

Student Review

Investigations in Earth and Space Science Semester B 2013 Examination

Test Description

Length: 2 hours

Items: 48 SR (85%), 2 BCRs (15%)

Unit	Approximate Number of Selected Response Items
IESS Skills and Processes	12
Restless Earth	16
Earth Materials & Surface Processes	9
Earth History/Global Change	11
Totals	48

The vocabulary terms and objectives are grouped into units for your convenience. Some items may occur in multiple units during the semester. The vocabulary includes terms that students may encounter when reading examination items. *The vocabulary list is provided to support the use of common language in the application and analysis of the concepts in the listed objectives. This study guide should be used throughout semester instruction to reflect on learning and organize materials to aid in the on-going review of learning.*

Skills and Processes

balance
conclusion
data analysis
dependent variable
density
graduated cylinder
hypothesis
independent variable
pattern
pi graph
prediction
procedure
ratio
range
sample size
scientific model
scientific notation
trend

Restless Earth

convection
convergence
divergence
earthquake
fault
hot spot
island chain
lithosphere
mantle
mid-ocean ridge
plate
plate boundary
plate tectonics
rift valley
San Andreas Fault
sea floor spreading
seismograph
subduction
transform boundary
trench

volcano
Earth Materials & Surface Processes
chemical weathering
compounds
core sample
crystal shape
deposition
elements
erosion
foliation
hardness
igneous
landform
lithification
mechanical
weathering
metamorphic
minerals
oxygen
rock cycle

sedimentary
streak
weathering
Earth History/Global Change
absolute age
correlation
relationships
fossil evidence
global warming
greenhouse gas
half-life
outcropping
radioactive dating
radioisotope
relative age
solar radiation
superposition
unconformity
uniformitarianism

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Upon successful completion of Semester B, the student should be able to:

Investigations Earth Space Systems Skills and Processes

- form a working hypothesis.
- test a working hypothesis.
- select appropriate materials to conduct an investigation.
- identify appropriate methods for conducting an investigation.
- use relationships discovered in the lab to explain observations outside the lab.
- analyze data to make predictions, decisions, or draw conclusions.
- describe trends revealed by data.
- use analyzed data to confirm, modify, or reject a hypothesis.
- interpret graphics such as maps, graphs, and satellite images.
- read a technical selection and interpret it appropriately.
- describe similarities and differences when explaining concepts and/or principles.
- express large quantities using scientific notation.

Restless Earth

- explain how variations in heat flow from Earth's interior affect the circulation of the mantle.
- explain how variations in heat flow from Earth's interior affect the movement of plates and volcanic activity.
- give evidence to support continental drift, sea-floor spreading, and plate tectonics.
- give examples of Earth features caused by sea-floor spreading and plate tectonics. Examples; San Andreas Fault, Hawaiian Islands, Marianas Trench, Himalayas Mountains
- compare divergent, convergent, and transform plate boundaries.
- explain changes in the Earth's surface at subduction zones.
- describe how island chains are produced by hot spots.
- analyze factors that influence the magnitude and intensity of earthquakes.
- explain how different types of volcanic activity reveal what is happening in the Earth's interior.

Earth Materials & Surface Processes

- identify physical properties of rocks.
- describe the rock cycle.
- explain how erosion affects the rock cycle.
- identify silicon and oxygen as elements commonly found in minerals.
- describe how igneous rocks with a large grain size form on Earth.
- given a table, compare the hardness of different minerals.
- given a table, compare the density of different minerals.
- compare the origin and chemical composition of igneous, metamorphic, and sedimentary rocks.
- identify the processes responsible for the formation of sedimentary rocks.
- recognize examples of landform change caused by water and wave action.
- explain how resistance to erosion determines landforms.
- explain how chemical and physical properties of Earth materials are controlling factors in landform changes.
- using the characteristics of a rock, identify the process through which it formed.

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Earth History/Global Change

- use the principle of superposition to identify the relative age of surface features or rock layers.
- use cross-cutting relationships to determine the relative age of rocks.
- describe the principle of uniformitarianism.
- describe the principle of radioactive dating and radioisotopes decay
- select an appropriate method to determine the age of a rock.
- describe how fossil evidence can support the age of rocks.
- identify a technique used by geologists to identify the age of events in Earth's history.
- identify a greenhouse gas in Earth's atmosphere.
- explain how global temperature change may affect sea level.

BCRs were put on the exam review sheets to encourage appropriate student collaboration and review of concepts in preparation for the entire exam (not just the BCRs). Teachers should not address these BCRs during the course of their instruction and review with students other than highlighting their availability to support STUDENT review and to teach, model and encourage collaboration around the concepts.

Be sure to consider the completeness of your response, supporting details, and accurate use of terms. Write your response on the lines provided on your Constructed Response Answer Sheet.

Students should be prepared to answer any of the following BCRs. Teachers will select two from the list below:

BCR 1: Erosion Investigation

Students investigate erosion of three different soils. They decide to use water. Design an investigation to help them determine which soil is most affected by erosion from water.

Be sure to include

- the materials needed.
- the independent and dependent variables.
- a numbered procedure for them to follow.
- important data to collect.
- ways to improve the accuracy of their results.

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BCR 2: Comparing Rocks

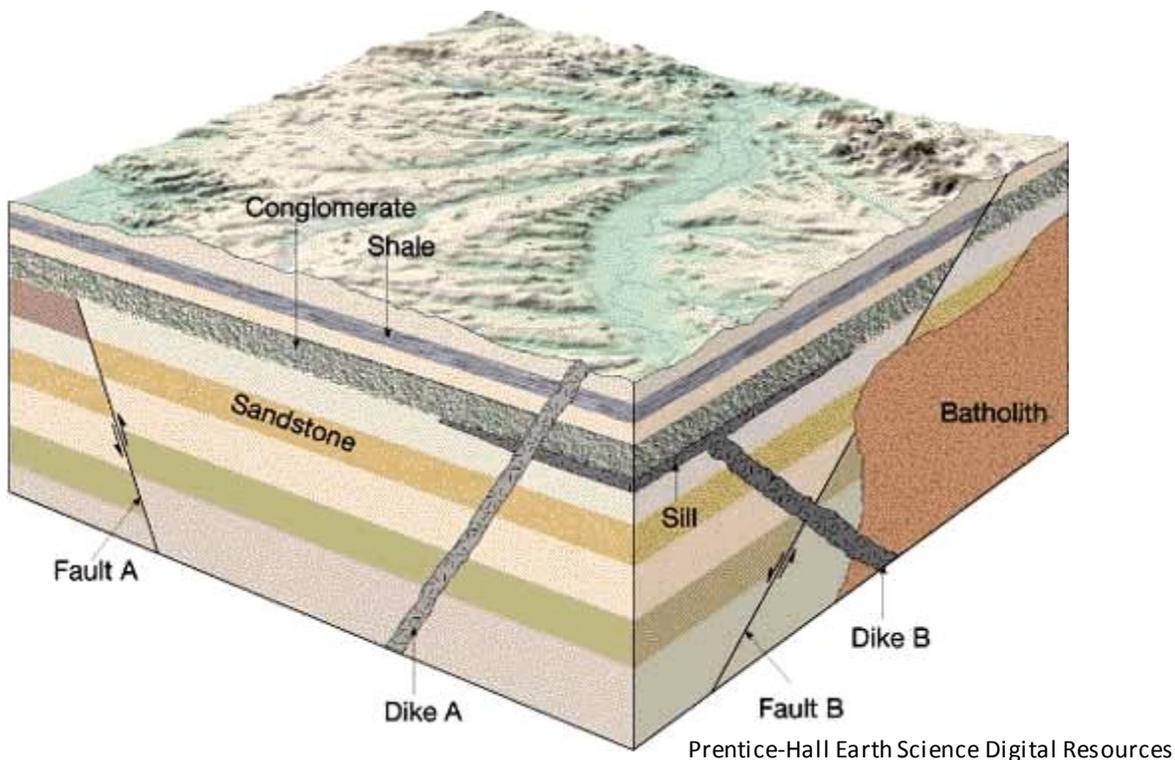
Compare igneous, metamorphic, and sedimentary rocks.

Be sure to include

- the origin of each type.
- an example of each type.

BCR 3: Physical Changes

Earth is constantly changing. Changes occur in the atmosphere, on Earth's surface, and below Earth's surface. As these changes occur, processes in each of these locations significantly affect processes in the other locations. Review the diagram of a cross section of Earth pictured below



Prentice-Hall Earth Science Digital Resources

Explain the physical processes that created this cross section.

Be sure to include:

- **evidence supporting the occurrence of tectonic events below the surface**
- **evidence supporting the occurrence of tectonic events at the surface**
- **example of water's role in changing Earth's surface (you may use evidence from the cross section or information from investigations this semester)**