



Science 10

Examination Booklet

2011/12 Released Exam for T/S

Form 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.

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
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

LIFE SCIENCE

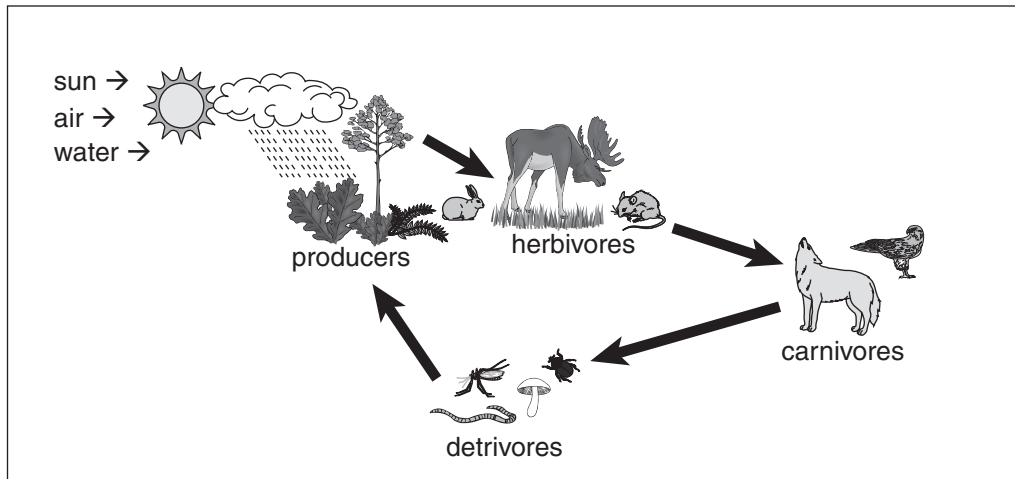
SUSTAINABILITY OF ECOSYSTEMS

**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

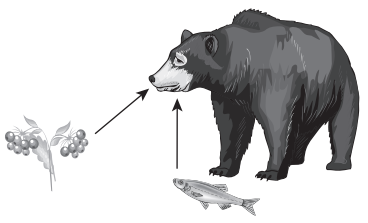
Use the following diagram to answer question 1.



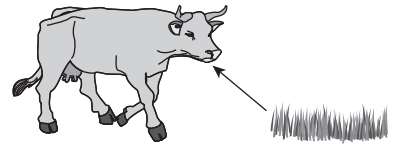
1. Which of the following terms describes the sun, air and water in the diagram shown above?
 - A. biotic factors
 - B. trophic levels
 - C. abiotic factors
 - D. bioaccumulation

2. Which of the following animals is an omnivore?

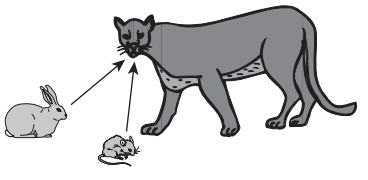
A.



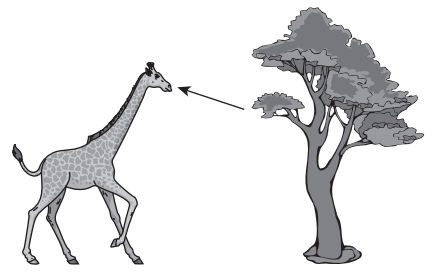
B.



C.



D.




3. Which of the following terms is an abiotic factor that is a limited resource within deep water marine ecosystems?

- A. light
- B. prey
- C. food
- D. photosynthesis

4. Detrivores are organisms that
- A. are parasites.
 - B. photosynthesize.
 - C. feed on producers.
 - D. feed on plant and animal remains.

Use the following information to answer question 5.

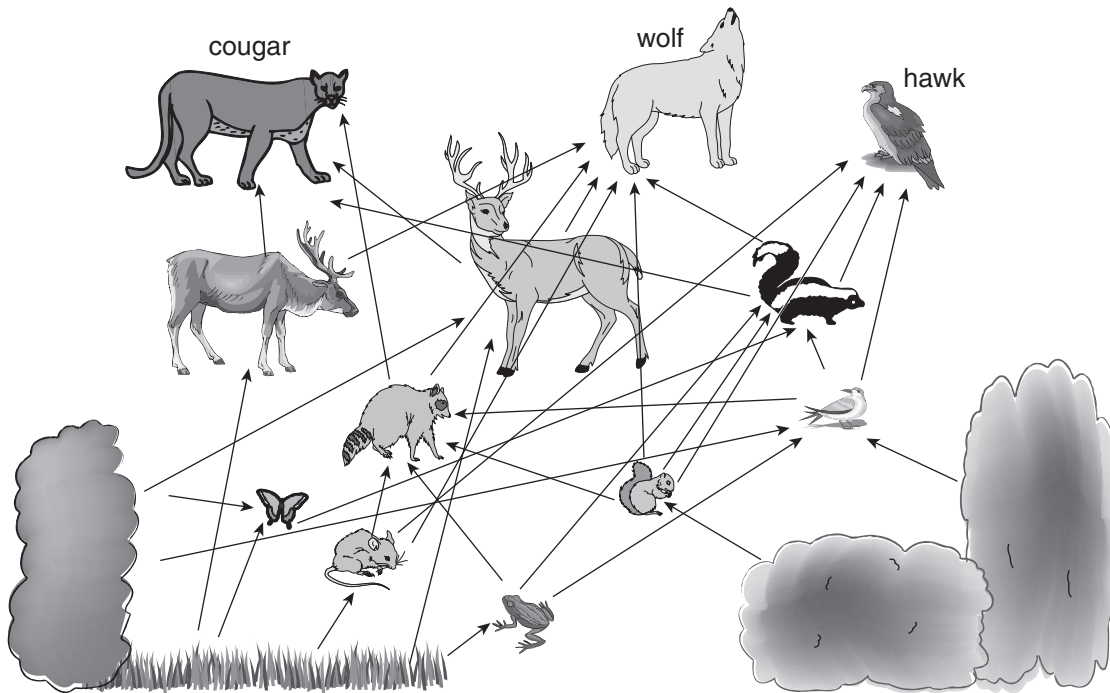


In the relationship illustrated above, the birds are known for preying on parasites that feed on the hippopotamus. The hippopotamus allows the birds to safely hunt on its body and in its mouth. From the bird's point of view, this relationship not only provides a ready source of food but also a safe place to eat considering that few predators would dare strike a bird in such close proximity to a hippopotamus.

Adapted from an excerpt, "Examples of symbiosis in action," www.wordinfo.info.

5. What relationship exists between the birds and the hippopotamus?
- A. predation
 - B. mutualism
 - C. parasitism
 - D. commensalism

Use the following food web to answer question 6.

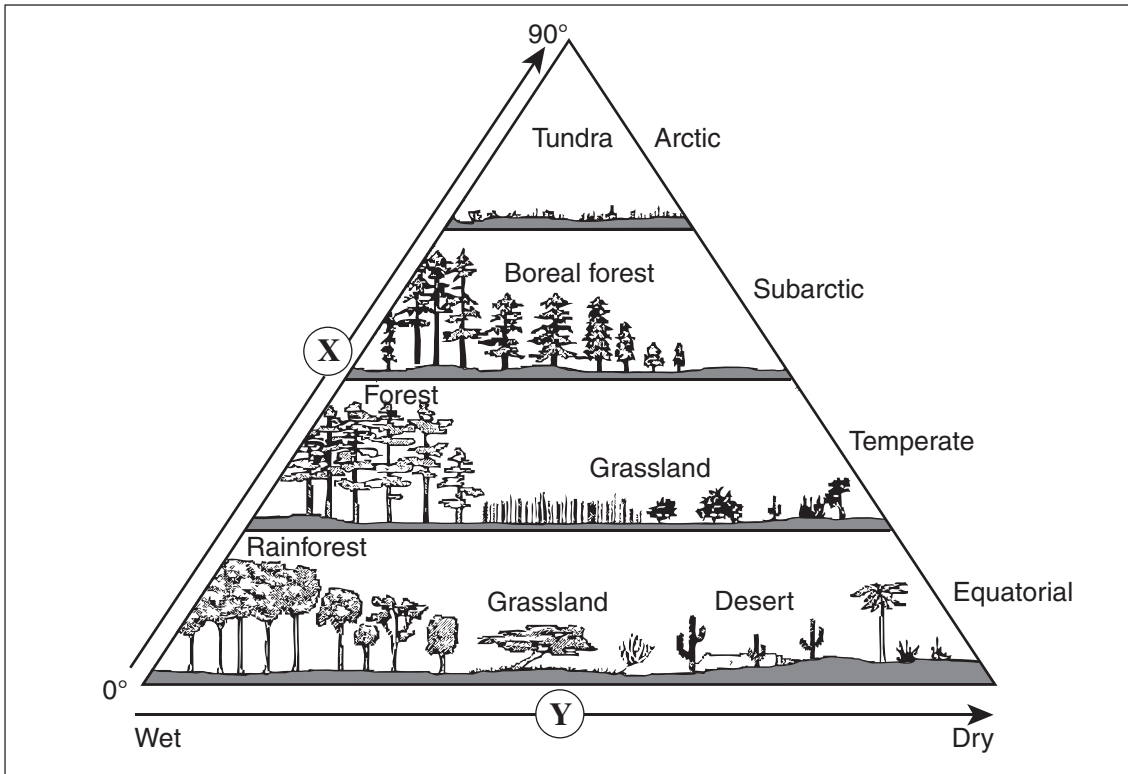


6. What do the cougar, wolf and hawk all have in common with one another?

- A. They all hunt deer.
- B. They are all parasites.
- C. They are all predators.
- D. They have a mutualistic relationship.

7. What process directly converts atmospheric nitrogen, N_2 , into a form that plants can use?
- A. denitrification
 - B. sedimentation
 - C. nitrogen fixation
 - D. leeching and runoff
8. Which of the following events has the greatest difference between carbon released and carbon stored each year?
- A. growth and decay of plant life
 - B. change in land use for agriculture
 - C. gas exchange at the surface of the ocean
 - D. circulation of intermediate and deep ocean water
9. Which of the following relationships is an example of oxygen and carbon dioxide exchange?
- A. Herbivores use carbon dioxide and produce oxygen.
 - B. Top predators use oxygen and produce carbon dioxide.
 - C. Microbes and worms add oxygen to the atmosphere and remove carbon dioxide.
 - D. Fossil fuel combustion adds oxygen to the atmosphere and removes carbon dioxide.

Use the following diagram to answer questions 10 and 11.



10. Which of the following factors describes the change represented by the direction of arrow **X**?

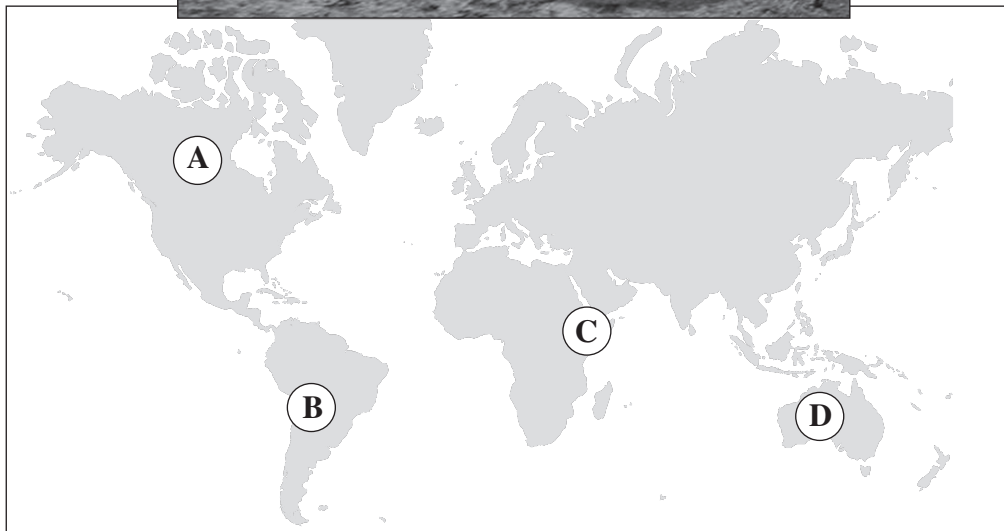
I	increasing latitude
II	increasing temperature
III	increasing precipitation

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

11. Which of the following factors describes the change represented by the direction of arrow **Y**?

- A. increasing latitude
- B. decreasing precipitation
- C. decreasing temperature
- D. increasing diversity in life forms

Use the following photograph and map to answer question 12.

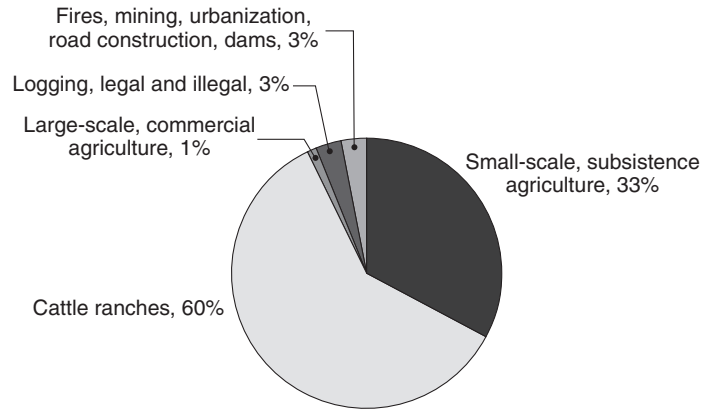


12. Where would you expect to find the biome shown in the photograph?

- A. **(A)**
- B. **(B)**
- C. **(C)**
- D. **(D)**

Use the following graph and information to answer questions 13 and 14.

Causes of Deforestation in the Amazon, 2000–2005



The Amazon rainforest is a major player in the amount of carbon dioxide that is removed from the atmosphere. However, deforestation, which provides grazing land for cattle ranches, reduces the number of trees that help to rid the atmosphere of carbon dioxide and other greenhouse gases. Furthermore, the practice of burning to clear woodland leads to a massive release of carbon dioxide into the atmosphere during combustion. Deforestation of the Amazon rainforest leads not only to a reduction of the amount of carbon dioxide taken out of the atmosphere, but also to an increased release of carbon dioxide into the atmosphere. Plant growth provides a crucial sink for carbon absorption.

Graphic: www.mongabay.com

13. What is the major reason for deforestation in the Amazon?

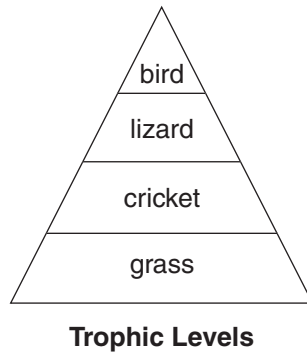
- A. logging
- B. forest fires
- C. agriculture
- D. cattle ranches

14. How does deforestation in the Amazon contribute to an increase in the level of carbon dioxide in the atmosphere?

I	It increases the rate of photosynthesis.
II	It removes plants that act as carbon sinks.
III	It releases carbon dioxide into the atmosphere through combustion.

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

Use the following diagram to answer question 15.



15. In which of the following organisms would biomagnification result in the highest concentration of pesticides?
- A. bird
 - B. lizard
 - C. cricket
 - D. grass

Use the following cartoon to answer question 16.



16. On which of the following concepts is the cartoon based?
- A. extinction
 - B. symbiosis
 - C. natural selection
 - D. ecological succession

Use the following article to answer question 17.

Quarter of Mammals “Face Extinction”



Siberian tigers may vanish within three decades.

The destruction of habitats and the introduction of foreign species from one part of the world to another are blamed for the loss of biodiversity. More than 11 000 endangered animal and plant species are facing extinction—including more than 1000 mammals, nearly a quarter of the world’s total.

The species likely to vanish within three decades include the black rhinoceros, the Siberian tiger and the Asian Amur leopard.

All of the factors which have led to the extinction of species in recent decades have intensified. The encroachment of human settlement into wilderness regions, rainforest and wetlands destruction, and the impact of industry have had a dramatic impact on the survival of threatened animals and plants.

Adapted from an article by Corinne Podger, “Quarter of mammals face extinction,”
BBC News, May 21, 2002.
Photograph: news.bbc.co.uk

17. According to the article, which of the following factors led to the extinction of plant and animal species on the planet?

I	destruction of rainforests and wetlands
II	the removal of foreign species from an ecosystem
III	destruction of habitats due to the impact of industry

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

Use the following article to answer question 18.

In the spring, deciduous trees begin producing thin, broad, light-weight leaves. This type of leaf structure easily captures the sunlight needed for food production (photosynthesis). The broad leaves are beneficial when temperatures are warm and there is plenty of sunlight. However, when temperatures are cold, the broad leaves expose too much surface area which can lead to water loss and tissue damage. To help prevent this damage from occurring, deciduous trees have internal and physical adaptations that are triggered by seasonal changes.

Adapted from an excerpt, "Forest Adaptations," www.rbcarlton.com.

18. What physical adaptation of deciduous trees is triggered by cooler temperatures?
- A. Leaves turn green.
 - B. Trees drop their leaves.
 - C. Photosynthesis increases.
 - D. Leaves become needle-like.
-
19. Which of the following organisms would be the most likely to first colonize a rocky and barren terrestrial environment?
- A. grasses
 - B. coniferous trees
 - C. lichens and mosses
 - D. deciduous shrubs and trees

Use the following article to answer questions 20 to 22.

If Trees Are Masked by the Wrong Scent, Can Beetles Find Them?

The Douglas-fir beetle and the mountain pine beetle may soon be outwitted through the magic of chemistry. Both insects cause havoc in BC forests, damaging fir and pine trees. Beetles tunnel into the bark of trees to lay their eggs. They find the trees they're interested in by scent. Trees release distinct scents into the air, and the beetles are experts at following them.

Beetles tunnelling into the bark of the trees gradually circle all around the tree trunk, through the bark. Once the bark is damaged, the flow of water and nutrients from the roots to the needles is disrupted, causing the death of the tree.

Scientists plan to mask the trees with scents from other types of trees that don't interest the beetles. This way, the beetles won't recognize their host trees. If they can't detect them, they'll leave them alone.

Researchers are testing scent compounds to see which work best at fooling the determined beetles. Single test trees have been successfully protected by "the wrong" scent. Hopefully, in the near future, large stands of trees may be protected.

Adapted from a news release issued by Simon Fraser University, "SFU Researcher Fools Forest Pest into 'Barking up the Wrong Tree'," December 2, 1997.

20. Which of the following statements are supported by the article?

I	Beetles choose trees by scents the trees release.
II	Beetles lay their eggs in the bark of fir and pine trees.
III	Beetles mark trees with their scent, attracting other beetles to the tree.

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

21. What is the relationship between the beetles and the fir trees?

- A. parasitism
- B. mutualism
- C. decomposer
- D. commensalism

22. What method of pest control could cause the most harm to the environment?
- introducing a new species to prey on the beetles
 - using traps with fir or pine scents to attract the beetles
 - breeding new varieties of fir and pine trees that are resistant to the pests
 - disguising fir and pine trees with scents from other trees to fool the beetles

PHYSICAL SCIENCE

CHEMICAL REACTIONS

**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

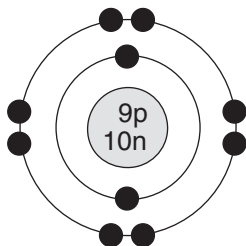
23. Which of the following comparisons describes a proton?

	Charge	Location
A.	none	in the nucleus
B.	positive	in the nucleus
C.	positive	outside the nucleus
D.	negative	outside the nucleus

24. Which of the following elements exists naturally as a covalently bonded molecule?

- gold
- helium
- sodium
- bromine

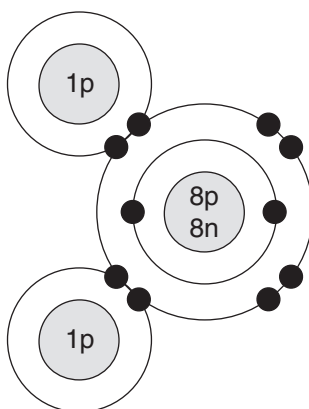
Use the following Bohr diagram to answer question 25.



25. The Bohr diagram represents

- A. a sodium ion.
- B. a fluoride ion.
- C. a helium atom.
- D. a fluorine atom.

Use the following Bohr model to answer question 26.



26. What molecule is illustrated above?

- A. HCl
- B. H₂S
- C. H₂O
- D. BeH₂

27. An atom of phosphorus has how many valence electrons?
- A. 1
 - B. 3
 - C. 5
 - D. 15
28. An atom of which of these elements has the most unpaired electrons?
- A. neon
 - B. boron
 - C. fluorine
 - D. hydrogen

Use the following Lewis diagram to answer question 29.



29. The Lewis diagram above represents either
- A. a helium atom or a lithium ion.
 - B. a neon atom or a fluorine atom.
 - C. an argon atom or a sulphide ion.
 - D. a potassium atom or a calcium ion.
-
30. How are lone pairs and bonding pairs of electrons similar?
- A. Both have no charge.
 - B. Both form ionic bonds.
 - C. Both form covalent bonds.
 - D. Both are valence electrons.

31. The water from the Great Salt Lake in Utah has the following effects on acid-base indicators:

- Indigo carmine turns blue.
- Phenolphthalein turns pink.
- Bromthymol blue turns blue.

What is its pH?

- A. 8
- B. 10
- C. 12
- D. 14

32. What colour would bromthymol blue turn in acetic acid?

- A. red
- B. blue
- C. yellow
- D. colourless

33. Which of the following substances, when dissolved in rainwater, cause acid precipitation?

- A. alkali metals
- B. metal oxides
- C. non-metal oxides
- D. alkaline earth metals

34. What is the chemical formula for ammonium oxide?

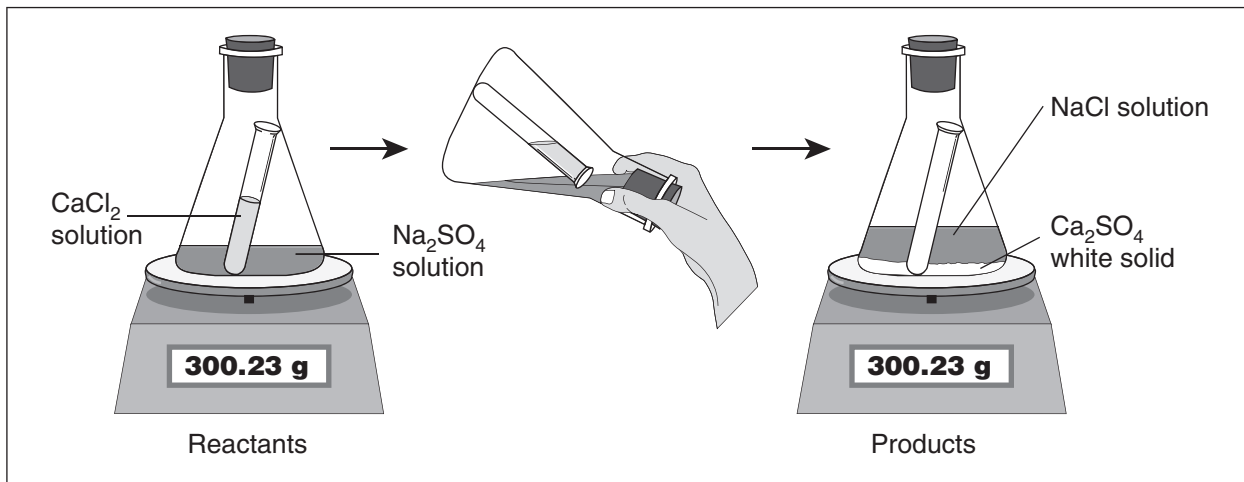
- A. Al_2O_3
- B. Am_2O_3
- C. NH_4O
- D. $(\text{NH}_4)_2\text{O}$

35. What is the name of the compound represented by the formula $\text{Cu}(\text{HCO}_3)_2$?
- A. copper carbonate
 - B. copper bicarbonate
 - C. copper(II) carbonate
 - D. copper(II) bicarbonate
36. What is the written expression for the Cr^{2+} ion?
- A. chromium
 - B. chromium(I)
 - C. chromium(II)
 - D. chromium(IV)
37. When Rh^{4+} combines with PO_4^{3-} , what is the name of the compound that is formed?
- A. rhodium phosphate
 - B. rhodium phosphide
 - C. rhodium(IV) phosphide
 - D. rhodium(IV) phosphate
38. What is the formula for the compound dinitrogen pentoxide?
- A. NO_4
 - B. NO_5
 - C. N_2O_4
 - D. N_2O_5

39. Which of the following compounds is inorganic?

- A. HCl
- B. CH_3OH
- C. CH_3CH_3
- D. $\text{HCl}_2\text{C}_2\text{F}_2\text{H}$

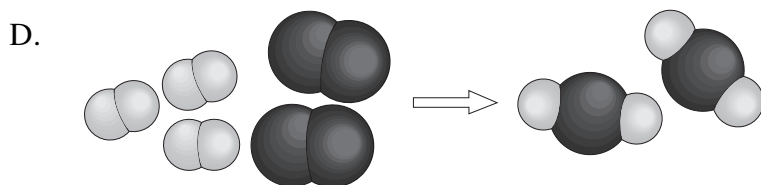
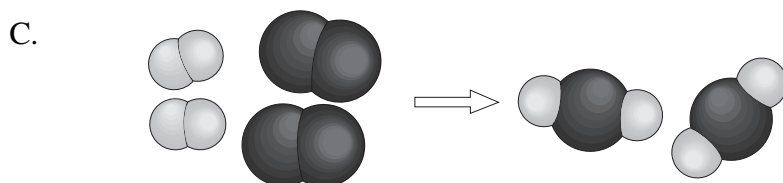
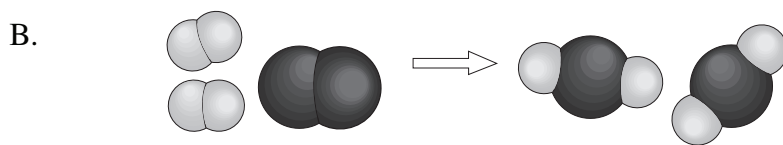
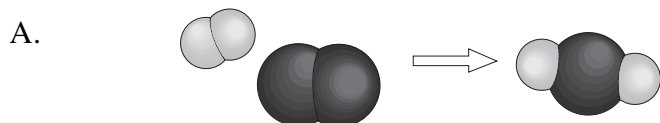
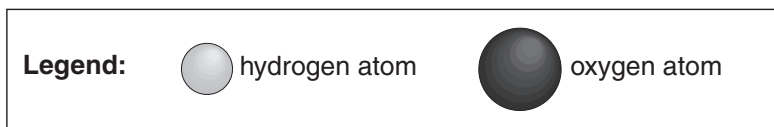
Use the following diagram of an experiment to answer question 40.



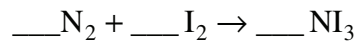
40. What is demonstrated by the procedure shown in the illustration?

- A. the neutralization of an acid with a base
- B. the conservation of mass during a chemical change
- C. the effect of a catalyst on the rate of a chemical reaction
- D. the effect of surface area in a double replacement reaction

41. Which of the following molecular diagrams shows the balanced reaction as hydrogen and oxygen combine to produce water?



42. What coefficient is needed for I_2 in order to balance the equation?



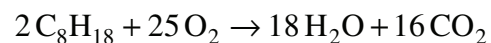
- A. 1
- B. 2
- C. 3
- D. 4

43. Which set of ordered coefficients balances the equation shown below?



- A. 3, 1, 3, 1, 3
- B. 3, 1, 1, 1, 3
- C. 3, 1, 1, 3, 1
- D. 3, 1, 1, 3, 3

44. What type of reaction is represented by the equation?

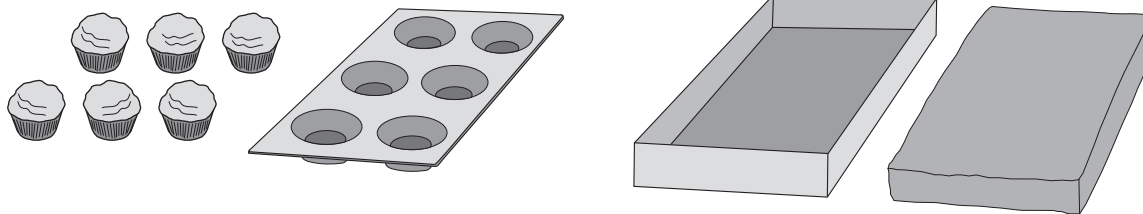


- A. synthesis
- B. combustion
- C. decomposition
- D. single replacement

45. When sodium hydroxide reacts with hydrogen phosphate, two products are formed. You may wish to write the chemical equation in the box provided.

What two products are formed?

- A. NaOH and H₂O
 - B. Na₃PO₄ and H₂O
 - C. NaOH and H₃PO₄
 - D. Na₃PO₄ and P(OH)₃
46. Karen notices that cupcake recipes always have shorter cooking times than larger cakes. Which of the following factors accounts for this observation?



- A. presence of a catalyst
- B. increased surface area
- C. increased temperature
- D. increased concentration

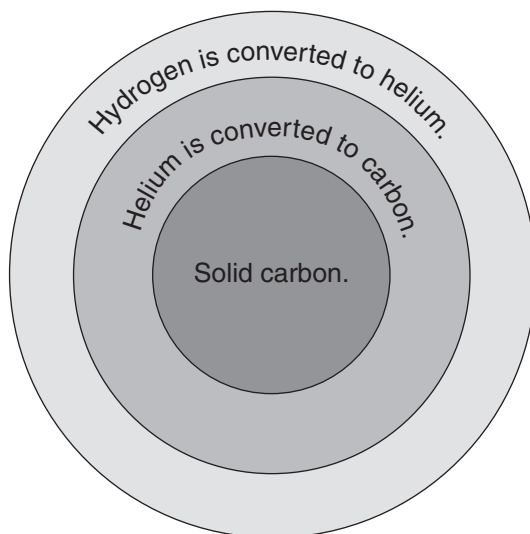
**REFER TO
DATA PAGES**

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

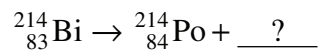
47. Which of the following choices represents an isotope?
- A. H_2
 - B. plutonium
 - C. potassium-40
 - D. silver sulphide
48. A rock sample originally contained 8 g of U-235 but now contains only 2 g of U-235. How old is the rock?
- A. 710 Ma
 - B. 1420 Ma
 - C. 2130 Ma
 - D. 2840 Ma

Use the following diagram of nuclear reactions in a Red Giant star to answer question 49.



49. What type of reactions provide energy within a Red Giant star?
- A. fusion
 - B. fission
 - C. beta decay
 - D. alpha decay

Use the following information to answer question 50.



50. Which of the following decay products could complete the nuclear equation?

I	${}_{-1}^0\beta$
II	${}_{-1}^0e$
III	${}_{2}^4\alpha$

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

51. Which reaction occurs when an alpha particle is captured by a beryllium-9 nucleus?

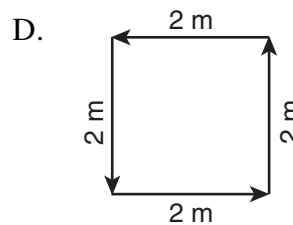
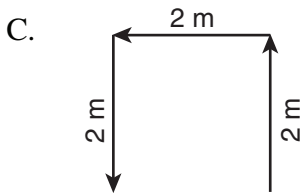
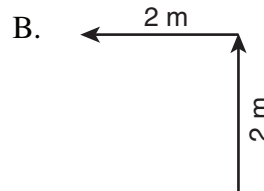
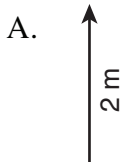
- A. ${}_{4}^9\text{Be} + {}_{2}^4\text{He} \rightarrow {}_{6}^{12}\text{C} + {}_{0}^1\text{n}$
- B. ${}_{9}^4\text{Be} + {}_{4}^2\text{He} \rightarrow {}_{12}^6\text{C} + {}_{1}^0\text{n}$
- C. ${}_{9}^4\text{Be} + {}_{4}^2\text{He} \rightarrow {}_{12}^6\text{Mg} + {}_{1}^0\text{n}$
- D. ${}_{4}^9\text{Be} + {}_{2}^4\text{He} \rightarrow {}_{6}^{12}\text{Mg} + {}_{0}^1\text{n}$

**REFER TO
DATA PAGES**

For this section of the examination, refer to:

- Units and Abbreviations and Equations of Motion on Data Page 12

52. In which of the following situations is the displacement the greatest?



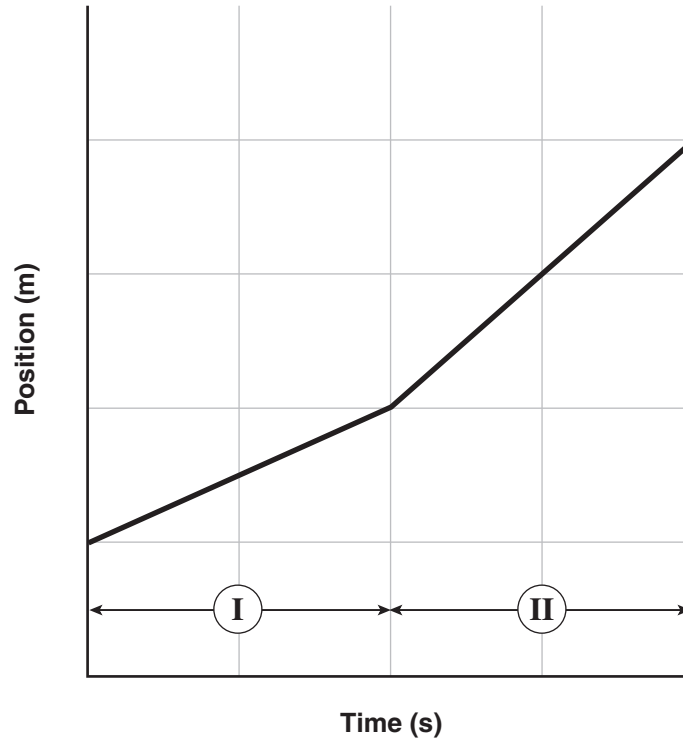
Use the following information to answer question 53.

distance is to displacement
as
speed is to _____ ?

53. Which of the following terms completes the comparison?

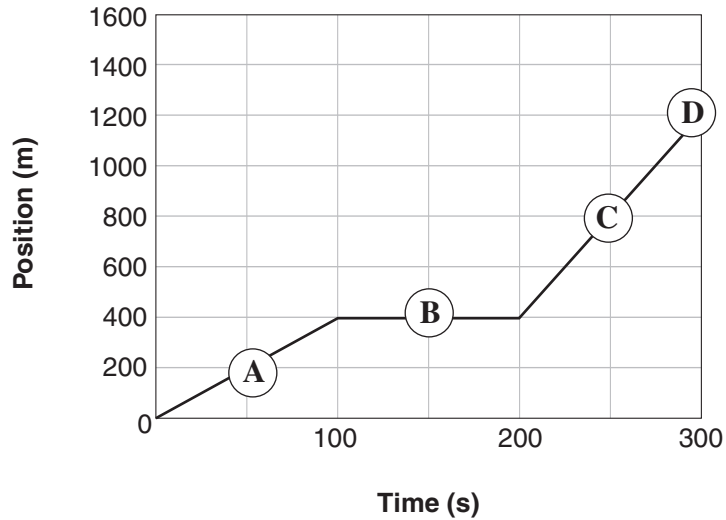
- A. time
- B. velocity
- C. acceleration
- D. displacement

Use the following position–time graph showing the motion of an object to answer question 54.



54. Which of the following statements correctly compares the motion of the object during time intervals **I** and **II** on the graph?
- A. During both intervals, the object travels the same distance.
 - B. During both intervals, the object is travelling the same velocity.
 - C. During interval **I**, the object is travelling faster than in interval **II**.
 - D. During interval **II**, the object travels a greater distance than in interval **I**.

Use the following graphical representation of a swimmer to answer question 55.



55. Which part of the graph shows the swimmer resting for 100 s?

- A. **(A)**
 - B. **(B)**
 - C. **(C)**
 - D. **(D)**
-

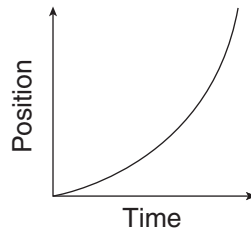
56. A family on vacation drove 200 km in two hours and then travelled only 40 km during the next hour due to a construction zone.

What was the family's average velocity during the trip?

- A. 40 km/h
- B. 70 km/h
- C. 80 km/h
- D. 120 km/h

57. Which of the following units is associated with the Δd symbol in motion formulae?
- A. s
 - B. m
 - C. m/s
 - D. m/s^2
58. A mosquito flies at 4 m/s covering a distance of 5 m. What calculation determines the time interval?
- A. $t = \frac{5 \text{ m}}{4 \text{ m/s}}$
 - B. $t = \frac{4 \text{ m/s}}{5 \text{ m}}$
 - C. $t = 5 \text{ m} \times 4 \text{ m/s}$
 - D. $t = 5 \text{ m} - 4 \text{ m/s}$
59. Light travelling at 300 000 km/s takes about 8 minutes to travel from the sun to the earth. What is the distance from the sun to the earth?
- A. 37 500 km
 - B. 225 000 km
 - C. 2 400 000 km
 - D. 144 000 000 km

Use the following position vs. time graph for an object travelling in a straight line to answer question 60.



60. Which of the following conditions is represented by the graph?

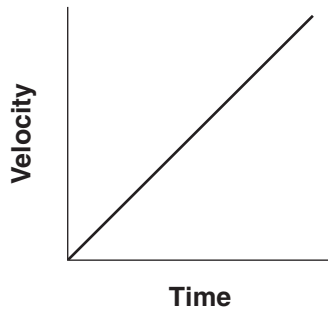
- A. uniform motion
 - B. zero acceleration
 - C. constant velocity
 - D. increasing velocity
-

61. A car moving at +15 m/s pulls onto the highway and accelerates at $+1.2 \text{ m/s}^2$ for 8.2 s. What is its final velocity?

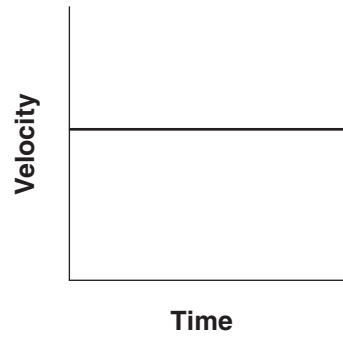
- A. +9.8 m/s
- B. +16.2 m/s
- C. +20.7 m/s
- D. +24.8 m/s

62. Which of the following graphs represents an object with a positive uniform acceleration?

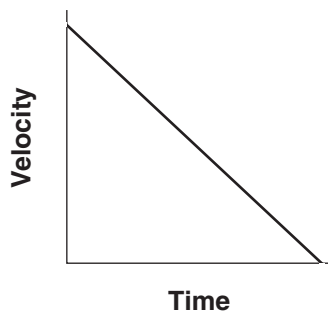
A.



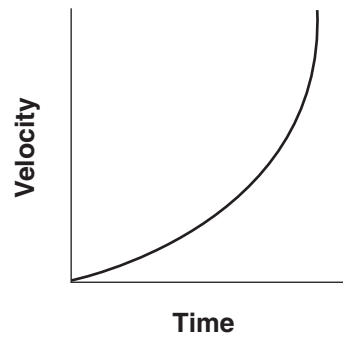
B.



C.



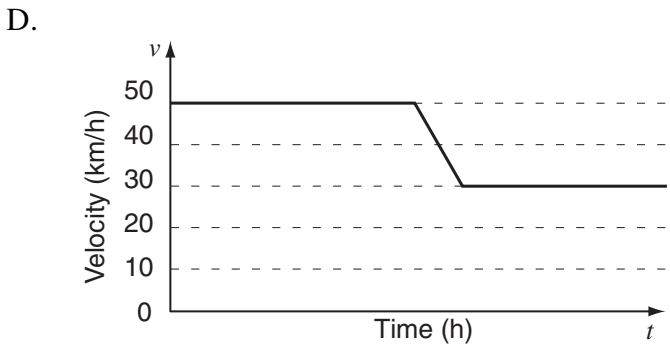
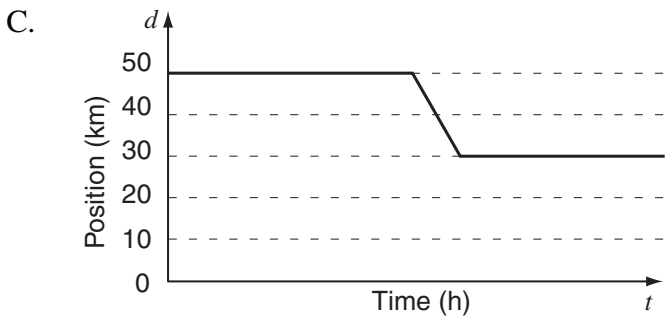
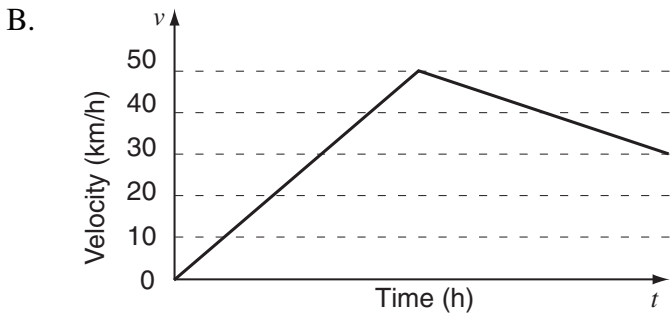
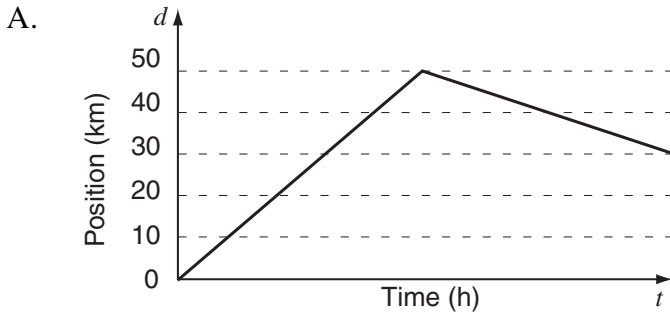
D.



Use the following diagram to answer question 63.

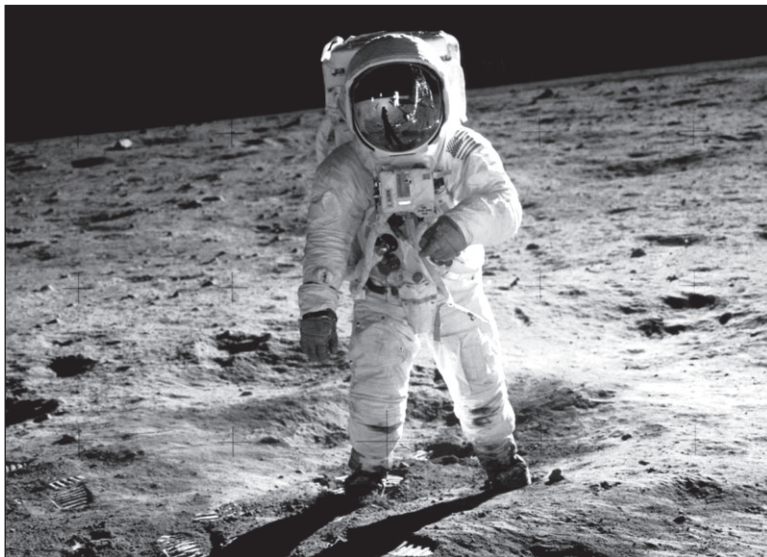


63. Which of the following graphs shows a car travelling at a constant velocity of +50 km/h, then slowing down to +30 km/h as it enters a school zone?



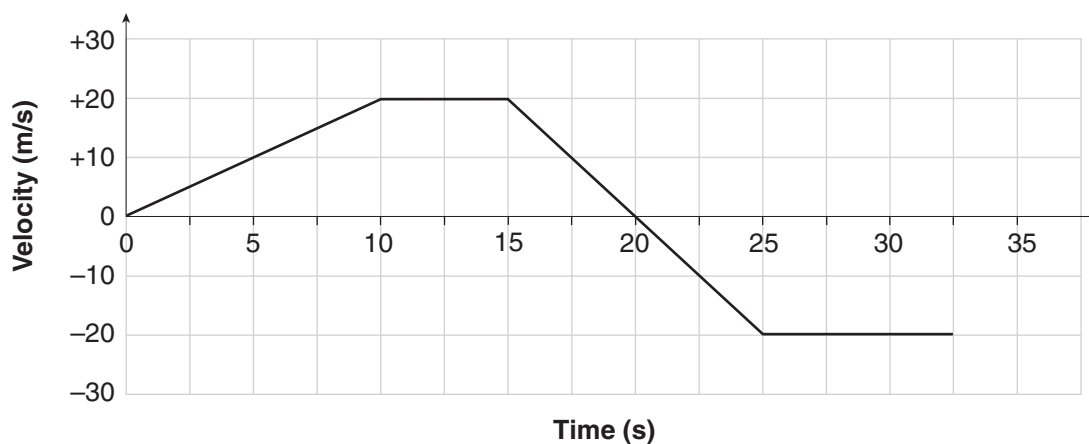
64. Which of the following situations describes a positive acceleration?
- A. a book resting on a desk top
 - B. a car braking as it approaches a stop sign
 - C. a speed skater going from rest to 10 m/s in 5 s
 - D. a skier sliding down a slope with constant velocity
65. At a safety-testing facility, a car travelling +30 m/s is brought to rest in 0.5 s. What is the acceleration of the car during this interval?
- A. -15 m/s^2
 - B. $+15 \text{ m/s}^2$
 - C. -60 m/s^2
 - D. $+60 \text{ m/s}^2$

The following photograph shows astronaut Buzz Aldrin as he walked on the surface of the moon in 1969.



66. On the surface of the moon, the acceleration due to gravity is -1.6 m/s^2 . If a ball is thrown upward at +20 m/s, how long does it take for the ball to reach a velocity of 0 m/s before falling back to the surface of the moon?
- A. 0.08 s
 - B. 12.5 s
 - C. 20 s
 - D. 32 s

Use the following velocity vs. time graph showing the motion of a gazelle to answer question 67.



67. What is the gazelle's change in velocity from 15 s to 25 s?

- A. -40 m/s
- B. -4 m/s
- C. 0 m/s
- D. $+40$ m/s

EARTH AND SPACE SCIENCE

PLATE TECTONICS

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

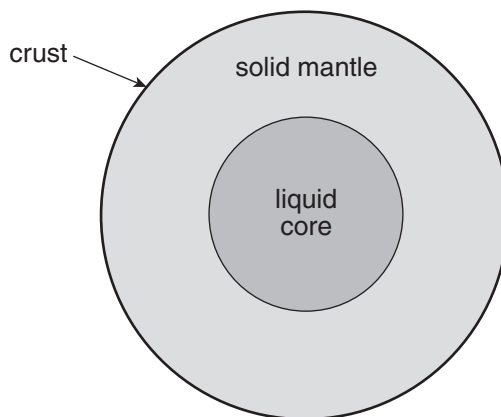
68. At which of the following locations is a spreading ridge most likely to occur?

- A. an ocean–ocean divergent plate boundary
- B. an ocean–ocean convergent plate boundary
- C. a continent–continent transform plate boundary
- D. a continent–continent convergent plate boundary

69. Which of the following statements correctly compares the Earth's crust to its mantle?

- A. It is thicker and denser than the mantle.
- B. It is thinner and denser than the mantle.
- C. It is thicker and less dense than the mantle.
- D. It is thinner and less dense than the mantle.

Use the following illustration of the interior of a recently discovered planet to answer question 70.

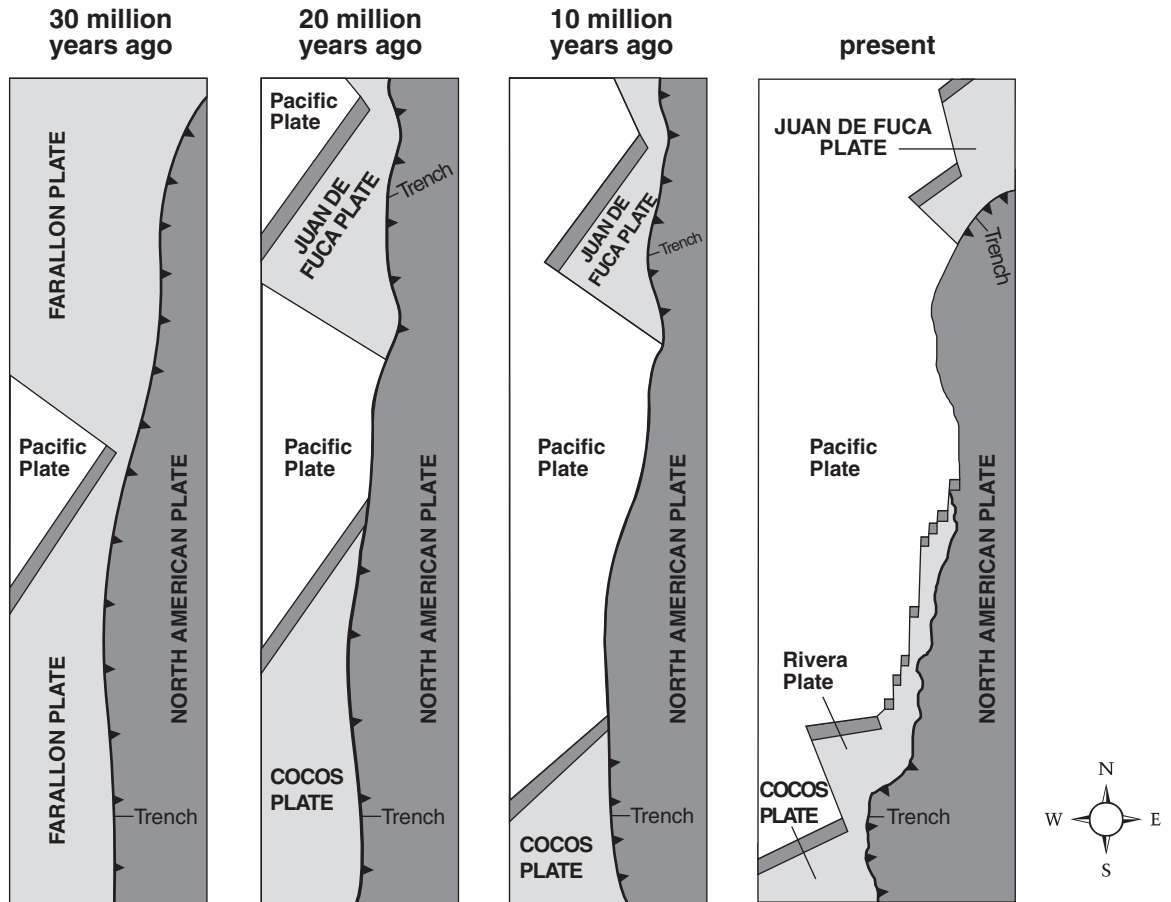


70. Which of the following seismic waves could be used to determine the depths of the solid mantle and liquid core of this planet?

I	surface waves
II	primary waves
III	secondary waves

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

Use the following series of map diagrams for the Pacific Coast of North America to answer question 71.



71. Which of the following processes accounts for the absence of the Farallon Plate in the final diagram?
- A. The Farallon Plate moved west along a transform fault.
 - B. The Farallon Plate collided with the Pacific Plate, forming a larger oceanic plate.
 - C. The Farallon Plate subducted beneath the Pacific Plate and parts of it were renamed.
 - D. The Farallon Plate subducted beneath the North American Plate and parts of it were renamed.

Use the following map of South America to answer question 72.



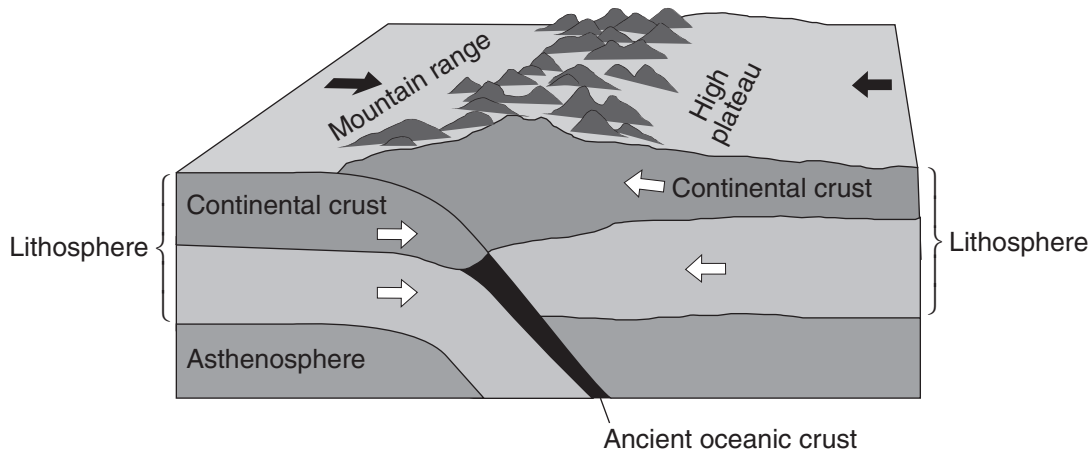
72. What tectonic feature is found in the region from P to Q?

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

73. Which pair of symbols indicate the presence of a subduction zone?

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

Use the following block diagram of a continental–continental convergent plate boundary to answer question 74.



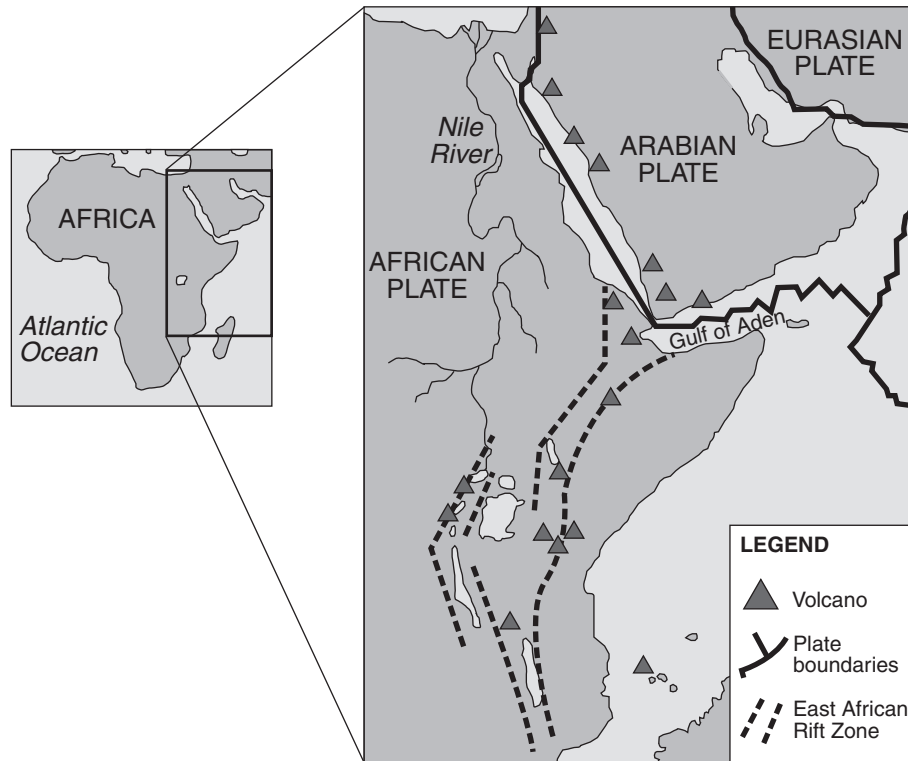
74. Which of the following locations is most closely associated with the type of tectonic activity illustrated in the diagram?
- A. Himalayas
 - B. East Pacific Rise
 - C. Cascade volcanoes
 - D. Yellowstone hot spot

75. Which of the following thermal energy sources are responsible for producing mantle convection?

I	decay of radioactive isotopes
II	heat left over from Earth's formation
III	friction from tectonic plate movement

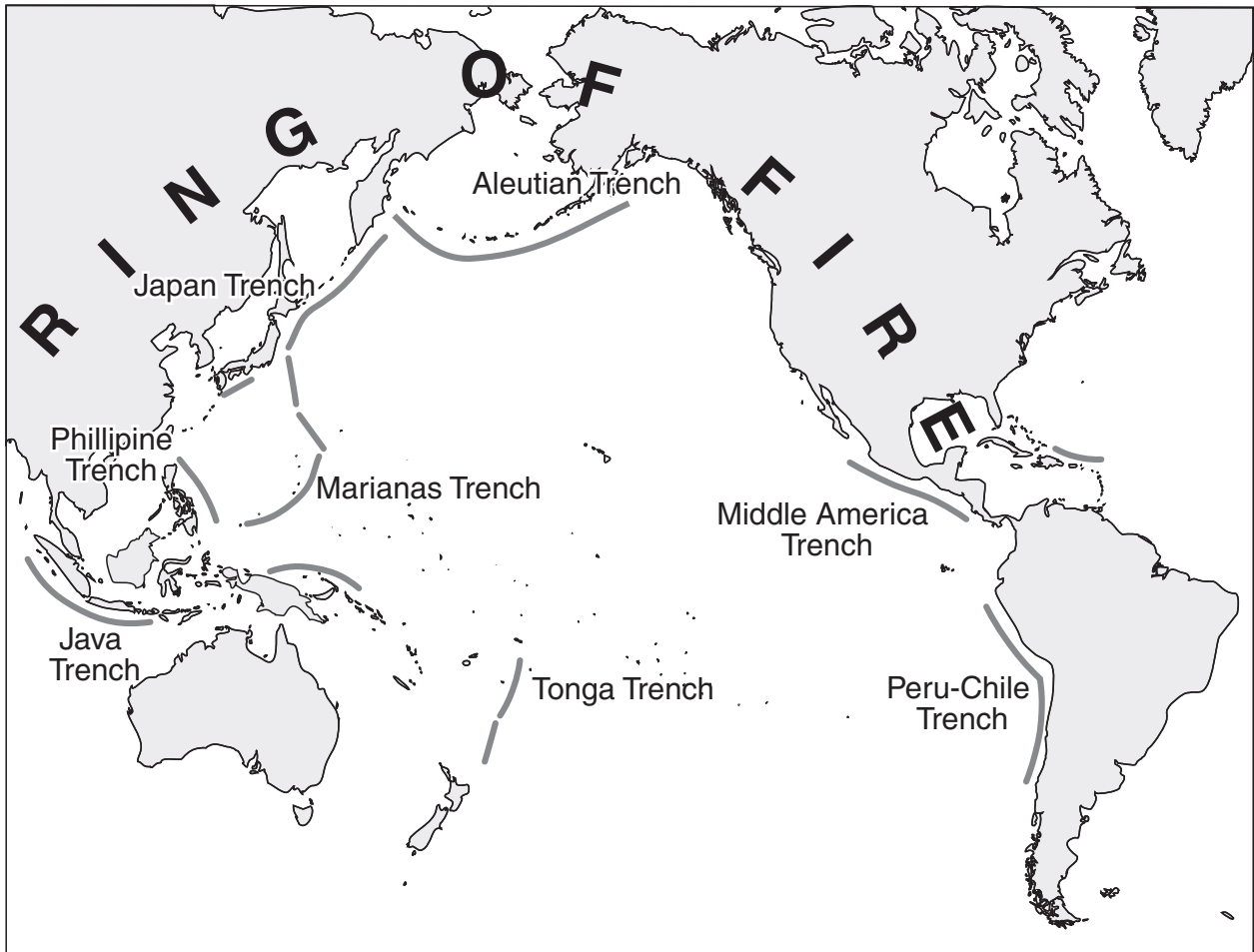
- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

Use the following detail map of the East African Rift Zone to answer question 76.



76. What will occur near the Gulf of Aden as the tectonic activity within the East African Rift Zone continues?
- A. Sea water will flood the East African Rift Zone.
 - B. A subduction zone will form along the Gulf of Aden.
 - C. Volcanic activity in the East African Rift Zone will stop.
 - D. The Arabian Plate will move south along transform faults.

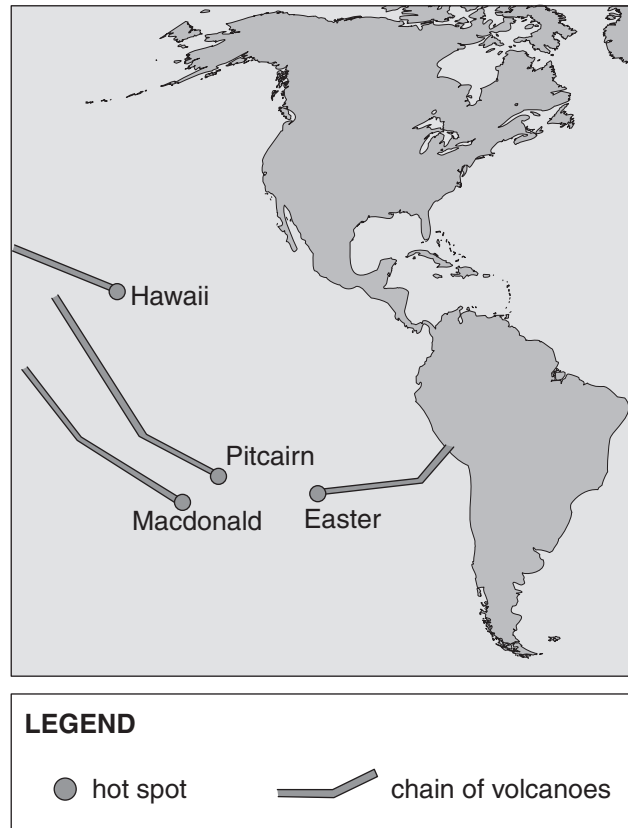
Use the following map of the Ring of Fire to answer question 77.



77. Which of the following processes forms the trenches which outline the Ring of Fire?

- A. hot spot formation
- B. divergence of oceanic crust
- C. subduction of continental crust
- D. subduction of an oceanic plate

Use the following map of hot spot chains to answer question 78.



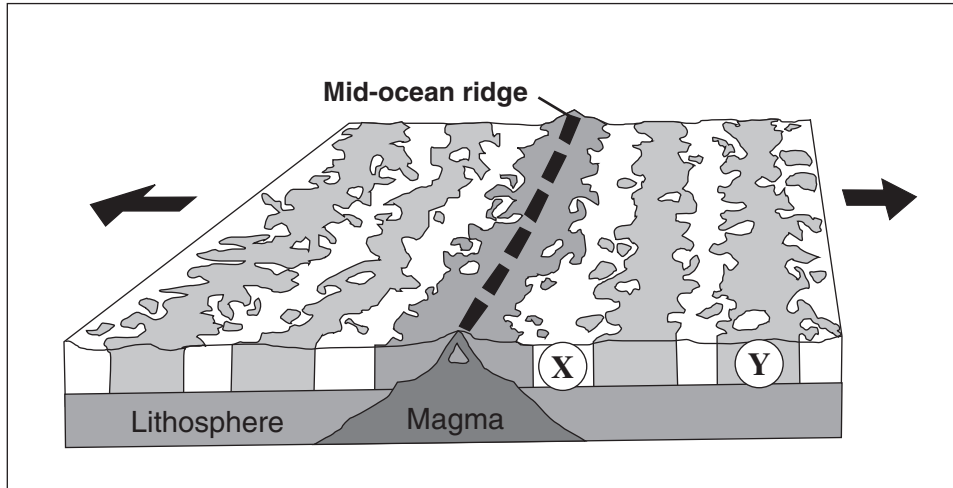
78. Which of the following geological processes causes apparent opposing motion of the Macdonald and Easter Islands hot spots?
- A. ridge push at the East Pacific Rise
 - B. slab pull at the Eastern edge of the Pacific Plate
 - C. divergence of the North America Plate and the Pacific Plate
 - D. mantle magma rising at several locations along the hot spot island chain

79. Alfred Wegener's Continental Drift Theory was based on which of the following observations?

I	fossil distribution
II	jigsaw puzzle fit of continents
III	matching up of mountain ranges
IV	magnetic reversals in the ocean crust

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

Use the following diagram to answer question 80.



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80. Ocean crust (X) is younger than ocean crust (Y).
- A. The statement is supported by the diagram.
 - B. The statement is refuted by the diagram.
 - C. The statement is neither supported nor refuted by the diagram.

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
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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.