

Appendix I – GEOL100 Geoscience Concept Inventory

DEMOGRAPHICS:

Please answer the following questions about your background.

Gender _____ **High School G.P.A.** _____

Birthdate: Day _____ Month _____ Year _____

Anticipated Major _____

Racial Background: ___ White ___ Hispanic ___ Asian
___ African-American ___ Pacific Islander
___ American Indian ___ Other _____

In which high school grade did you take:

Physics	8	9	10	11	12	Never
Chemistry	8	9	10	11	12	Never
Biology	8	9	10	11	12	Never
Earth Science	8	9	10	11	12	Never

Highest degree of:

Female Parent:

___ Elementary School
___ some High School
___ High School
___ some College
___ Bachelor's Degree
___ some Graduate School
___ Master's Degree
___ Doctoral Degree

Male Parent:

___ Elementary School
___ some High School
___ High School
___ some College
___ Bachelor's Degree
___ some Graduate School
___ Master's Degree
___ Doctoral Degree

GCI TEST QUESTIONS

Please answer the following questions to the best of your ability.

1. Some scientists claim that they can determine when the Earth first formed as a planet. Which technique(s) do scientists use today to determine when the Earth first formed? **Choose all that apply.**

- (A) Comparison of fossils found in rocks
- (B) Comparison of different layers of rock
- (C) Analysis of uranium and lead in rock
- (D) Analysis of carbon in rock
- (E) Scientists cannot calculate the age of the Earth

2. Which of the following can greatly affect erosion rates? **Choose all that apply.**

- (A) Rock type
- (B) Earthquakes
- (C) Time
- (D) Climate

3 (6). Which is the best definition of a tectonic plate?

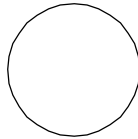
- (A) All solid, rigid rock beneath the continents and above deeper, moving rock
- (B) All solid, rigid rock beneath the continents and oceans and above deeper, moving rock
- (C) All solid, rigid rock that lies beneath the layer of loose dirt at the Earth's surface and above deeper, moving rock
- (D) All solid, rigid rock and loose dirt beneath the Earth's surface and above deeper, moving rock
- (E) The rigid material of the outer core

4 (7). What did the Earth's surface look like when it first formed?



A

A. One large landmass surrounded by water



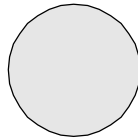
B

B. All water and no land



C

C. Similar to today



D

D. Mostly molten rock and no water

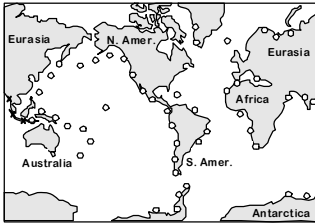


E

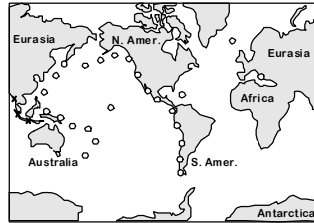
E. We have no way of knowing

5 (13). The following maps show the position of the Earth's continents and oceans. The circles on each map mark the locations where volcanic eruptions occur on land. Which map do you think most closely represents the places where these volcanoes are typically observed?

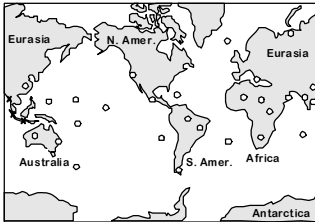
Circle one: **A** **B** **C** **D** **E**



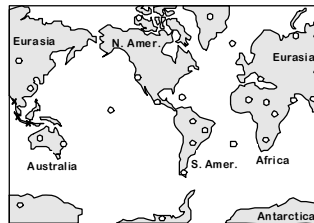
A. Mostly along the margins of the Pacific and Atlantic Oceans



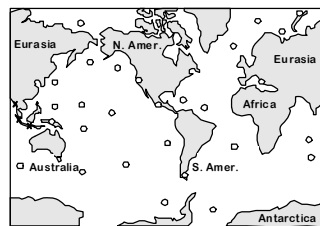
B. Mostly along the margins of the Pacific Ocean



C. Mostly in warm climates



D. Mostly on continents



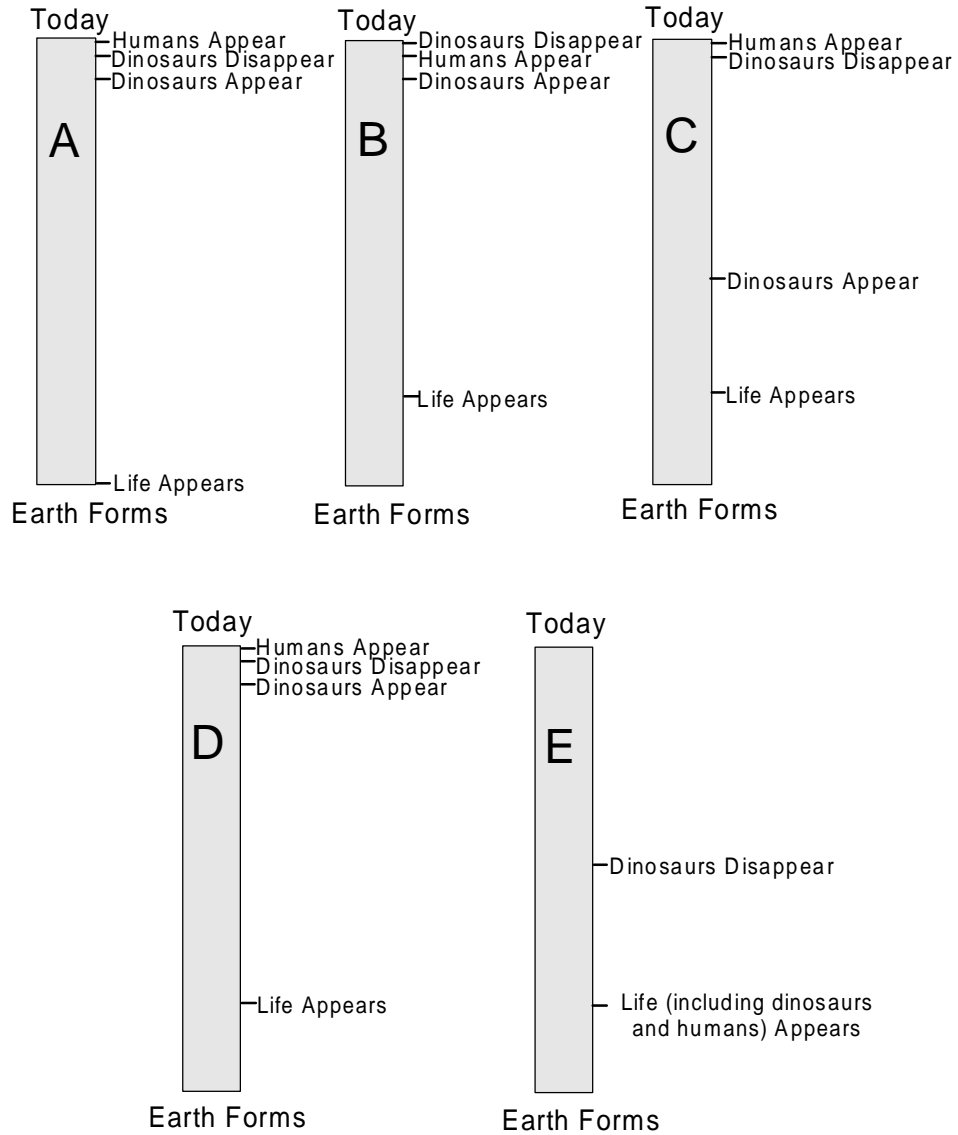
E. Mostly on islands

6 (19). The Earth probably has a magnetic field because of:

- (A) Changes in the composition of the Earth's crust
- (B) Gravity
- (C) Liquid metal moving inside the Earth
- (D) The Earth's revolution around the Sun
- (E) None of the above, the Earth does not have a magnetic field

7 (28). Which of the figures below do you think most closely represents changes in life on Earth over time?

Choose one: **A** **B** **C** **D** **E**



8 (34). What causes most of the waves in the ocean?

- (A) Tides
- (B) Earthquakes
- (C) Wind
- (D) Tsunamis

9 (37). If the single continent in #15 (73) did exist, how long did it take for the single continent to break apart and form the arrangement of continents we see today?

- (A) Hundreds of years
- (B) Thousands of years
- (C) Millions of years
- (D) Billions of years
- (E) It is impossible to tell how long the break up would have taken

10 (46). Which of the following describes what scientists mean when they use the word “earthquake”. **Choose all that apply.**

- (A) All earthquakes create visible cracks on the Earth's surface
- (B) When an earthquake occurs, the earth shakes at least once every 10 seconds for a period of at least 1 minute
- (C) All earthquakes damage man-made structures
- (D) When an earthquake occurs, energy is released from inside the Earth
- (E) When an earthquake occurs, the gravitational pull of the Earth increases

11 (51). Which of the following responses best summarizes the relationship between volcanoes, large earthquakes, and tectonic plates?

- (A) Volcanoes are typically found on islands and earthquakes typically occur in continents. Both volcanoes and large earthquakes occur near tectonic plates.
- (B) Volcanoes and large earthquakes both typically occur along the edges of tectonic plates.
- (C) Volcanoes mostly occur in the center of tectonic plates and large earthquakes typically occur along the edges of tectonic plates.
- (D) Volcanoes and large earthquakes both typically occur in warm climates near tectonic plates.
- (E) Volcanoes, large earthquakes, and tectonic plates are not related, and each can occur in different places.

12 (58). Why do tectonic plates move?

- (A) The eruption of underwater volcanoes pushes the tectonic plates
- (B) Currents in the ocean push against the tectonic plates
- (C) Earthquakes push the tectonic plates
- (D) Material is moving beneath the plates
- (E) Magnetism moves the tectonic plates

13 (63). How big was the planet Earth when dinosaurs first appeared?

- (A) Smaller than today
- (B) Larger than today
- (C) Same size as today
- (D) We have no way of knowing

14 (68). If you could travel back in time to when the Earth first formed as a planet How many years back in time would you have to travel?

- (A) 4 hundred years
- (B) 4 hundred-thousand years
- (C) 4 million years
- (D) 4 billion years
- (E) 4 trillion years

15 (73). Some people believe there was once a single continent on Earth. Which of the following statements best describes what happened to this continent?

- (A) Meteors hit the Earth causing the continent to break into smaller pieces
- (B) The Earth lost heat over time and cracked, causing the continent to break into smaller pieces
- (C) Material beneath the continent moved, causing the continent to break into smaller pieces
- (D) The Earth gained heat over time and cracked, causing the continent to break into smaller pieces
- (E) Only a small number of people believe there was once a single continent, and it is more likely that the continents have always been in roughly the same place as they are today