D) wavelength.

Answer: C
Section: 02.05 What Is Electromagnetic Radiation?
Topic: Electromagnetic Radiation
Bloom's: 1. Remember; 2. Understand
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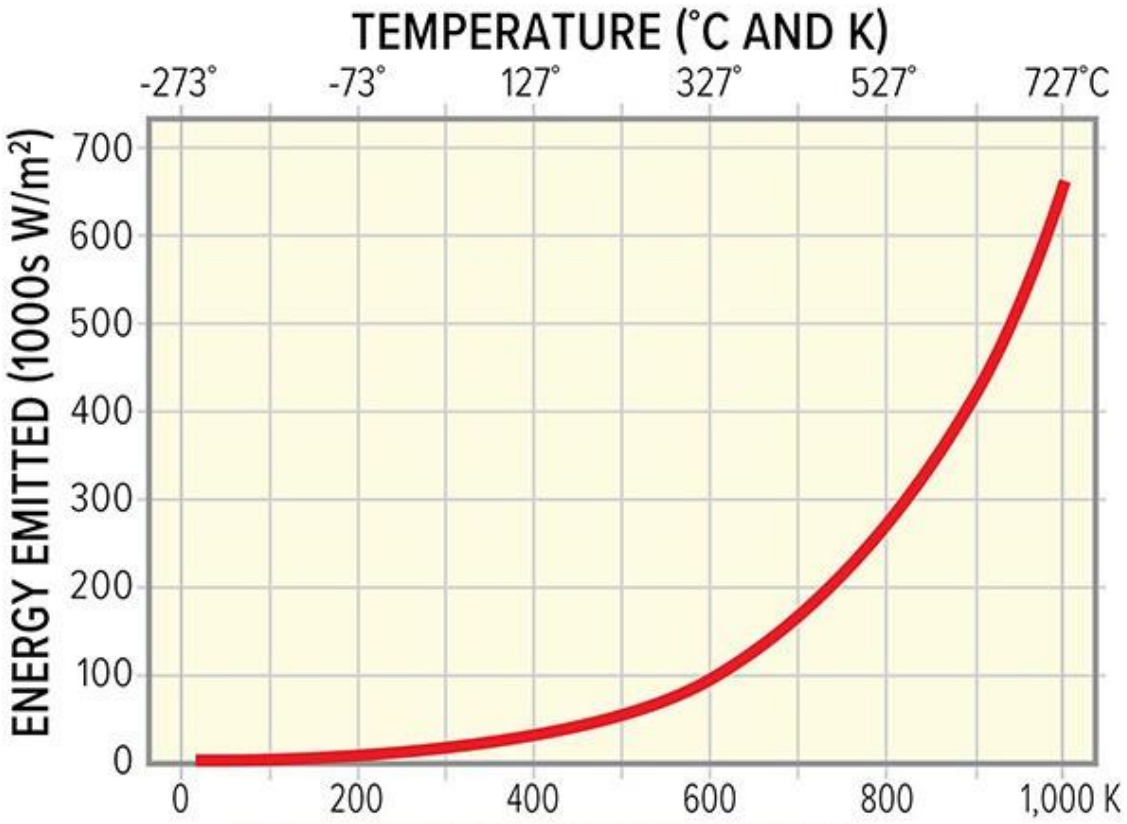
22) Electromagnetic radiation is generated from all of the following except
A) the joining together of protons and neutrons through fusion.
B) molecules' electrons and bonds that vibrate.
C) changes in the energy level of the electron.
D) unconfined waves that radiate out in all directions.

Answer: D
Section: 02.05 What Is Electromagnetic Radiation?
Topic: Electromagnetic Radiation
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23) Compare the amount of energy emitted as a function of temperature (K). The amount of energy emitted from 200 to 600 K is _____ while the amount of energy emitted from 600 to 1000 K is _____.




A) 0 W/m$^2$; 650 W/m$^2$
B) 73 W/m$^2$; 727 W/m$^2$
C) 100 W/m$^2$; 550 W/m$^2$
D) 200 W/m$^2$; 600 W/m$^2$

Answer: C
Section: 02.05 What Is Electromagnetic Radiation?
Topic: Electromagnetic Radiation
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24) An object emits a range of electromagnetic energy wavelengths because
A) not all molecules vibrate at the same speed.
B) relativity theory states that objects attain varying terminal velocities.
C) lowest and highest vibration rates are cancelled.
D) all molecules vibrate at the same rate.

Answer: A
Section: 02.06 What Controls Wavelengths of Radiation?
Topic: Electromagnetic Radiation Wavelengths
Bloom's: 1. Remember; 2. Understand
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25) Which of the following is true regarding the relationship between molecular motion, wavelength, and temperature?
A) As the temperature decreases, molecular motion increases and wavelength increases.
B) As the temperature increases, molecular motion increases and wavelength decreases.
C) As the temperature decreases, molecular motion decreases and wavelength decreases.
D) As the temperature increases, molecular motion decreases and wavelength decreases.

Answer: B
Section: 02.06 What Controls Wavelengths of Radiation?
Topic: Electromagnetic Radiation Wavelengths
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

26) Which color portion of the visible spectrum emits the lowest amount of energy?
A) Red
B) Yellow
C) Green
D) Blue

Answer: A
Section: 02.06 What Controls Wavelengths of Radiation?
Topic: Electromagnetic Radiation Wavelengths
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27) Which of the following types of electromagnetic radiation are arranged in the proper decreasing order of energy?
A) Infrared, x rays, AM radio
B) Microwaves, ultraviolet, green light
C) Radio waves, gamma rays, ultraviolet
D) Blue light, infrared, AM radio

Answer: D
Section: 02.06 What Controls Wavelengths of Radiation?
Topic: Electromagnetic Radiation Wavelengths
Bloom's: 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

28) The solar constant is
A) a consistent amount of energy received at the top of the atmosphere.
B) the same for a sphere or for a circle.
C) only about a quarter of all energy emitted by the sun.
D) the same value for all planets, even Neptune.

Answer: A
Section: 02.07 What Causes Changes in Insolation?
Topic: Insolation and Earth's Climate
Bloom's: 1. Remember; 2. Understand
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Accessibility: Keyboard Navigation

29) North America is closest to the Sun, during
A) perihelion, which occurs in early July.
B) perihelion, which occurs in early January.
C) aphelion, which occurs in early July.
D) aphelion, which occurs in early January.

Answer: B
Section: 02.07 What Causes Changes in Insolation?
Topic: Insolation and Earth's Climate
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30) North America is farthest from the Sun during
A) perihelion, which occurs in early July.
B) perihelion, which occurs in early January.
C) aphelion, which occurs in early July.
D) aphelion, which occurs in early January.

Answer: C
Section: 02.07 What Causes Changes in Insolation?
Topic: Insolation and Earth's Climate
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

31) All of the following are true regarding sunspot activity except
A) solar flares are more common with maximum sunspot activity.
B) the Little Ice Age occurred when there was a minimum of sunspot activity.
C) there is, on average, an 11-year cycle for sunspot cycles.
D) more sunspot activity means less overall energy emitted from the sun.

Answer: D
Section: 02.07 What Causes Changes in Insolation?
Topic: Insolation and Earth's Climate
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

32) As one approaches the equator, the Sun angle _____ and the atmosphere attenuation _____.
A) increases; increases
B) decreases; decreases
C) increases; decreases
D) decreases; increases

Answer: C
Section: 02.07 What Causes Changes in Insolation?
Topic: Variations in Insolation
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33) As one approaches the poles, the Sun angle _____ and atmosphere attenuation _____.
A) increases; increases
B) decreases; decreases
C) increases; decreases
D) decreases; increases

Answer: D
Section: 02.08 Why Does Insolation Vary from Place to Place?
Topic: Variations in Insolation
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

34) As the Sun angle _____, the amount of energy reaching the surface _____.
A) increases; increases
B) increases; decreases
C) increases or decreases; remains constant

Answer: A
Section: 02.08 Why Does Insolation Vary from Place to Place?
Topic: Variations in Insolation
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
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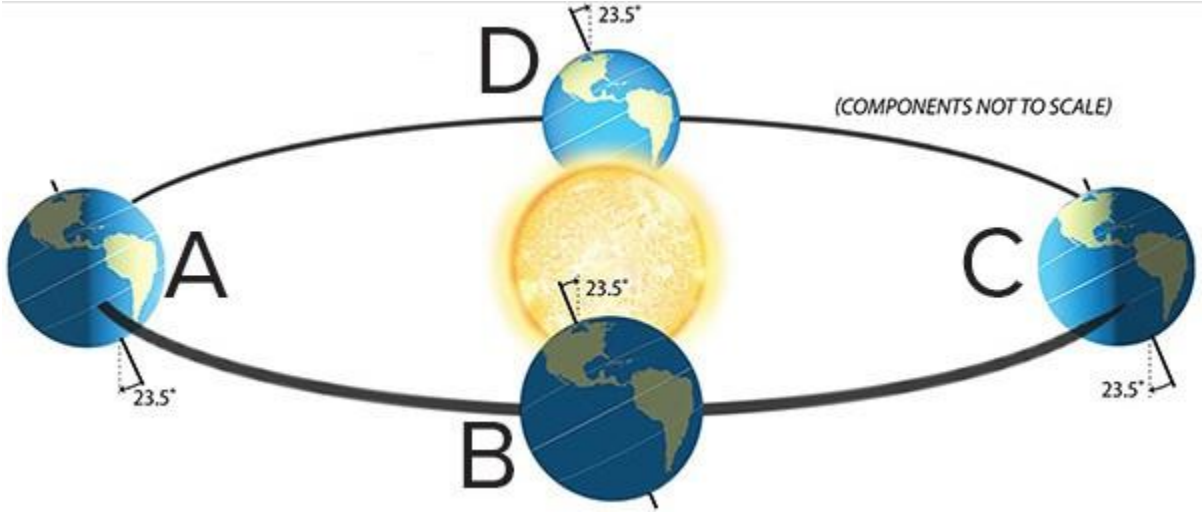
35) Polar regions receive
A) minimum variation in solar isolation and high Sun angles.
B) maximum variation in solar isolation and high Sun angles.
C) minimal variation in solar isolation and low Sun angles.
D) maximum variation in solar isolation and low Sun angles.

Answer: D
Section: 02.08 Why Does Insolation Vary from Place to Place?
Topic: Variations in Insolation
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
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36) Which of the letters represents the summer solstice for the Northern Hemisphere?



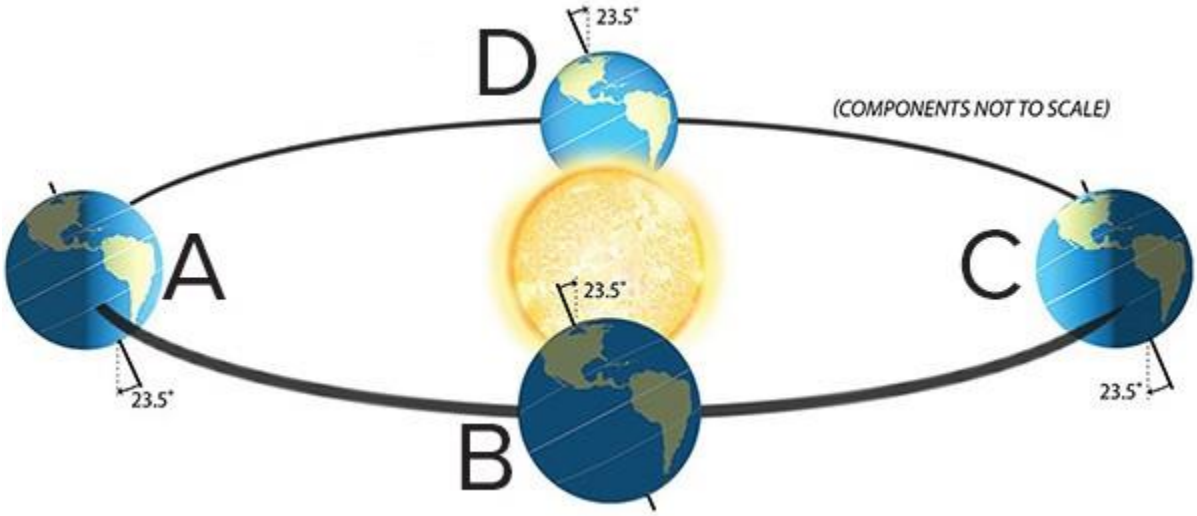

A) A
B) B
C) C
D) D

Answer: C
Section: 02.09 Why Do We Have Seasons?
Topic: Earth's Seasons
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37) On March 21, the sun will be directly overhead at



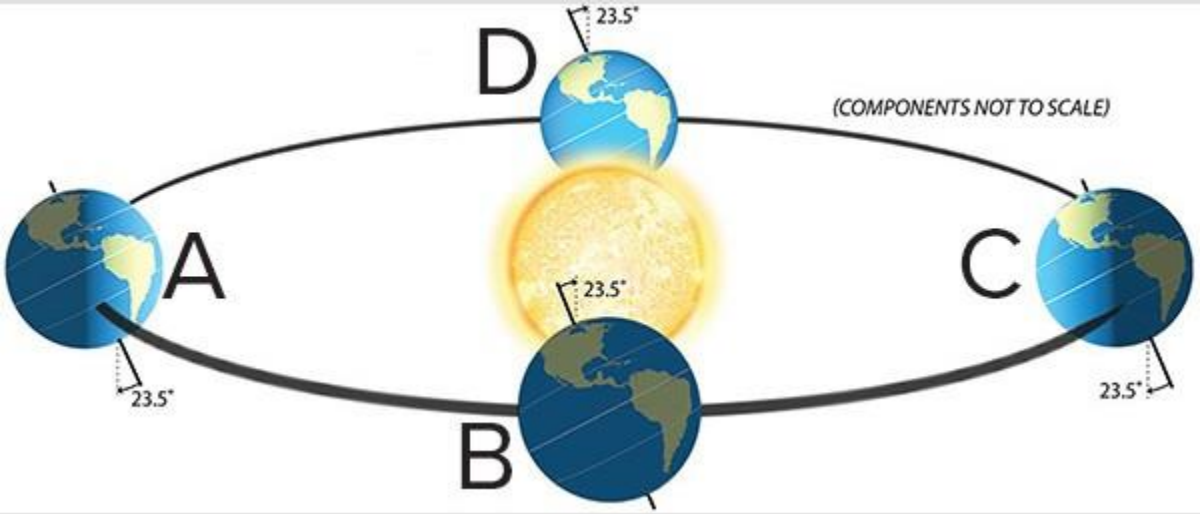

A) A.
B) B.
C) C.
D) D.

Answer: B
Section: 02.09 Why Do We Have Seasons?
Topic: Earth's Seasons
Bloom's: 3. Apply; 4. Analyze
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38) Which of the following letters represents when the sun is directly overhead at the Tropic of Capricorn?




A) A
B) B
C) C
D) D

Answer: A
Section: 02.09 Why Do We Have Seasons?
Topic: Earth's Seasons
Bloom's: 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

39) On June 21, which location will be receiving 24 hours of daylight?
A) Antarctic Circle
B) Tropic of Cancer
C) Tropic of Capricorn
D) Arctic Circle

Answer: D
Section: 02.09 Why Do We Have Seasons?
Topic: Earth's Seasons
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
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Accessibility: Keyboard Navigation


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40) During the June solstice, the circle of illumination completely shades out
A) points south of the Antarctic Circle but completely illuminates points north of the Arctic Circle.
B) points north of the Arctic Circle but completely illuminates points south of the Antarctic Circle.
C) points south of the Arctic Circle but completely illuminates points north of the Antarctic Circle.
D) points north of the Antarctic Circle but completely illuminates points south of the Arctic Circle.

Answer: A
Section: 02.10 What Controls When and Where the Sun Rises and Sets?
Topic: Rising and Setting of the Sun
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

41) On equinox,
A) points north of the Arctic Circle receive 24 hours of daylight
B) tilt is neither inclined toward or away from the sun
C) points south of the Antarctic receive 24 hours of daylight
D) points north of the Arctic Circle and Antarctic Circle receive 24 hours of darkness

Answer: B
Section: 02.10 What Controls When and Where the Sun Rises and Sets?
Topic: Rising and Setting of the Sun
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

42) During December solstice, the
A) entire area poleward of the Antarctic Circle remains out of sunlight.
B) entire area poleward of the Tropic of Capricorn remains out of sunlight.
C) entire area poleward of the Arctic Circle remains out of sunlight.
D) entire area poleward of the Tropic of Cancer remains out of sunlight.

Answer: C
Section: 02.10 What Controls When and Where the Sun Rises and Sets?
Topic: Rising and Setting of the Sun
Bloom's: 3. Apply; 4. Analyze
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43) On what day does the Sun have its highest Sun angle and sets/rises farthest north?
A) Winter solstice
B) Spring equinox
C) Fall equinox
D) Summer solstice

Answer: D
Section: 02.10 What Controls When and Where the Sun Rises and Sets?
Topic: Rising and Setting of the Sun
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

44) The most common component of the atmosphere is
A) nitrogen.
B) carbon dioxide.
C) particulates.
D) aerosols.

Answer: A
Section: 02.11 How Does Insolation Interact with the Atmosphere?
Topic: Components of Atmosphere and Insolation
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

45) Which of the following processes is primarily responsible for the sky's blue color?
A) Absorption
B) Scattering
C) Reflection
D) Filtering

Answer: B
Section: 02.11 How Does Insolation Interact with the Atmosphere?
Topic: Components of Atmosphere and Insolation
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46) Which two layers of the atmosphere experience temperature inversion?
A) Troposphere and stratosphere
B) Stratosphere and mesosphere
C) Thermosphere and stratosphere
D) Thermosphere and mesosphere

Answer: C
Section: 02.11 How Does Insolation Interact with the Atmosphere?
Topic: Components of Atmosphere and Insolation
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

47) The _____ experiences a temperature _____ primarily due to the absorption of _____.
A) troposphere; decrease; ultraviolet rays
B) ozone; increase; gamma rays and x rays
C) stratosphere; decrease; ultraviolet rays
D) thermosphere; increase; gamma rays and x rays

Answer: D
Section: 02.11 How Does Insolation Interact with the Atmosphere?
Topic: Components of Atmosphere and Insolation
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

48) Ozone consists of _____ molecules of oxygen, is found primarily in the _____ and protects us from _____.
A) three, stratosphere; ultraviolet rays
B) two; troposphere; cosmic rays
C) two; stratosphere; x rays and gamma rays
D) two; troposphere; meteors

Answer: A
Section: 02.12 What Is Ozone and Why Is It So Important?
Topic: Ozone: Importance and Distribution Pattern
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49) Ozone can be created by all of the following processes except
A) sunlight acting on hydrocarbons.
B) scattering by UV-B and UV-C radiation.
C) lightning during thunderstorms.
D) UV-C radiation in stratosphere.

Answer: B
Section: 02.12 What Is Ozone and Why Is It So Important?
Topic: Ozone: Importance and Distribution Pattern
Bloom's: 1. Remember; 2. Understand; 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

50) Ozone
A) is formed mainly in the troposphere where it diffuses to the stratosphere.
B) is only formed through natural processes.
C) is destroyed by halogens in chlorofluorocarbons.
D) is only destroyed through natural processes.

Answer: C
Section: 02.12 What Is Ozone and Why Is It So Important?
Topic: Ozone: Importance and Distribution Pattern
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

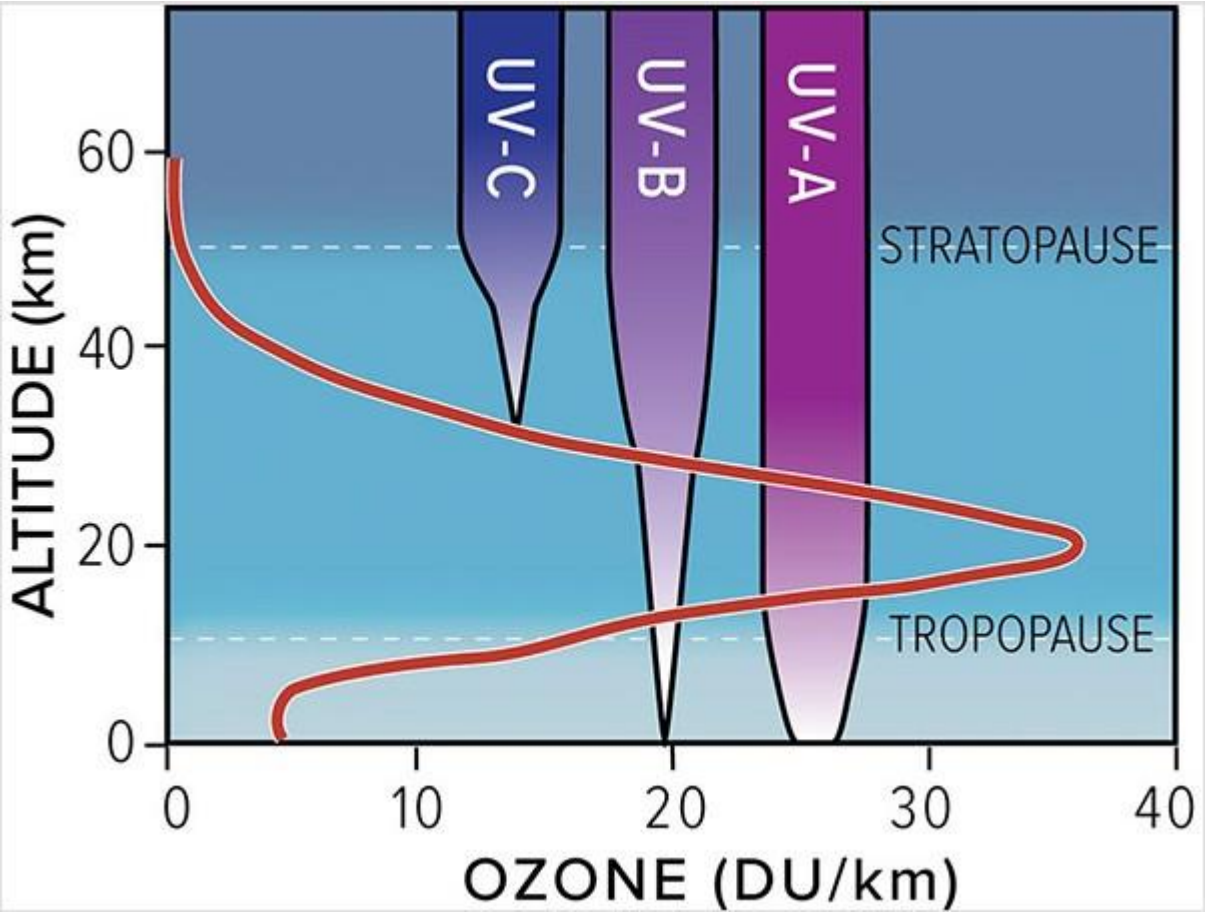
51) Ozone thinning is
A) greatest in the Northern Hemisphere in October.
B) greatest in the Southern Hemisphere in April.
C) evenly distributed for most of the year.
D) more pronounced in Antarctica than the Arctic.

Answer: D
Section: 02.12 What Is Ozone and Why Is It So Important?
Topic: Ozone: Importance and Distribution Pattern
Bloom's: 1. Remember; 2. Understand
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52) The atmosphere is mainly transparent to this form of ultraviolet radiation?



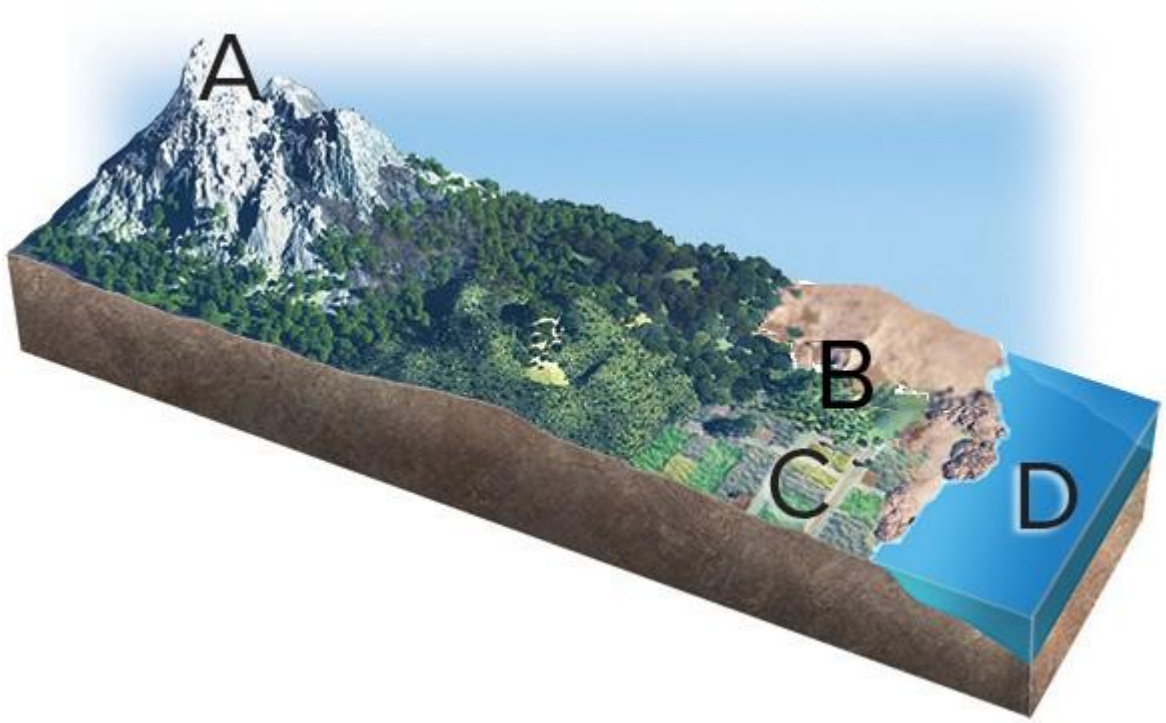

A) UV-C
B) UV-B
C) UV-A
D) The atmosphere is equally transparent to UV-A, UV-B, and UV-C radiation.

Answer: C
Section: 02.13 How Much Insolation Reaches the Surface?
Topic: Insolation Intercepted in the Atmosphere
Bloom's: 3. Apply; 4. Analyze
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Accessibility: Keyboard Navigation


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53) Which of the following surfaces has the lowest albedo?




A) A – fresh snow
B) B – forests
C) C – orchards
D) D – water with a small zenith

Answer: D
Section: 02.13 How Much Insolation Reaches the Surface?
Topic: Insolation Intercepted in the Atmosphere
Bloom's: 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

54) What is the approximate percentage of insolation arriving at the top of the atmosphere that is absorbed by the ground?
A) 20%
B) 40%
C) 50%
D) 70%

Answer: C
Section: 02.13 How Much Insolation Reaches the Surface?
Topic: Insolation Intercepted in the Atmosphere
Bloom's: 1. Remember; 2. Understand
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55) Which of the following correctly tallies the earth's shortwave-radiation balance?
A) planetary albedo – 4%, atmospheric absorption – 31%, surface absorption – 65%
B) planetary albedo – 10 %, atmospheric absorption – 20%, surface absorption – 70%
C) planetary albedo – 31%, atmospheric absorption – 20%, surface absorption – 49%
D) planetary albedo – 70%, atmospheric absorption – 20%, surface absorption – 10%

Answer: C
Section: 02.13 How Much Insolation Reaches the Surface?
Topic: Insolation Intercepted in the Atmosphere
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

56) All of the following is true regarding shortwave radiation that reaches the earth's surface except
A) the earth's atmosphere can be heated by latent heat released through condensation, freezing, and deposition.
B) heating of the atmosphere by insolation is more effective than heating of the atmosphere by land and water.
C) some shortwave radiation is absorbed by ozone molecules in the stratosphere and converted to sensible heat.
D) shortwave radiation is absorbed by the surface and then radiated as longwave radiation where it can later be directed downward
by counterradiation.

Answer: B
Section: 02.14 What Happens to Insolation that Reaches the Surface?
Topic: Insolation Intercepted in the Atmosphere; Earth's Energy Balance
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

57) Which ranges for incoming light and UV radiation would be absorbed and scattered the most?
A) 0.2−0.3 microns
B) 0.3−0.4 microns
C) 0.4−0.5 microns
D) 0.5−0.7 microns

Answer: A
Section: 02.14 What Happens to Insolation that Reaches the Surface?
Topic: Insolation Intercepted in the Atmosphere; Earth's Energy Balance
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58) Most energy entering the earth's atmosphere is between _____ and _____ microns while most of the thermal infrared energy emitted from the earth is between _____ and _____ microns
A) 20; 40; 40; 60
B) 8; 13; 20; 40
C) 0.1; 0.4; 8; 13
D) 0.4; 0.7; 8; 20

Answer: D
Section: 02.14 What Happens to Insolation that Reaches the Surface?
Topic: Insolation Intercepted in the Atmosphere
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

59) The most important greenhouse gas for retaining a variety of outgoing longwave radiation is
A) $CH_4$.
B) $N_2O$.
C) $H_2O$.
D) $CO_2$.

Answer: C
Section: 02.14 What Happens to Insolation that Reaches the Surface?
Topic: Insolation Intercepted in the Atmosphere
Bloom's: 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

60) In regard to the shortwave energy entering the earth's atmosphere, most is
A) used to heat either the atmosphere or the ground surface.
B) lost into space by scattering and reflection.
C) used for sensible heat flux.
D) used for latent heat flux.

Answer: A
Section: 02.15 How Does Earth Maintain an Energy Balance?
Topic: Earth's Energy Balance
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61) All of the following is true regarding the earth's radiation balance except
A) the sun heats the earth's surface more than it does the atmosphere.
B) sensible heat flux is the predominant process for the loss of outgoing longwave radiation.
C) almost half the energy received by the earth's surface is returned to the atmosphere through latent heat flux.
D) sensible and latent heat flux together carry most of the energy stored at the surface into the atmosphere.

Answer: B
Section: 02.15 How Does Earth Maintain an Energy Balance?
Topic: Earth's Energy Balance
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
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62) The earth's radiation balance involves
A) conduction and convection emitting energy directly into space.
B) most energy emitted directly into space with no interaction with the atmosphere.
C) most energy leaving the earth in the form of longwave radiation.
D) energy being radiated only upward into space.

Answer: C
Section: 02.15 How Does Earth Maintain an Energy Balance?
Topic: Earth's Energy Balance
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

63) Without greenhouse gases, earth's temperature would be
A) 68°C.
B) 15°C.
C) 0°C.
D) –18°C.

Answer: D
Section: 02.15 How Does Earth Maintain an Energy Balance?
Topic: Earth's Energy Balance
Bloom's: 1. Remember; 2. Understand
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64) Where do the highest amounts of insolation reach the surface based on more absorption and less scattering?



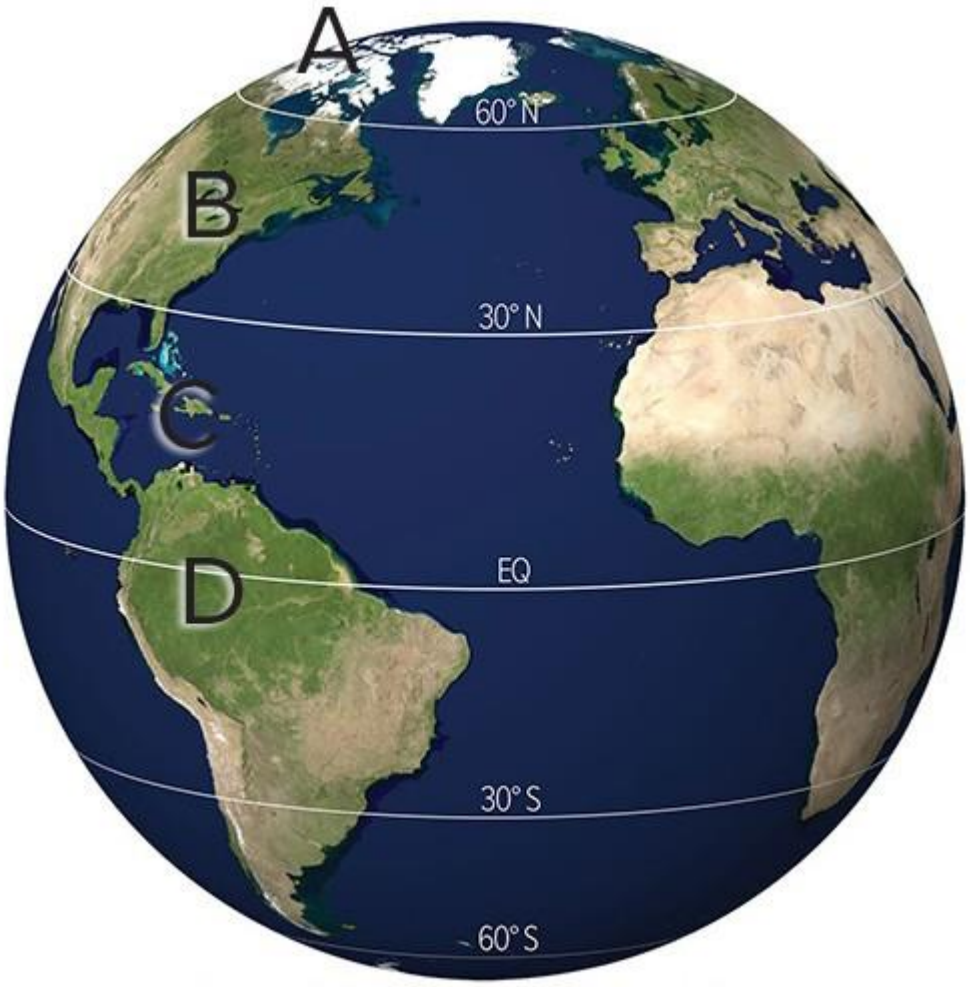

A) A
B) B
C) C
D) D

Answer: D
Section: 02.16 How Do Insolation and Outgoing Radiation Vary Spatially?
Topic: Spatial Variation of Earth's Incoming and Outgoing Radiation
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65) Where is the least and greatest amount of outgoing longwave radiation (OLR) located?




A) A and B
B) A and C
C) A and D
D) C and D

Answer: B
Section: 02.16 How Do Insolation and Outgoing Radiation Vary Spatially?
Topic: Spatial Variation of Earth's Incoming and Outgoing Radiation
Bloom's: 3. Apply; 4. Analyze
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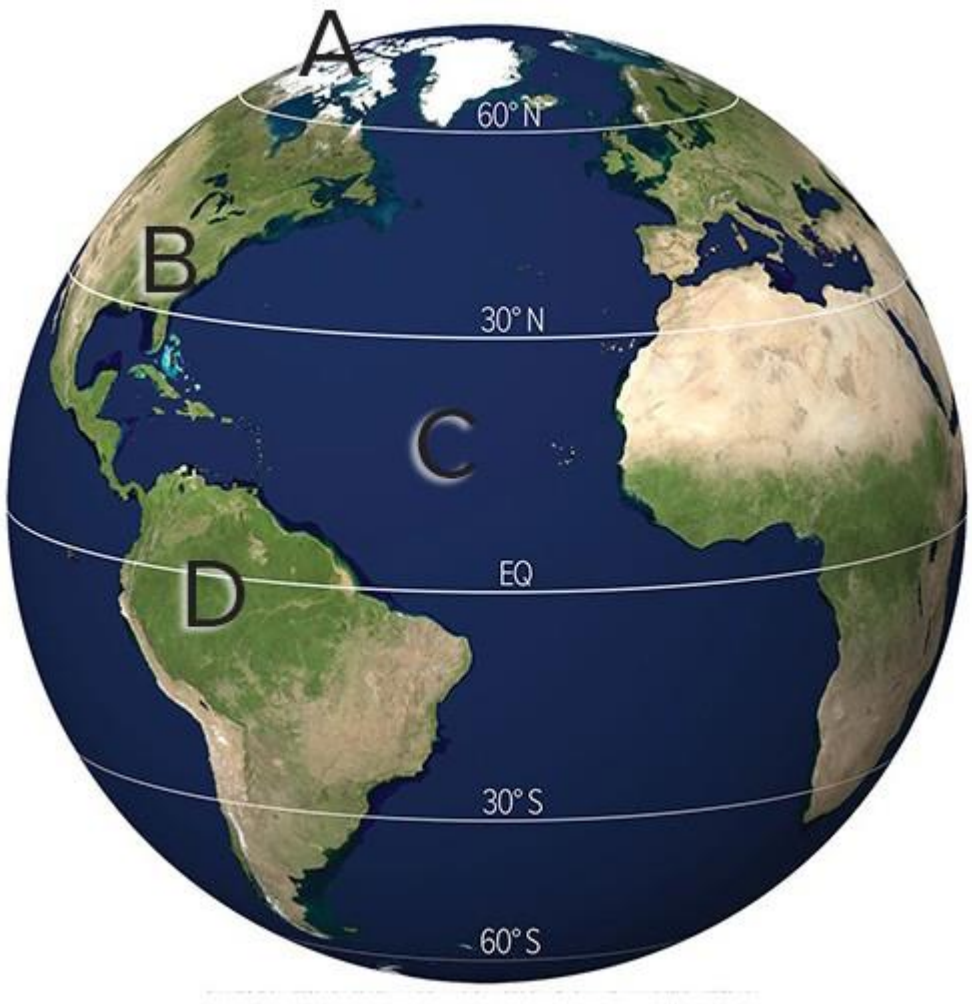
66) All of the following is true in regard to the earth's radiation balance except
A) at around 35°, incoming insolation is roughly balanced with outgoing longwave radiation.
B) poleward of 35° regions emit more outgoing longwave radiation than they receive as insolation.
C) outgoing longwave radiation increases poleward in regular increments, peaking at the poles.
D) equator, tropics, and subtropics receive more insolation than what they emit as outgoing longwave radiation.

Answer: C
Section: 02.16 How Do Insolation and Outgoing Radiation Vary Spatially?
Topic: Spatial Variation of Earth's Incoming and Outgoing Radiation
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67) Which of the following locations would experience a slight radiative energy deficit?




A) A
B) B
C) C
D) D

Answer: B
Section: 02.16 How Do Insolation and Outgoing Radiation Vary Spatially?
Topic: Spatial Variation of Earth's Incoming and Outgoing Radiation
Bloom's: 3. Apply; 4. Analyze
Gradable: automatic
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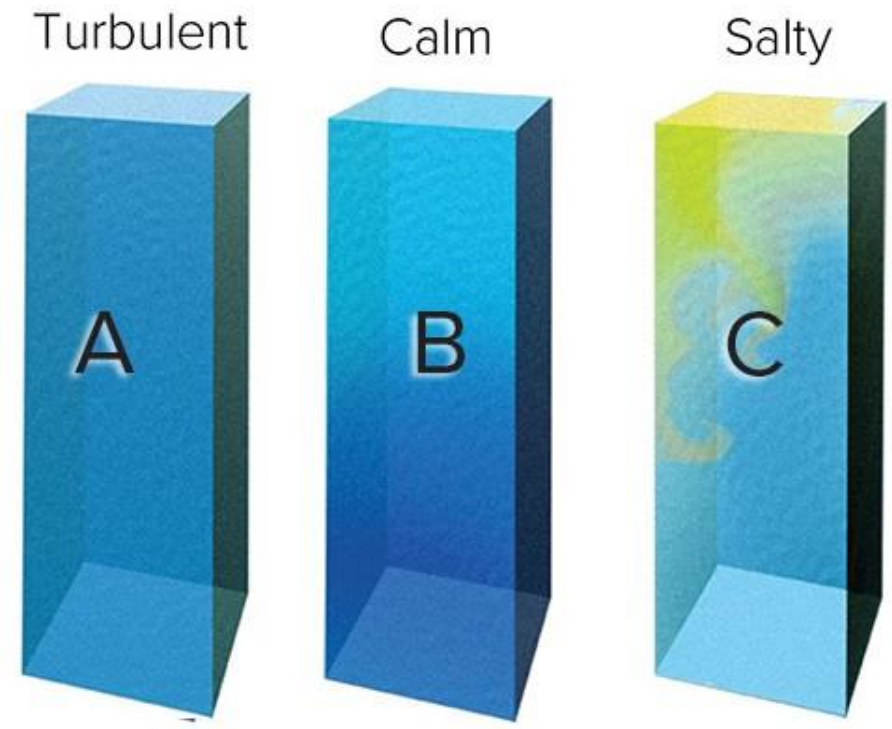

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68) Land heats and cools more rapidly than the ocean because of its
A) lower specific heat when compared to the ocean.
B) ability for land to retain heat better than the ocean.
C) strong mixing through soil horizons on land.
D) great potential for latent heat on land through evaporation.

Answer: A
Section: 02.17 Why Do Temperatures Vary Between Oceans and Continents?
Topic: Major Patterns of Global Temperature and Climate
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
Accessibility: Keyboard Navigation

69) Which of the water columns would experience the greatest temperature differences with depth?




A) A
B) B
C) C

Answer: B
Section: 02.17 Why Do Temperatures Vary Between Oceans and Continents?
Topic: Major Patterns of Global Temperature and Climate
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70) Oceans heat and cool more slowly than land because of
A) oceans' lack of transparency dampens temperature changes.
B) great amounts of latent heat available to directly warm ocean water.
C) oceans' high specific heat dampens temperature changes.
D) lack of mixing through the water column.

Answer: C
Section: 02.17 Why Do Temperatures Vary Between Oceans and Continents?
Topic: Major Patterns of Global Temperature and Climate
Bloom's: 1. Remember; 2. Understand
Gradable: automatic
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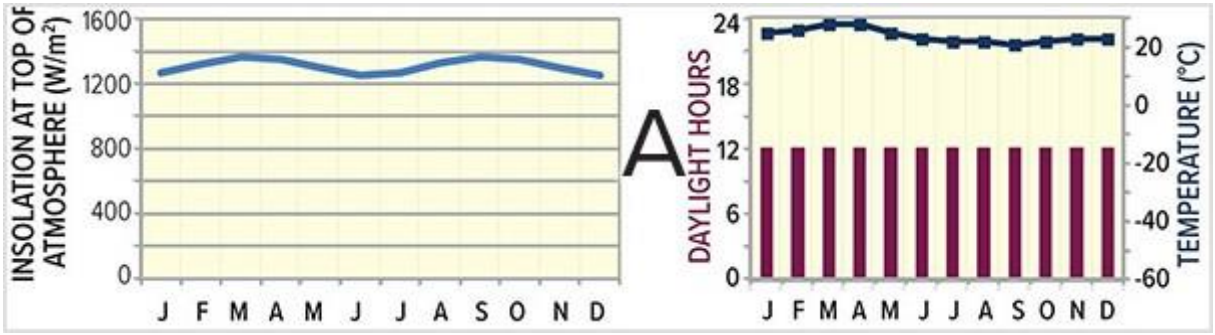
71) Land heats and cools more rapidly than oceans because of
A) land's great transparency encourages temperature changes.
B) abundance of latent heat available to directly warm land.
C) land's high specific heat encourages temperature changes.
D) lack of mixing in soil or rock layers.

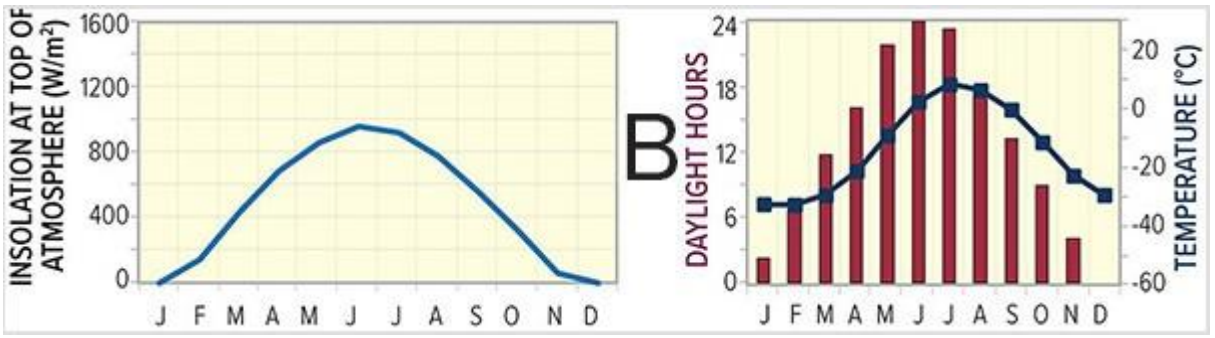
Answer: D
Section: 02.17 Why Do Temperatures Vary Between Oceans and Continents?
Topic: Major Patterns of Global Temperature and Climate
Bloom's: 3. Apply; 4. Analyze
Gradable: automatic
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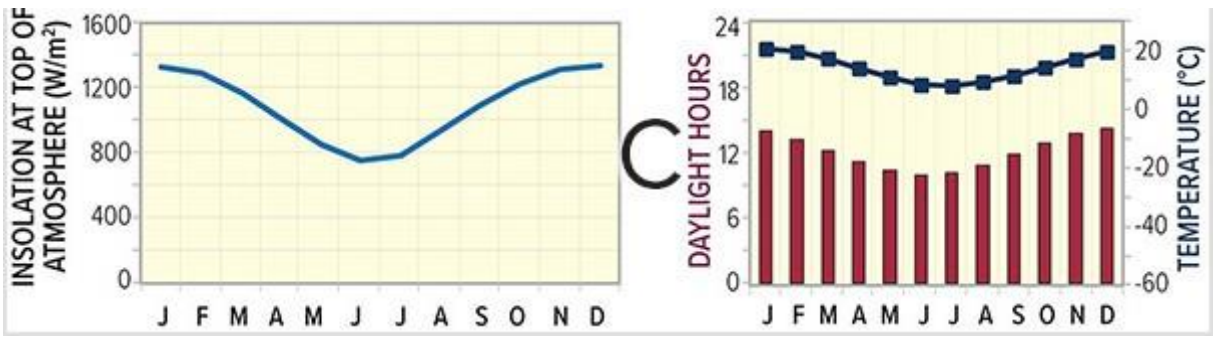

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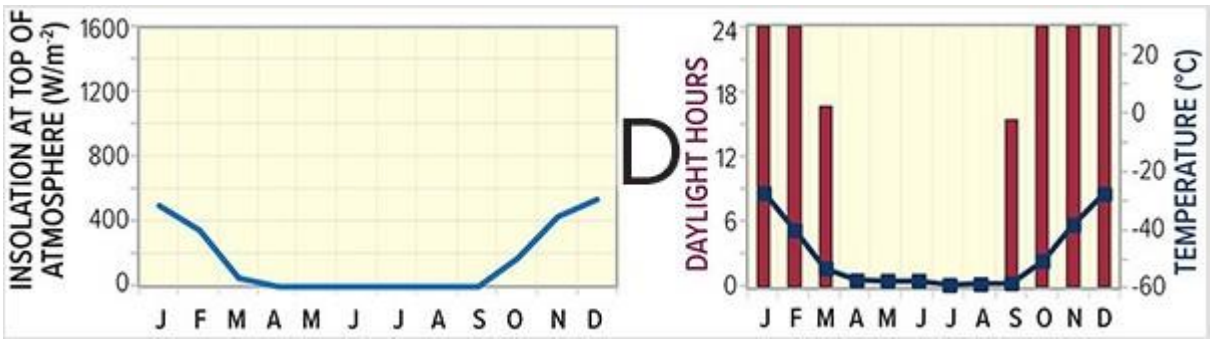
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Base the following questions on the climographs and insolation graphs below. Letters represent a location where the climograph and insolation graph were recorded.





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72) Which location is found at the highest latitude?
A) A
B) B
C) C
D) D

Answer: D
Section: 02.18 Connections: How Are Variations in Insolation Expressed between the North and South Poles?
Topic: Global Variations in Insolation
Bloom's: 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

73) Which location is found at the lowest latitude?
A) A
B) B
C) C
D) D

Answer: A
Section: 02.18 Connections: How Are Variations in Insolation Expressed between the North and South Poles?
Topic: Global Variations in Insolation
Bloom's: 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

74) Which location is found in the midlatitudes?
A) A
B) B
C) C
D) D

Answer: C
Section: 02.18 Connections: How Are Variations in Insolation Expressed between the North and South Poles?
Topic: Global Variations in Insolation
Bloom's: 3. Apply; 4. Analyze
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75) Which location has the longest period of continuous darkness?
A) A
B) B
C) C
D) D

Answer: D
Section: 02.18 Connections: How Are Variations in Insolation Expressed between the North and South Poles?
Topic: Global Variations in Insolation
Bloom's: 3. Apply; 4. Analyze
Gradable: automatic
Accessibility: Keyboard Navigation

76) Which of the following was NOT discussed in the opening two-page spread of the Energy and Matter chapter?
A) Sunlight
B) Tropical regions
C) Clouds
D) Seasons
E) All of these choices are correct

Answer: E
Section: 02.00 Introduction
Topic: Energy and Matter in the Atmosphere
Bloom's: 1. Remember
Gradable: automatic
Accessibility: Keyboard Navigation

77) In the Chapter 2 Investigation (Evaluating Solar Energy), which of the following is the most important factor to consider?
A) Whether the site was in the Northern Hemisphere or Southern Hemisphere
B) The latitude of the sites
C) The longitude of the sites
D) Which time zone a site is in

Answer: B
Section: 02.19 Investigation: How Do We Evaluate Sites for Solar-Energy Generation?
Topic: Evaluate: Sites for Solar-Energy Generation
Bloom's: 2. Understand
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78) In the Chapter 2 Investigation (Evaluating Solar Energy), which site had the most limited potential for solar energy generation?
A) Galápagos
B) Macapá
C) La Serena
D) Mar Chiquita
E) Ushuaia

Answer: E
Section: 02.19 Investigation: How Do We Evaluate Sites for Solar-Energy Generation?
Topic: Evaluate: Sites for Solar-Energy Generation
Bloom's: 1. Remember
Gradable: automatic
Accessibility: Keyboard Navigation

79) In the Chapter 2 Investigation (Evaluating Solar Energy), which of the following factors did you evaluate when considering the suitability of a site for solar energy generation?
A) Its location with respect to the equator
B) Sun angle
C) The percentage of solar energy available
D) Outgoing longwave radiation flux
E) All of these choices are correct

Answer: E
Section: 02.19 Investigation: How Do We Evaluate Sites for Solar-Energy Generation?
Topic: Evaluate: Sites for Solar-Energy Generation
Bloom's: 1. Remember
Gradable: automatic
Accessibility: Keyboard Navigation

80) In the Chapter 2 Investigation (Evaluating Solar Energy), which of the following is true about the downward shortwave radiation flux near South America?
A) It was relatively constant as a function of latitude
B) It was relatively constant as a function of longitude
C) It was affected by ocean currents and topography
D) It did not vary much from place to place

Answer: C
Section: 02.19 Investigation: How Do We Evaluate Sites for Solar-Energy Generation?
Topic: Evaluate: Sites for Solar-Energy Generation
Bloom's: 2. Understand
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81) Based on the Chapter 2 Investigation (Evaluating Solar Energy), how does the percentage of solar energy available vary as a function of sun angle?
A) It does not vary as a function of sun angle
B) The percentage increases as sun angle increases
C) The percentage decreases as sun angle increases
D) The percentage is high at low sun angles

Answer: B
Section: 02.19 Investigation: How Do We Evaluate Sites for Solar-Energy Generation?
Topic: Evaluate: Sites for Solar-Energy Generation
Bloom's: 2. Understand
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