BRITISH COLUMBIA
The Best Place on Earth

Science 10

Examination Booklet
2011/12 Sample Exam
Exam A

DO NOT OPEN ANY EXAMINATION MATERIALS UNTIL INSTRUCTED TO DO SO.

Examination Instructions

1. On your Answer Sheet, fill in the bubble (Form A, B, C, D, E, F, G or H) that corresponds to the letter on this Examination Booklet.
2. Use a pencil to fill in bubbles when answering questions on your Answer Sheet.
3. When the examination begins, remove the data pages located in the centre of this booklet.
4. Read the Examination Rules on the back of this booklet.

Contents: 42 pages
80 multiple-choice questions

Examination: 2 hours
Additional Time Permitted: 60 minutes

Suggested Time: 120 minutes

INSTRUCTIONS:	For each question, select the best answer and record your choice on the **Answer Sheet** provided. Using a pencil, completely fill in the bubble that has the letter corresponding to your answer.

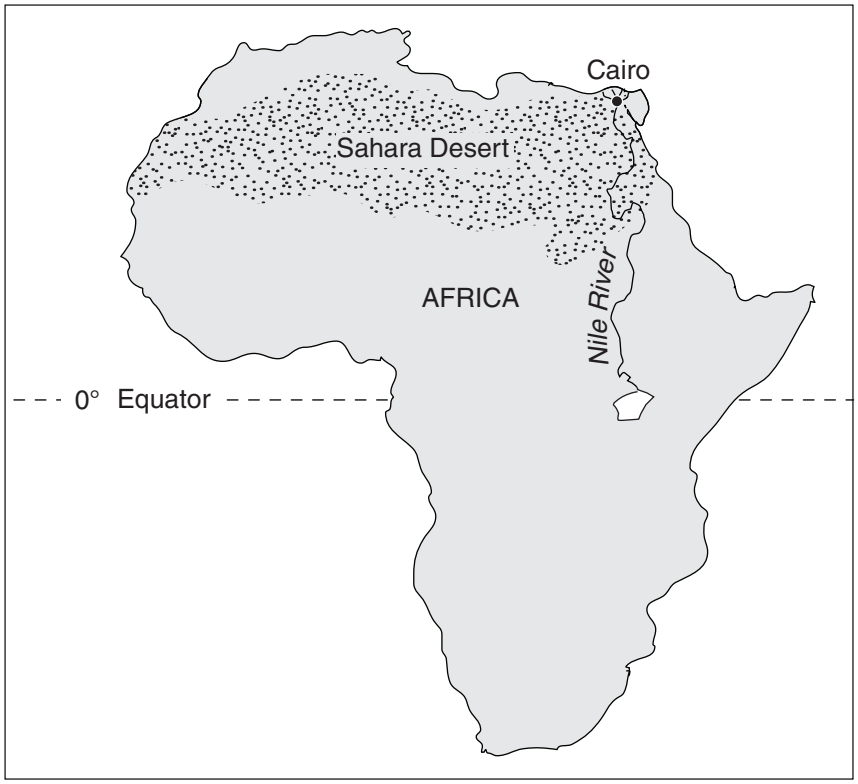
You have **Examination Booklet Form A**. In the box above #1 on your **Answer Sheet**, fill in the bubble as follows.

Exam Booklet Form/ Cahier d'examen	A	B	C	D	E	F	G	H
	●	○	○	○	○	○	○	○

LIFE SCIENCE — SUSTAINABILITY OF ECOSYSTEMS

REFER TO DATA PAGES	**For this section of the examination, refer to:** • **Names, Formulae and Charges of Some Polyatomic Ions on Data Page 5** • **The Carbon Cycle on Data Page 8** • **The Phosphorus Cycle on Data Page 9** • **Biomes of the World on Data Page 10** • **The Nitrogen Cycle on Data Page 11**

Use the following diagram of Africa to answer question 1.



1. Which of the following locations is an example of a biome?

   A. the Equator
   B. the Nile River
   C. the city of Cairo
   D. the Sahara Desert

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2. Which of the following features is a characteristic of the boreal forest biome?

   A. coniferous trees
   B. a permafrost layer
   C. a constant temperature throughout the year
   D. annual rainfall of more than 250 cm per year

3. An ecologist wants to gather information about a stream along a mountainside. Which of the following factors is biotic?

   A. water flow rate
   B. mineral deposits
   C. water temperature
   D. variety of life forms

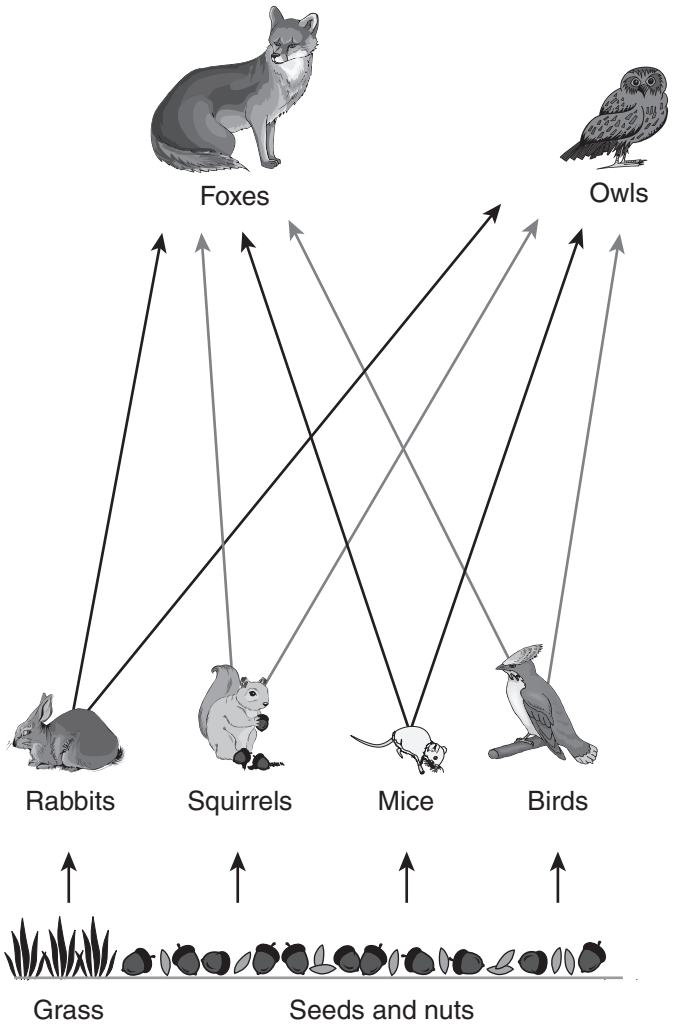
Use the following image of a honeybee pollinating a flower as it gathers food to answer question 4.

From "America's Beekeepers: Hives," May 1993, *National Geographic* magazine

4. What relationship exists between the honeybee and the flower?

   A. predation
   B. parasitism
   C. mutualism
   D. commensalism

Use the following illustration to answer question 5.



5. Which of the following changes is likely to occur if a large number of squirrels are removed from the area?

   A. an increase in the fox population
   B. an increase in the owl population
   C. a decrease in the plant population
   D. a decrease in the rabbit population

6. What type of organism breaks down waste?

   A. predators
   B. producers
   C. consumers
   D. decomposers

7. Which of the following carbon stores contains the greatest amount of carbon in gigatonnes?

   A. marine life
   B. oil and gas deposits
   C. organic matter in soil
   D. marine sediments and sedimentary rocks

8. Which of the following elements have these three characteristics in common?

   - dissolved in water
   - stored in sediments
   - present in the atmosphere

   A. carbon and nitrogen
   B. carbon and phosphorus
   C. nitrogen and phosphorus
   D. carbon, nitrogen and phosphorus

9. Which of the following effects do nitrogen fixation and the decomposition of organic wastes have in common?

   A. Both enrich the soil.
   B. Both are part of the carbon cycle.
   C. Both decrease levels of nitrogen in the soil.
   D. Both are responsible for increased levels of carbon dioxide in the atmosphere.

10. The distribution of temperate rainforests is best explained by

A. warm, moist air near the equator.
B. intense solar radiation causing arid conditions.
C. the presence of large numbers of small herbivores.
D. the presence of coastal mountains causing high annual precipitation.

11. In which of the following locations is the annual precipitation the greatest?

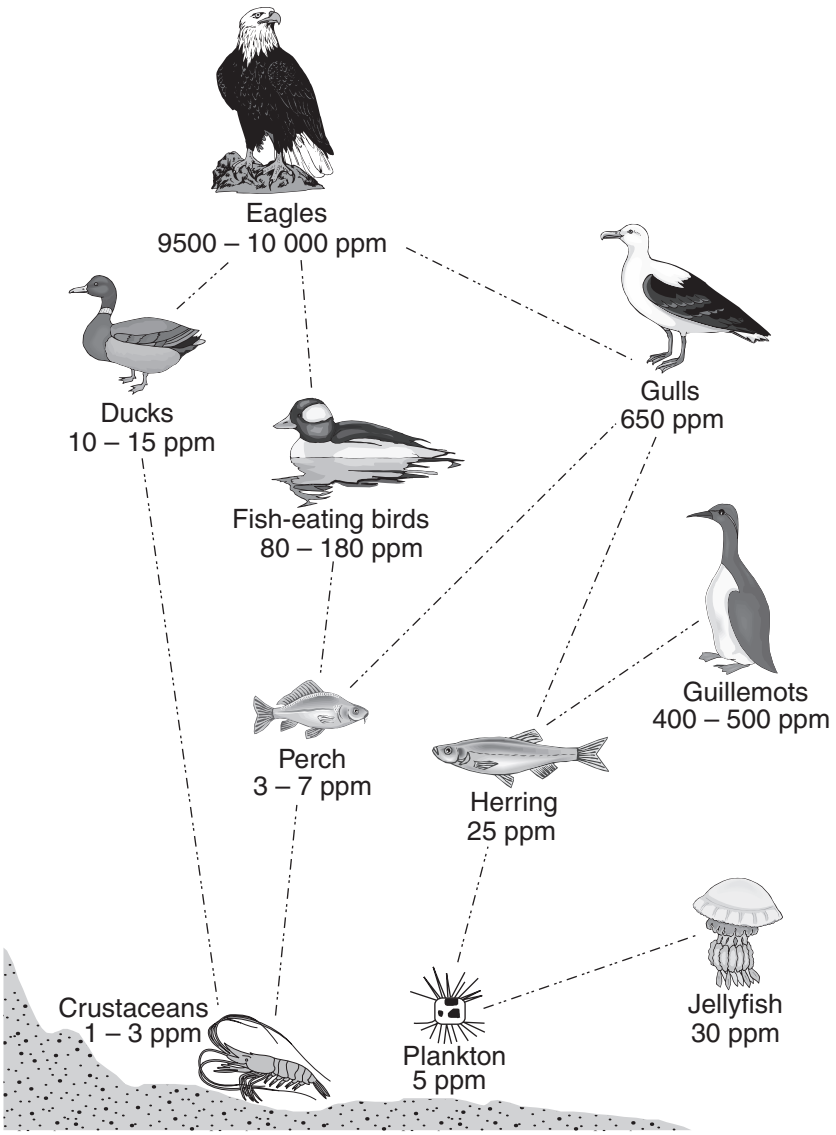
A. A

B. B

C. C

D. D

Use the following diagram of PCB levels in a community to answer question 12.



12. Which statement best explains the relatively high level of PCBs in eagles compared to those of guillemots?

    A. Both species are carnivores.
    B. Guillemots eat more herring than eagles do.
    C. Levels of PCBs are higher in marine environments.
    D. Eagles occupy a higher trophic level than guillemots.

Use the following article to answer question 13.

"Sorry, no eel pie today"

Eel pie, jellied eels, eel Florentine. The eels used in these dishes used to be abundant in Europe's ponds and streams but they may soon disappear.

The problem is that it only takes small amounts of polychlorinated biphenyls (PCBs), a common chemical pollutant, to kill eel embryos. Most European eels already have enough PCBs in them to stop them from reproducing.

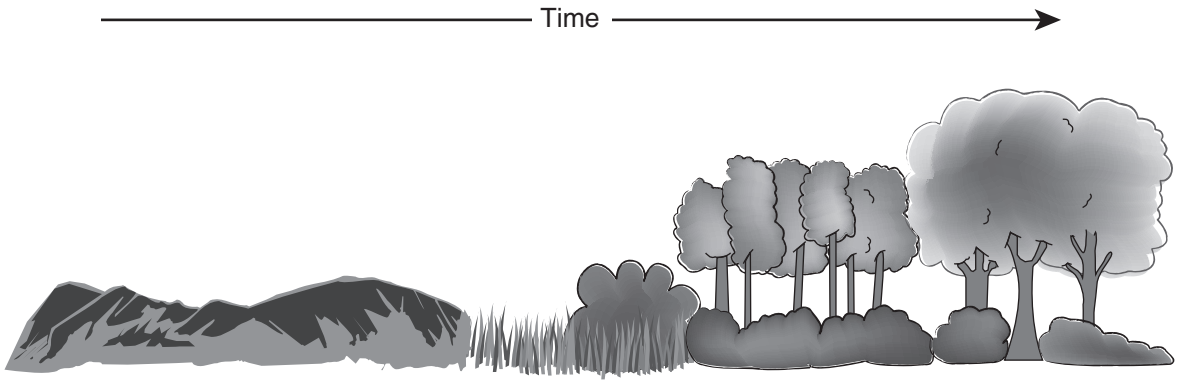
Overfishing was previously thought to have been the cause of the crash in the eel population. However, now that spawning has been observed in captivity, it has been found that a mother eel transfers PCBs from her body fat to her eggs. As a result, eel embryos die even when their mothers have PCB levels considered safe for human consumption.

Adapted from *New Scientist Print Edition,* March 11, 2006.

13. Which of the following factors is responsible for the observed decrease in the European eel population?

    A. overfishing
    B. loss of spawning grounds
    C. PCB concentrations in eel eggs
    D. increased predation on eel eggs

Use the following diagram of change over time to answer question 14.

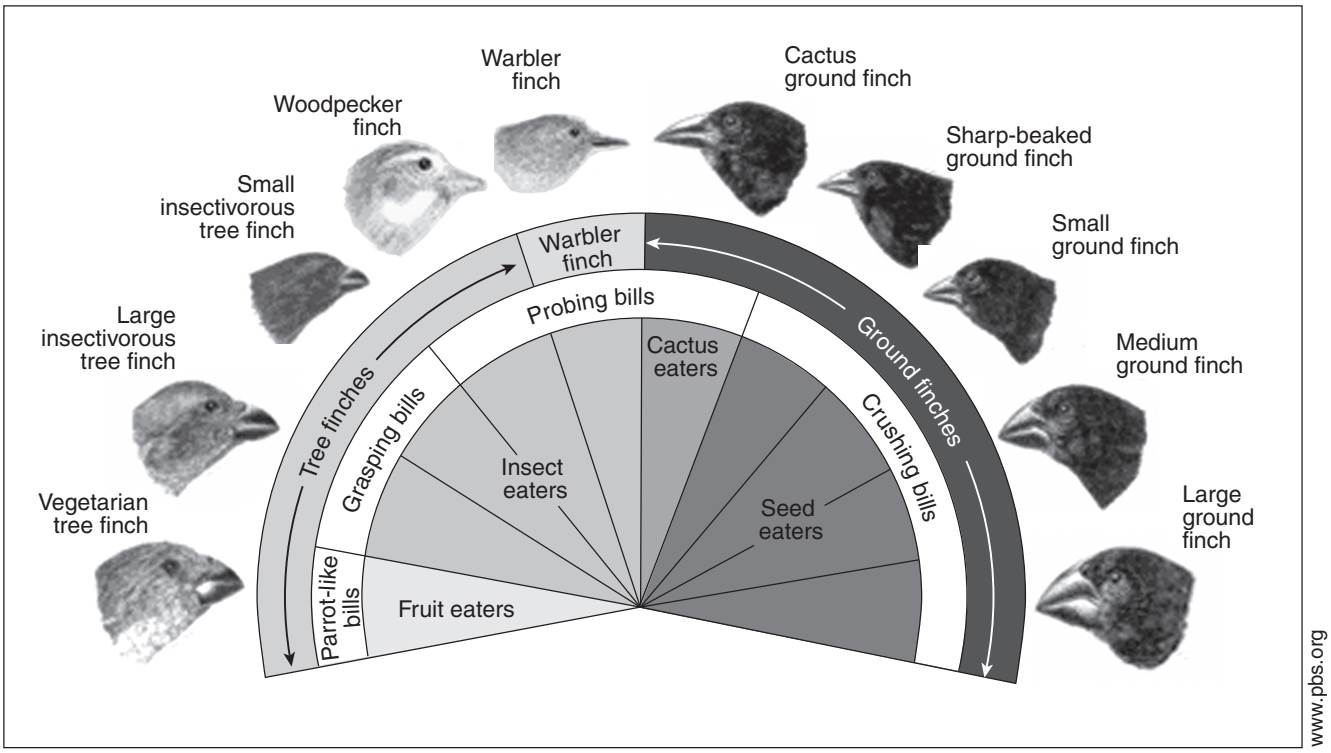


www.umaine.edu

14. The diagram illustrates

    A. biodegradation.
    B. natural selection.
    C. adaptive radiation.
    D. ecological succession

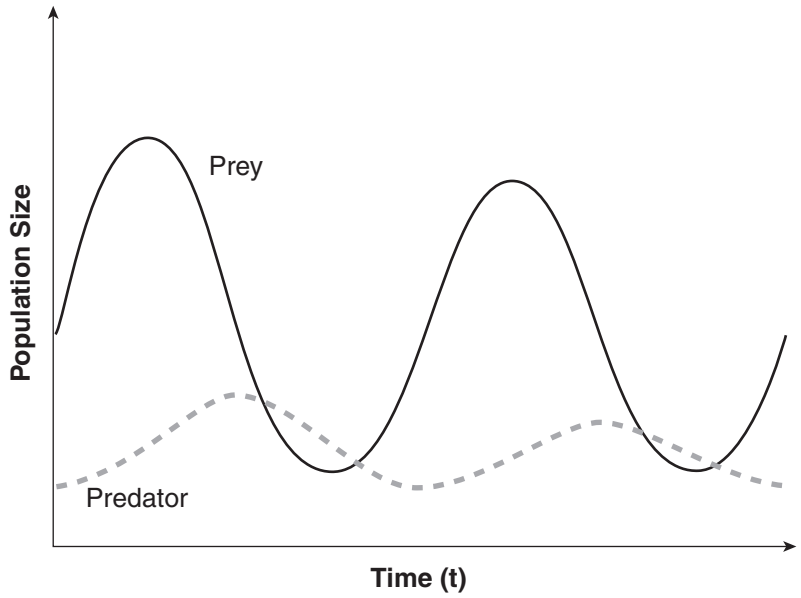
Use the following diagram to answer question 15.



15. The finches on the Galapagos Islands are different from island to island because of their different

A. ages.
B. sizes.
C. predators.
D. food sources.

Use the following graph showing the relationship between predator and prey to answer questions 16 and 17.



16. The increase in the predator population size lags behind the increase in the prey population size.

    A. The statement is supported by the graph.
    B. The statement is refuted by the graph.
    C. The statement is neither supported nor refuted by the graph.

17. Which of the following situations contributes to the shape of the graph?

I	When the prey population is small, the predators have more difficulty capturing food and their population starts to decline.
II	In response to predator decline, the prey population starts to increase.
III	Both predator and prey populations increase until the increased number of predators causes the prey population to decline.
IV	As the predator population increases and eats more prey, the reduced prey population will lead to starvation among predators.

    A. I and II only
    B. I and IV only
    C. II and III only
    D. I, II, III and IV

Use the following article to answer question 18.

Were Volcanoes the Crucible of Life?

www.arenal.net

New research by scientists shows that volcanoes produce large quantities of biologically available nitrogen.

Some bacteria and fungi have evolved the ability to fix nitrogen themselves, and these biological processes, along with mankind's activities (such as the burning of fossil fuels), are the major sources of fixed nitrogen in present-day ecosystems.

Where did the nitrogen that enabled life to evolve come from in the first place? Previously, lightning and asteroid impacts have been suggested as the major fixed nitrogen sources in the Earth's atmosphere of about three billion years ago; volcanism had not previously been thought of as an important process.

New work shows that the high temperatures associated with volcanic activity might also have played an important role in helping to fix nitrogen. Higher levels of fixed nitrogen were found in volcanic plumes than in the surrounding air.

This shows that the heat from volcanoes allows the nitrogen and oxygen in the atmosphere to react together to form fixed nitrogen. The results suggest that volcanism may have been at least as important as lightning and asteroid impacts in converting atmospheric nitrogen into fixed nitrogen on the early Earth.

Adapted from www.admin.cam.ac.uk/news/press/dpp/2004100402, October 4, 2004.

18. Which of the following statements describes nitrogen fixation in an active volcanic environment?

    A. Heat from the volcano provides the energy to fix nitrogen.
    B. Plants growing on cooling ashflows have the ability to fix nitrogen.
    C. The burning of organic material on the slopes of volcanoes fixes nitrogen.
    D. Bacteria and fungi on the flanks of the volcano have the ability to fix nitrogen.

19. Which of the following natural phenomena is most likely to cause widespread disease in human populations?

A. fire
B. flooding
C. extinction
D. timber pest infestation

20. Which of the following statements explains why foreign species may be successful in a new ecosystem?

A. Predators of foreign species are absent.
B. Foreign species prevent natural selection.
C. Native species become parasitic on foreign species.
D. Foreign species cause adaptive radiation of native species.

Use the following article to answer questions 21 and 22.

In March of 1989, the *Exxon Valdez* oil tanker spilled millions of litres of crude oil into the waters of Prince William Sound in Alaska. The spill killed many organisms, including an estimated 250 000 seabirds, 2800 sea otters, 300 harbour seals, 250 bald eagles and as many as 22 killer whales. Billions of salmon and herring eggs, as well as tidal plants and animals, were also smothered in oil.

Most of the fish and wildlife species that were affected have not fully recovered. Of the many species affected by the spill, only the river otter and bald eagle have returned to previous levels.

Killer whales, harbour seals and common loons have shown little sign of recovery in the area. Several other species, including sea otters and Pacific herring have made significant progress toward recovery, but are still not at the levels seen before the incident.

21. Which of the following organisms recovered most quickly after the oil spill?

    A. harbour seals and salmon
    B. river otters and bald eagles
    C. killer whales and bald eagles
    D. sea otters and Pacific herring

22. Which of the following statements describes the initial impact of the oil spill on the ecosystem?

    A. Several animal species became extinct.
    B. Adaptive radiation occurred in the seashore community.
    C. There was an increase in the rate of ecological succession.
    D. There was a reduction in the population of certain organisms.

REFER TO DATA PAGES	For this section of the examination, refer to: • Periodic Table of the Elements on Data Page 2 • pH Scale on Data Page 3 • Alphabetical Listing of the Elements on Data Page 4 • Names, Formulae and Charges of Some Polyatomic Ions, Names and Formulae of Common Acids, and Prefixes on Data Page 5

23. Which of the following formulae represents an ionic compound?

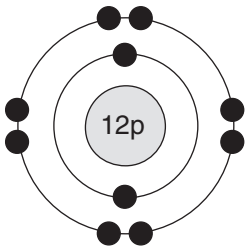
A. H_2

B. NH_3

C. CO_3^{2-}

D. $K_2Cr_2O_7$

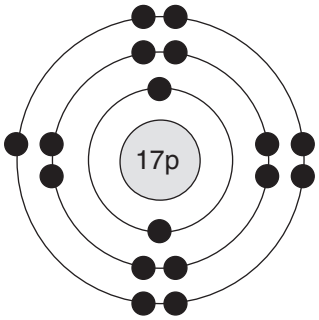
Use the following Bohr model diagram to answer question 24.



24. This diagram represents a

A. neon atom.
B. carbon ion.
C. magnesium ion.
D. magnesium atom.

Use the following Bohr model diagram to answer question 25.



25. How many valence electrons are illustrated?

A. 1
B. 7
C. 16
D. 17

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26. How many unpaired electrons are present in a nitrogen atom?

A. 2
B. 3
C. 5
D. 7

Use the following Lewis diagram to answer questions 27 and 28.

X and **Z** represent unknown elements from the periodic table.

27. The Lewis diagram **X:X** represents

    A. a noble gas.
    B. an alkali metal.
    C. a diatomic molecule.
    D. an alkaline earth metal.

28. Which of the following products could be formed from the two molecules represented above?

    A. water
    B. neon gas
    C. carbon dioxide
    D. hydrogen fluoride

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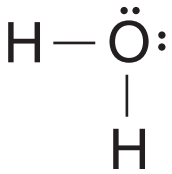
29. How many lone pairs and bonding pairs of electrons surround the central oxygen atom in a Lewis diagram of water?



	Lone Pairs	Bonding Pairs
A.	1	1
B.	1	2
C.	2	1
D.	2	2

30. Coffee has a pH of 5. Which of the following sets of colours is correct for each pH indicator when a small amount of black coffee is tested?

	Indigo Carmine	Methyl Orange	Bromthymol Blue
A.	blue	yellow	yellow
B.	blue	yellow	blue
C.	yellow	red	blue
D.	yellow	red	yellow

Use the following information to answer question 31.

A student is given four test tubes. He is asked to determine whether the substance in each test tube is acidic, basic or neutral. He makes the following observations:

pH Indicator	Test Tube 1	Test Tube 2	Test Tube 3	Test Tube 4
red litmus	no colour change	turns blue	no colour change	no colour change
blue litmus	turns red	no colour change	no colour change	turns red
phenolphthalein	colourless	turns pink	colourless	colourless

31. Which of the following conclusions is supported by the observations?

A. Test Tube 1 is basic.
B. Test Tube 2 is neutral.
C. Test Tube 3 is acidic.
D. Test Tube 4 is acidic.

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32. Which of the following substances is most likely to cause blue litmus paper to turn red?

A. soap
B. table salt
C. lemon juice
D. oven cleaner

Use the following information to answer question 33.

Sulfuric Acid Spill Threatens China's 900-Year-Old Grand Canal

Beijing—Chinese officials attempted to head off an environmental disaster after a ship capsized, dumping 220 tons of sulfuric acid into the country's 900-year-old Grand Canal. Three hundred tons of liquid alkali were poured into the water to neutralize the acid, state media reported.

Adapted from *The Vancouver Sun*, Saturday, August 5, 2006.

33. The "liquid alkali" that was spilled into the Grand Canal could be

A. HCl.
B. H_2O.
C. $NaCl$.
D. $NaOH$.

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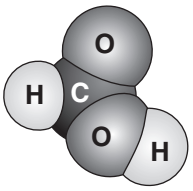
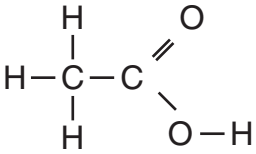
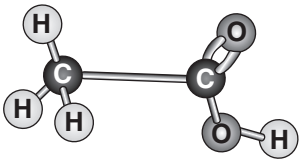
34. Identify the name of the ionic compound Na_2O.

A. sodium oxide
B. sodium(I) oxide
C. sodium(II) oxide
D. disodium monoxide

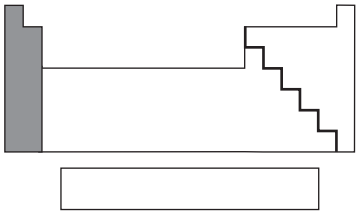
35. Which of the following models represents acetic acid?

I	CH_3COOH
II	
III	
IV	

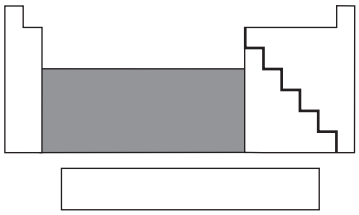
A. I only
B. I and II only
C. I, III and IV only
D. II, III and IV only

36. Which periodic table outline shows a shaded region indicating elements that form acidic oxides?

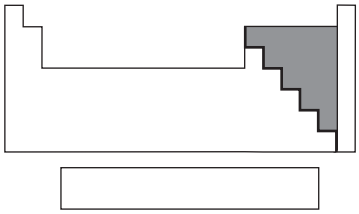
A.



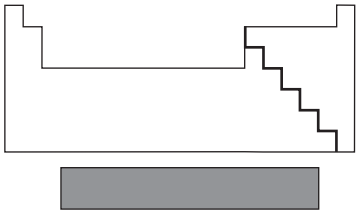
B.



C.



D.



37. How many atoms of each of the following elements are present in the compound copper(II) phosphate?

	Copper	Phosphorous	Oxygen
A.	1	1	4
B.	2	1	4
C.	3	2	0
D.	3	2	8

38. What is the name of the compound MnS_2 ?

A. manganese sulfide
B. magnesium sulfide
C. manganese(II) sulfide
D. manganese(IV) sulfide

39. What is the chemical formula for aluminium bicarbonate?

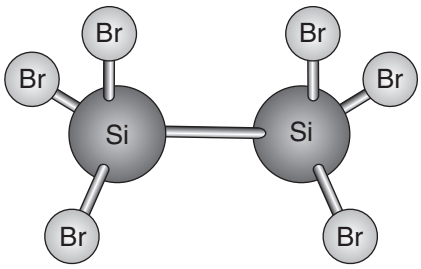
A. $AlHCO_3$

B. Al_3HCO_3

C. $Al_2(CO_3)_3$

D. $Al(HCO_3)_3$

Use the following model to answer question 40.



40. What is the name of the compound represented?

A. silicon bromide
B. silicon(II) bromide
C. silicon hexabromide
D. disilicon hexabromide

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41. What is the chemical formula for dinitrogen pentoxide?

A. NO

B. N_2O_5

C. N_5O_2

D. $(N_2O)_5$

42. Which of the following compounds is inorganic?

A. NO_2

B. C_3H_8

C. $C_6H_{12}O_6$

D. CH_3COOH

43. What is the coefficient needed in front of O_2 in order to balance the following equation?

$$\_\_\_\ NH_4ClO_4 \rightarrow \_\_\_\ N_2 + \_\_\_\ Cl_2 + \_\_\_\ H_2O + \_\_\_\ O_2$$

A. 1
B. 2
C. 3
D. 4

44. What type of reaction would be expected when sodium phosphate reacts with calcium chloride?

A. synthesis
B. combustion
C. decomposition
D. double replacement

45. Solid zinc reacts with sulfuric acid to produce hydrogen gas. What is the other product that would result from this reaction?

$$Zn + H_2SO_4 \rightarrow H_2 + \_\_\_$$

A. O_2

B. H_2S

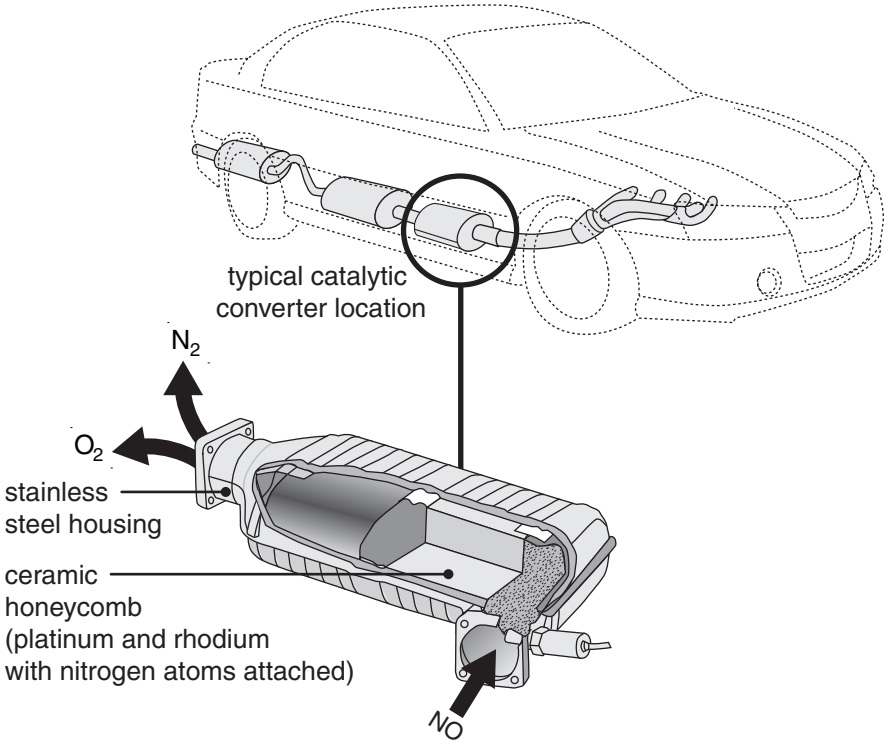
C. H_2O

D. $ZnSO_4$

Use the following article to answer question 46.

Catalytic Converters

The catalytic converter in a car reduces nitrogen oxide pollution. The converter has a ceramic honeycomb structure plated with platinum and rhodium and is located in the exhaust system close enough to the engine to stay warm. The honeycomb structure provides a large surface area over which the exhaust gases can react. As the gases from the car engine are channelled through the warm honeycomb, the metals remove the oxygen from the nitrogen monoxide (NO) molecules and the oxygen atoms form O_2 molecules. The nitrogen atoms that are attached to the metal combine with others, forming N_2. The overall reaction is shown in the equation $2NO \rightarrow O_2 + N_2$.



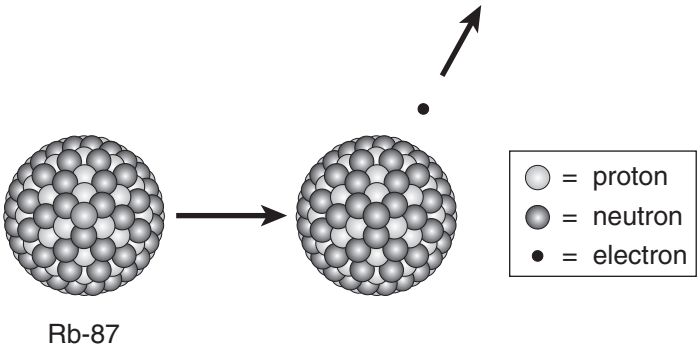
46. Which of the following factors is used to speed up this chemical reaction?

I	presence of a catalyst
II	increased temperature
III	increased surface area

A. I only
B. I and II only
C. II and III only
D. I, II and III

REFER TO DATA PAGES	For this section of the examination, refer to: • Periodic Table of the Elements on Data Page 2 • Alphabetical Listing of the Elements on Data Page 4 • Common Isotope Pairs Chart and Radioactivity Symbols on Data Page 12

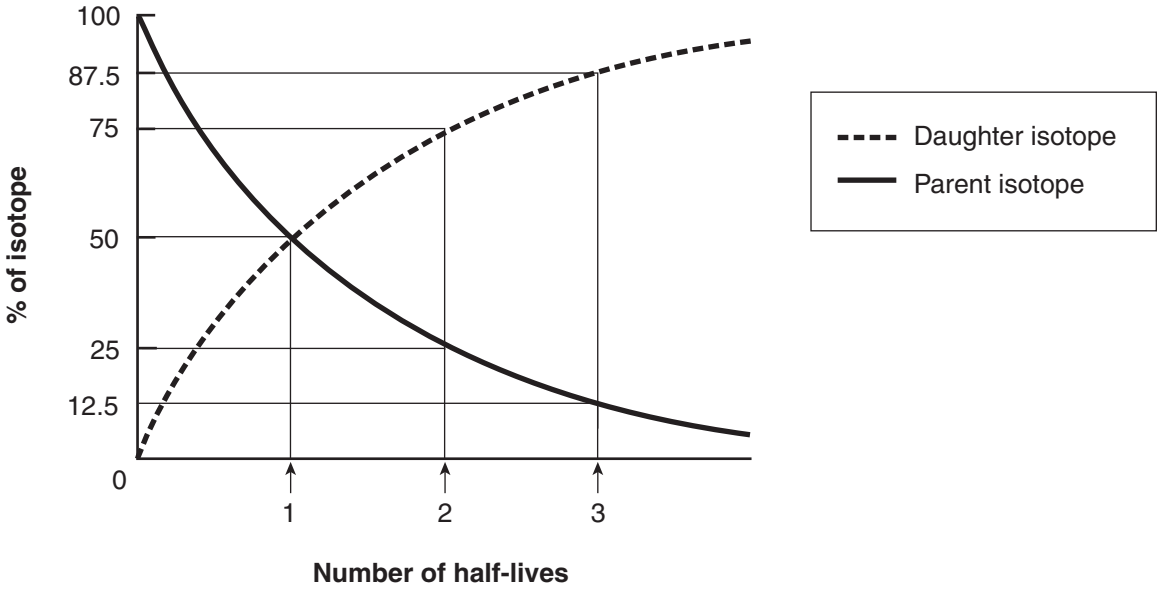
Use the following illustration showing the nucleus of an Rb-87 atom to answer question 47.



47. What process is illustrated above?

A. a nuclear reaction producing a beta particle
B. a nuclear reaction producing an alpha particle
C. a chemical change producing a hydrogen atom
D. a nuclear fusion reaction producing two new elements

Use the following graph to answer question 48.



48. What is the percentage of the parent isotope present after two half-lives?

A. 12.5%
B. 25%
C. 50%
D. 75%

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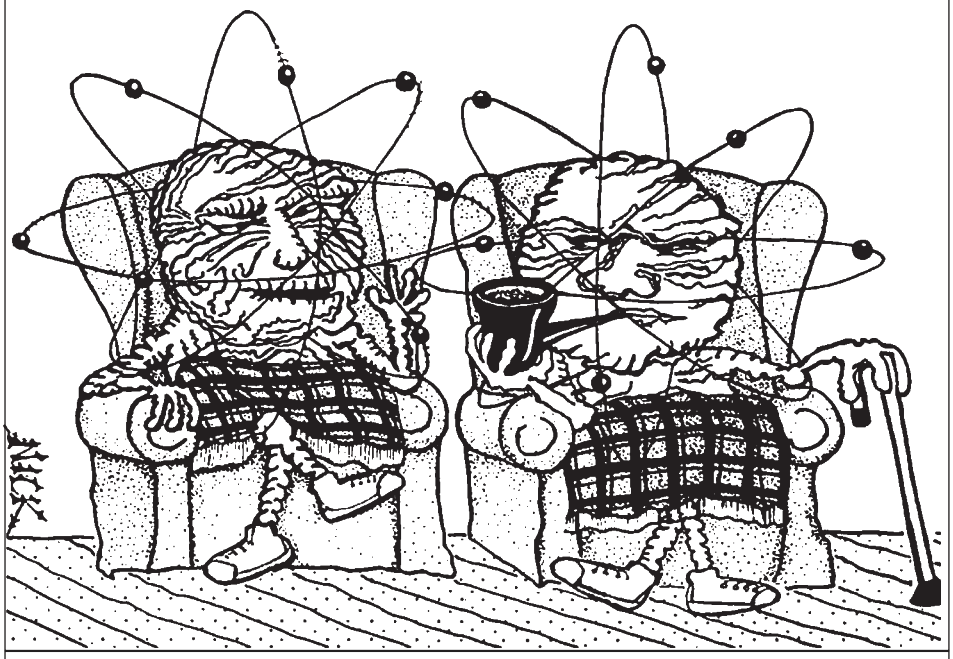
49. Which of the following situations is a concern when nuclear energy is used to produce electricity?

A. Nuclear waste material has a very short half-life.
B. Nuclear energy does not produce a lot of electricity.
C. An accident at a reactor could release a large amount of radioactivity.
D. Radioactivity emitted during normal operation of a reactor can harm workers or those living nearby.

Use the following cartoon to answer question 50.

At the home for old atoms…



"When I was young I used to feel so alive and dangerous! Would you believe I started life as a uranium-238? Then one day I accidentally emitted an alpha particle. Now look at me—an old atom of lead-206. It seems that all my life since then has been nothing but decay, decay, decay…"

www.nearingzero.net

50. What element was formed during the first decay of the uranium-238?

A. lead-206
B. radium-226
C. thorium-234
D. uranium-234

51. Which of the following reactions would produce a proton?

A. $^{263}_{106}Sg \rightarrow ^{259}_{104}Rf + \_\_\_\_$

B. $^{239}_{93}Np \rightarrow ^{239}_{94}Pu + \_\_\_\_$

C. $^{4}_{2}He + ^{14}_{7}N \rightarrow ^{17}_{8}O + \_\_\_\_$

D. $^{1}_{0}n + ^{235}_{92}U \rightarrow ^{92}_{36}Kr + ^{141}_{56}Ba + \_\_\_\_$

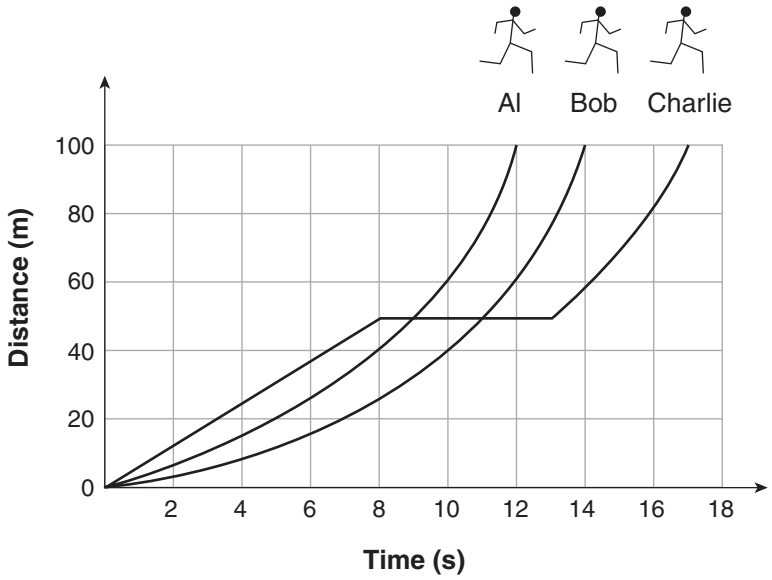
PHYSICAL SCIENCE — MOTION

REFER TO DATA PAGES	**For this section of the examination, refer to:** • **Units and Abbreviations and Equations of Motion on Data Page 12**

52. Which of the following units is appropriate for velocity?

A. s
B. m
C. m/s^2
D. km/h

53. The following distance–time graph shows a 100 m race among three friends.



What was the outcome of the race?

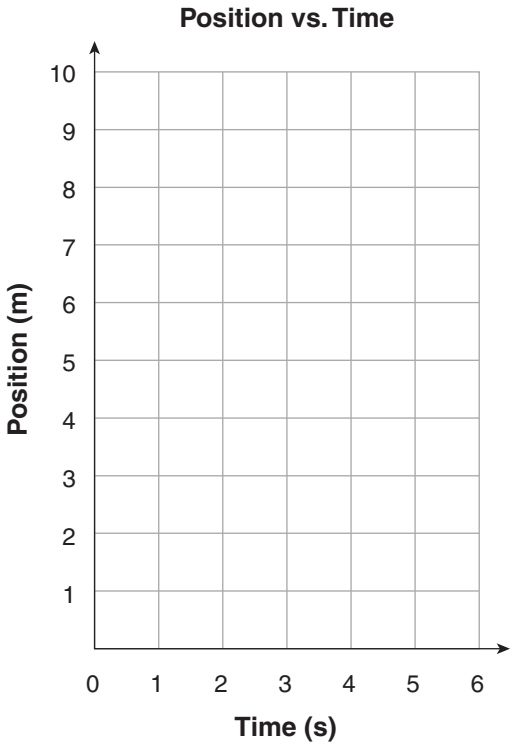
A. Al won the race.
B. Bob won the race.
C. Charlie won the race.
D. The race was a three-way tie.

Use the following information to answer questions 54 and 55.

The data represents the motion of a girl riding her skateboard along a smooth, pedestrian-free sidewalk. You may find it useful to graph the data in the table on the grid provided.

Position vs. Time

Time (s)	Position (m)
0	0
2	3.0
4	6.0
6	9.0



54. What does the slope of the line represent?

A. the distance the skateboarder travelled
B. the average velocity of the skateboarder
C. the path taken by the skateboarder, as she is moving up a hill
D. the most likely positions of the skateboarder at the times between the recorded data points

55. How far did the girl move during 3 s?

A. 3.0 m
B. 4.5 m
C. 6.0 m
D. 9.0 m

56. Which of the following statements describe the relationship among displacement, time interval and average velocity for an object travelling in uniform motion?

I	When Δd gets larger and Δt is constant, the average velocity gets larger.
II	When Δt gets larger and Δd is constant, the average velocity gets smaller.
III	When v_{av} gets larger, the slope of a position–time ($\Delta d/\Delta t$) graph gets steeper.

A. I and II only
B. I and III only
C. II and III only
D. I, II and III

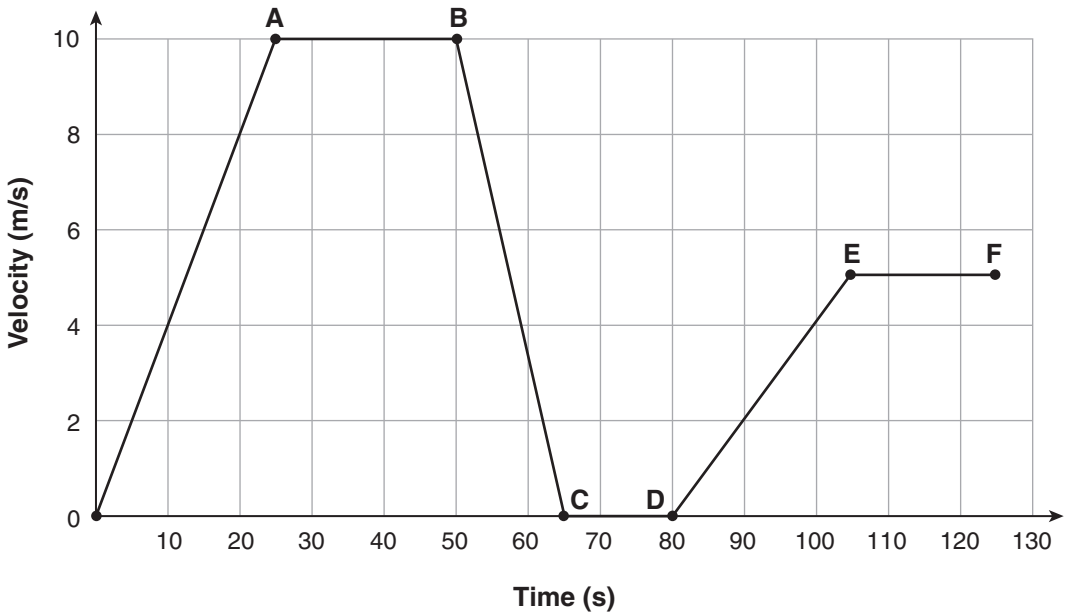
57. The fastest flying insect is the Australian dragonfly. It can travel 128 m in 8 s. What is its speed?

A. 0.063 m/s
B. 16 m/s
C. 128 m/s
D. 1024 m/s

58. In the Pacific Ocean, the East Pacific Rise spreads at about 12 cm/year. At this rate, how far would the Pacific sea floor have widened after 100 years?

A. 0.12 cm
B. 8.3 cm
C. 1 200 cm
D. 438 000 cm

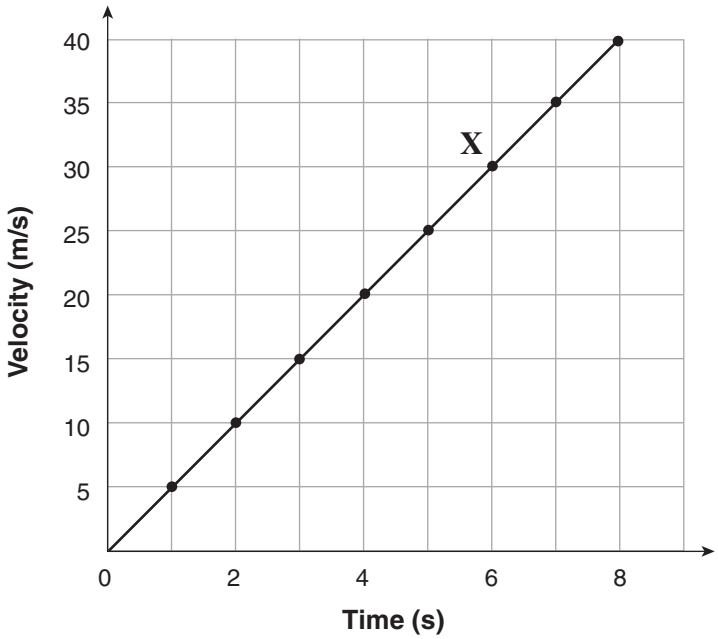
59. The following graph shows the velocity of a taxi as it travels to the airport.



During which interval of the journey is the taxi stopped?

A. from point A → point B
B. from point B → point C
C. from point C → point D
D. from point D → point E

Use the following information for a car moving with constant acceleration to answer questions 60 to 62.



60. The car has negative acceleration.

    A. The statement is supported by the information given.
    B. The statement is refuted by the information given.
    C. The statement is neither supported nor refuted by the information.

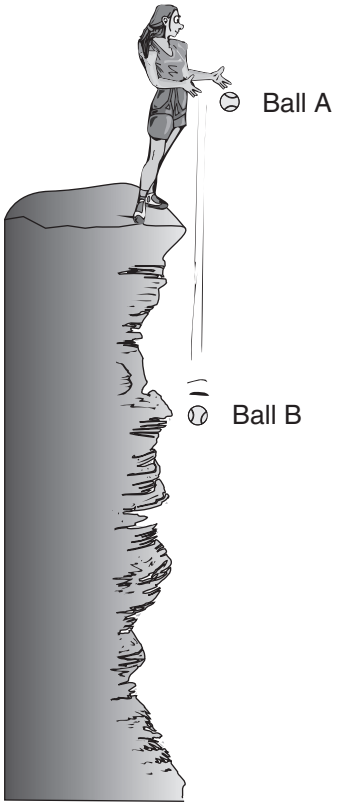
61. Every second, the velocity of the car increases by $5\ \text{m/s}$.

    A. The statement is supported by the information given.
    B. The statement is refuted by the information given.
    C. The statement is neither supported nor refuted by the information.

62. The velocity of the car at **X** is $5\ \text{m/s}$.

    A. The statement is supported by the information given.
    B. The statement is refuted by the information given.
    C. The statement is neither supported nor refuted by the information.

Use the following information to answer question 63.



- A student holds two identical tennis balls at the same height above a cliff.
- She releases Ball A one second after Ball B.
- Each ball is in the air for three seconds.
- Assume no friction.

63. Which of the following statements are supported by the diagram and experiment?

I	The balls fall with the same acceleration.
II	Each ball's velocity increases as it falls.
III	As they fall, the distance between the balls increases.

A. I only
B. I and II only
C. II and III only
D. I, II and III

64. A Grand Prix race car changes its velocity from $+50\ \text{km/h}$ to $+160\ \text{km/h}$ in 2.5 s. Which of the following terms describes the motion of the car?

A. uniform motion
B. zero acceleration
C. positive acceleration
D. negative acceleration

65. A car accelerates forward from rest at a constant $5\ \text{m/s}^2$. How long will it take the car to reach $+10\ \text{m/s}$?

A. 2 s
B. 5 s
C. 10 s
D. 50 s

66. A motorist travels at $+2\ \text{m/s}$ and then accelerates at a rate of $+6\ \text{m/s}^2$ for 3 s. What is the final velocity of the car?

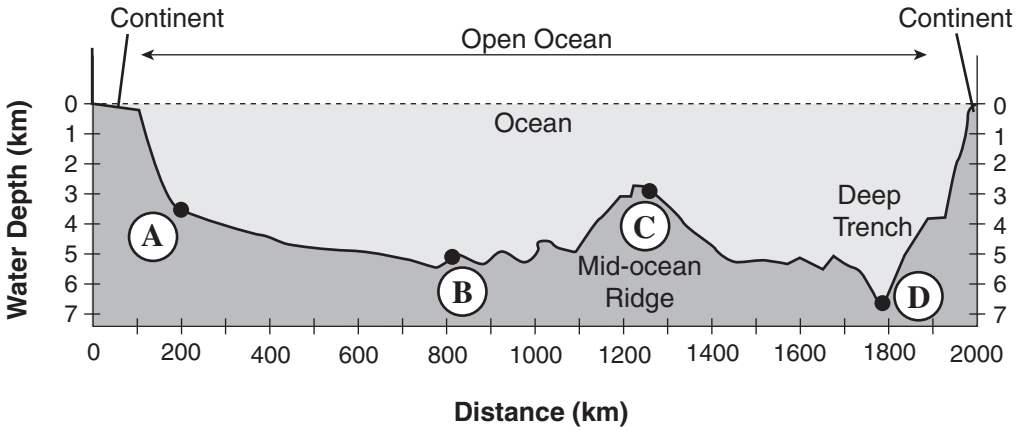
A. $+2\ \text{m/s}$
B. $+6\ \text{m/s}$
C. $+8\ \text{m/s}$
D. $+20\ \text{m/s}$

67. A car's velocity changes from $+30\ \text{m/s}$ to $+90\ \text{m/s}$ in 10 s. What is its acceleration?

A. $+3\ \text{m/s}^2$
B. $+6\ \text{m/s}^2$
C. $+9\ \text{m/s}^2$
D. $+12\ \text{m/s}^2$

REFER TO DATA PAGES	For this section of the examination, refer to: • Map of the Pacific Coast of North America on Data Page 6 • World Tectonic Plate Boundaries Map on Data Page 7

Use the following diagram to answer questions 68 and 69.



68. Which location has the youngest crust?

A. (A)

B. (B)

C. (C)

D. (D)

69. Which location is associated with subduction?

A. (A)

B. (B)

C. (C)

D. (D)

70. Which of the following statements best describes how the Earth's layers were originally formed?

A. Plate movement caused the formation of the crust, mantle and core.

B. Sediments were deposited with the least dense settling to the core and the most dense at the surface.

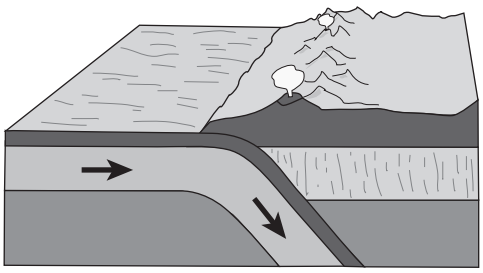
C. As the molten Earth cooled, the most dense materials sank to the core and the least dense rose to the surface.

D. Convection currents in the molten Earth distributed materials with the lowest density to the core and the greatest density to the surface.

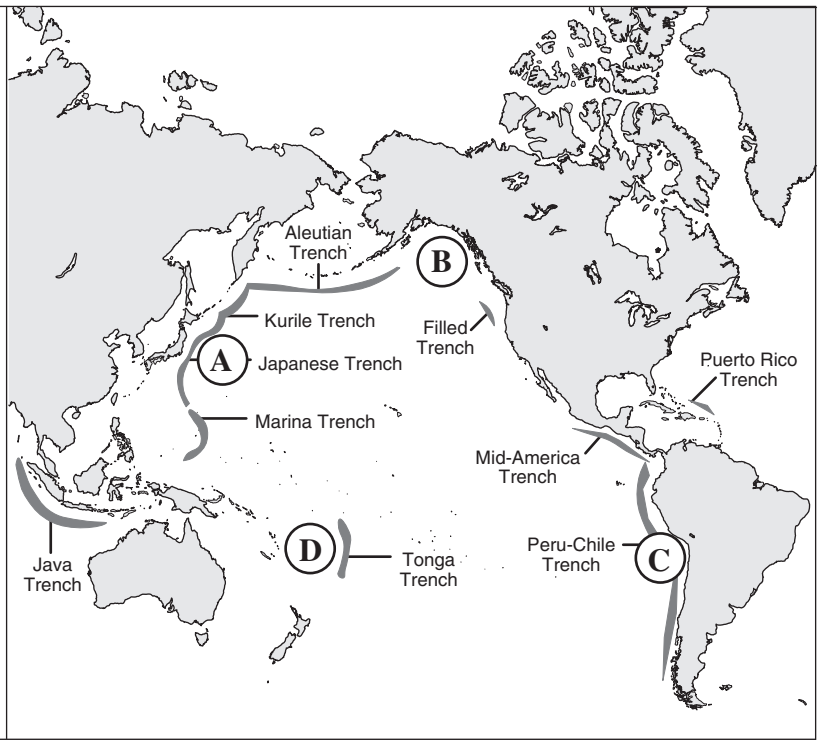
71. Which of the following conclusions is a result of seismic wave data?

A. The mantle does not transmit P-waves and is therefore solid.
B. The outer core does not transmit S-waves and is therefore liquid.
C. The inner core does not transmit surface waves and is therefore solid.
D. The crust transmits P-waves more slowly than S-waves and is therefore solid.

Use the following diagram and map to answer questions 72 and 73.



Oceanic–continental convergence



72. Which location on the map indicates an oceanic–continental convergence occur?

A. A

B. B

C. C

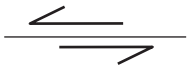
D. D

73. Which of the following features would be associated with this type of plate boundary?

I	volcanism
II	deep earthquakes
III	volcanic island arc

A. I and II only
B. I and III only
C. II and III only
D. I, II and III

74. Which of the following symbols indicates the presence of the subduction zone along the Pacific Coast of North America?

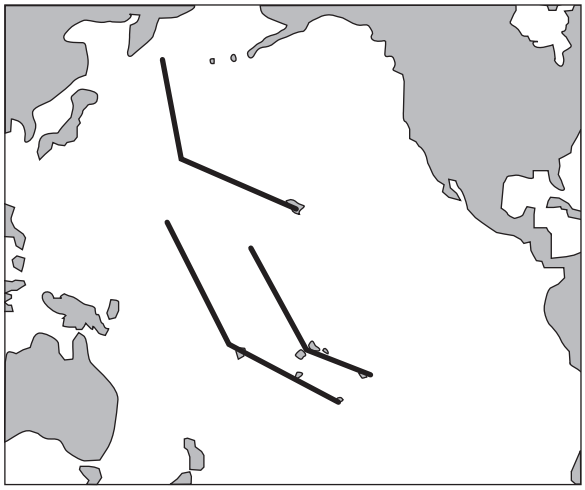
I	
II	
III	
IV	

A. II only
B. I and II only
C. II and III only
D. I, II, III and IV

75. Which of the following processes explains the presence of a hot spot in the interior region of a continental plate?

A. active subduction
B. rising mantle magma
C. convergence of continental plates
D. transform plate boundary movement

Use the following diagram of the Pacific plate to answer question 76.



Dr. Stephen R. Mattox.
scienceblogs.com

The lines on the diagram show the location of volcanic islands and submerged volcanoes from three hot spots on the floor of the Pacific Ocean.

76. There is a change in direction in the line of submerged volcanoes which occurred 43 million years ago. Which of the following statements best explains the change?

A. Pangea broke apart.
B. The Pacific plate changed direction.
C. The Pacific plate developed a transform fault.
D. A divergent plate boundary developed in the Pacific plate.

77. Identify the process and feature at the East Pacific Rise.

	Process	Feature
A.	slab pull	mid-ocean ridge
B.	slab pull	deep-ocean trench
C.	ridge push	mid-ocean ridge
D.	ridge push	deep-ocean trench

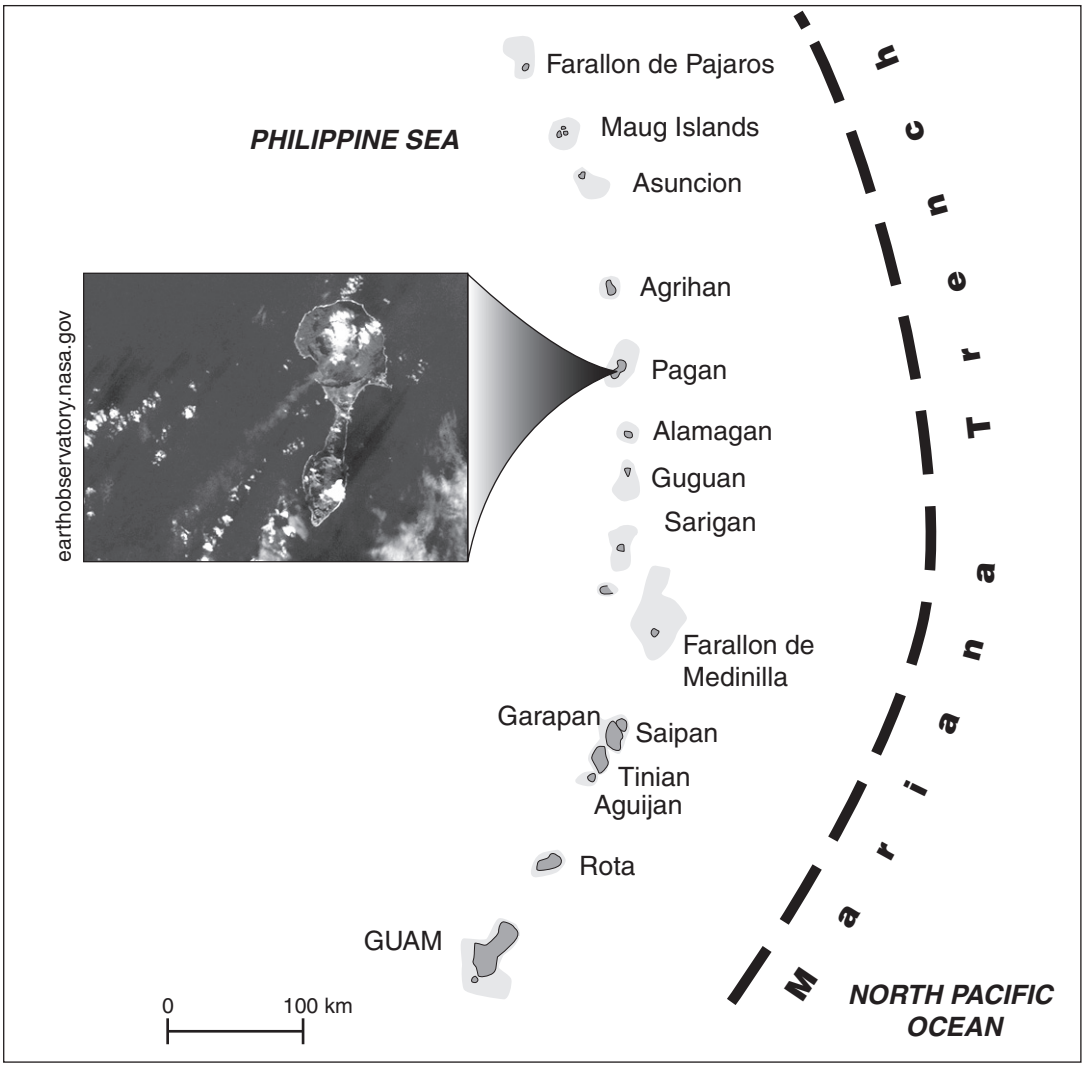
78. Which of the following observations were used as evidence to support Continental Drift Theory?

I	mountain chains separated by oceans
II	mirror-image seafloor magnetic reversal patterns
III	glacial deposits in locations too warm to have glaciers
IV	fossils on adjacent continents representing species which could not cross oceans
V	coal deposits in Antarctic regions too cold to support the necessary plant life

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

Use the following map of the Northern Mariana Islands in the Pacific Ocean to answer question 79.

Northern Mariana Islands, Pacific Plate

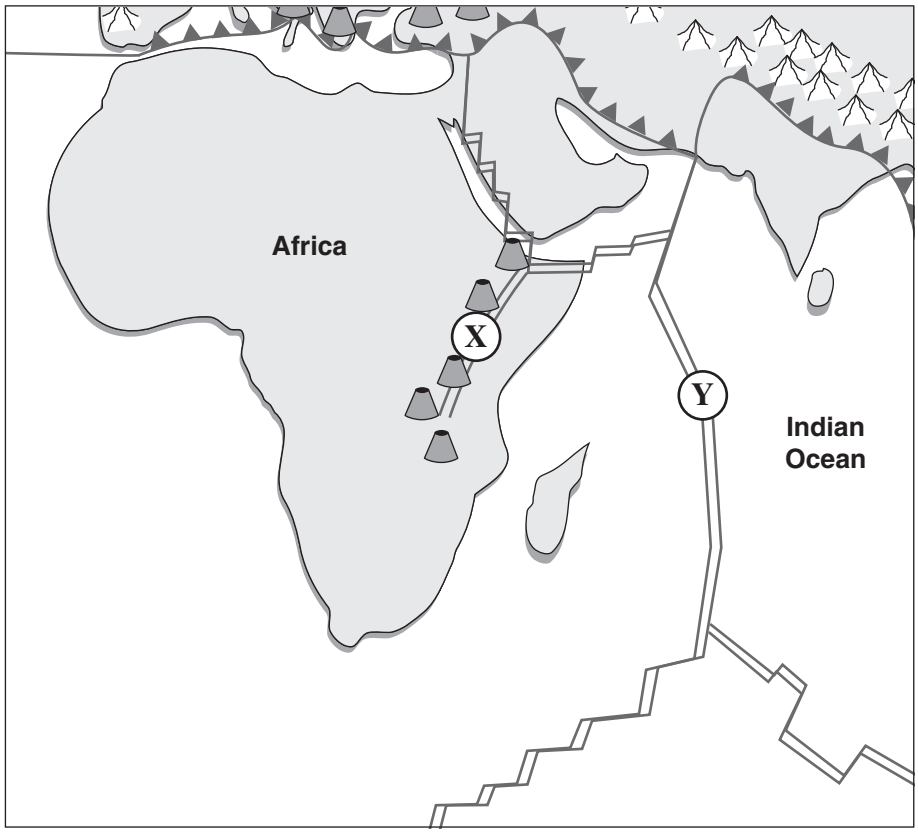


79. Which of the following statements is correct?

I	The islands owe their origin to a hot spot.
II	Deep earthquakes occur along the island chain.
III	The Mariana Islands are an example of a volcanic island arc.
IV	The islands owe their origin to the subduction of an ocean plate.

A. I only
B. III and IV only
C. I, II and III only
D. II, III and IV only

Use the following map to answer question 80.



80. If the divergent plate boundary, X, within the continent of Africa and the divergent boundary, Y, in the Indian Ocean both continue to be active in the future, what is likely to occur between the two plate boundaries?

A. a rift valley
B. a subduction zone
C. hot spot volcanoes
D. a transform fault zone

You have **Examination Booklet Form A**. In the box above #1 on your **Answer Sheet**, ensure you filled in the bubble as follows.

Exam Booklet Form/ Cahier d'examen	A	B	C	D	E	F	G	H
	●	○	○	○	○	○	○	○

END OF EXAMINATION

Examination Rules

1. The time allotted for this examination is two hours.
   You may, however, take up to 60 minutes of additional time to finish.

2. Answers entered in the Examination Booklet will not be marked.

3. Cheating on an examination will result in a mark of zero. The Ministry of Education considers cheating to have occurred if students break any of the following rules:

   - Students must not be in possession of or have used any secure examination materials prior to the examination session.
   - Students must not communicate with other students during the examination.
   - Students must not give or receive assistance of any kind in answering an examination question during an examination, including allowing one's paper to be viewed by others or copying answers from another student's paper.
   - Students must not possess any book, paper or item that might assist in writing an examination, including a dictionary or piece of electronic equipment, that is not specifically authorized for the examination by ministry policy.
   - Students must not copy, plagiarize or present as one's own, work done by any other person.
   - Students must immediately follow the invigilator's order to stop writing at the end of the examination time and must not alter an Examination Booklet, Response Booklet or Answer Sheet after the invigilator has asked students to hand in examination papers.
   - Students must not remove any piece of the examination materials from the examination room, including work pages.

4. The use of inappropriate language or content may result in a mark of zero being awarded.

5. Upon completion of the examination, return all examination materials to the supervising invigilator.