**NGS: NEXT GENERATION SCIENCE**

**EARTH SCIENCE FINAL EXAM STUDY GUIDE**

**UNIT 1 - STUDYING THE EARTH**

**Chapter 1 - Introduction of Earth Science**

**1.1 What is Earth Science?**

* How did people in the past interpret the natural phenomena of the earth?
  + In what ways do today’s scientist interpret them?
* Know ALL the Branches of Earth Science - definitions and its importance to society
  + Geology
  + Oceanography
  + Meteorology
  + Astronomy
* What are the 4 primary areas that earth scientists study? - definitions
  + geosphere
  + hydrosphere
  + atmosphere
  + biosphere
* What is ecology?
* What is an ecosystem? - definition and examples
* Environmental Pollution - know various types and there effects.

**1.3 Birth of a Theory: The Big Bang**

* What’s a spectrum?
* How are the colors organized in a spectrum?
* What color in the spectrum are known to have the longest wavelength? The shortest wavelength?
* How does light travel?
* What’s the definition of wavelength?
* What’s the definition of the doppler effect?
* What is a bright line spectrum?
* What did the study of starlight reveal about our universe?
* What did scientists conclude about the universe? What theory emerged from this conclusion?
* The Big Bang Theory
  + What does the hypothesis state?
  + Why didn’t a number of scientists accept the Big Bang hypothesis?
  + What important discovery in the 1960s finally convince them?
  + Why must the Big Bang theory continue to be tested?

**Chapter 2 - The Earth in Space**

**2.1 Earth: A Unique Planet**

* Why is the earth not considered to be a perfect sphere?
* What does earth’s hydrosphere consist of?
* What does the earth’s atmosphere consist of?

The Earth’s Interior

* What are seismic waves?
* What are the two types of seismic waves? How do they differ?

Zones of the Earth

What and where is the Moho?

Crust

* Where is the crust located?
* What’s the difference between oceanic crust and continental crust?

Mantle

* Where is the mantle located?
* What are the two types of mantle? What are the difference between the two?

Core

* Where is the core located?
* What are the two parts of the core? And What’s the difference between the two?

**BE ABLE TO CORRECTLY DRAW AND LABEL THE ZONES OF THE EARTH**

The Earth as a Magnet

* The lines of force of the earth’s magnetic poles extends between what?
* What is the magnetosphere?

The Earth’s Gravity

* What is the definition of gravity?
* What does the law of gravitation state?
* What’s the difference between mass and weight?

**Section 2.2 Movements of the Earth**

* Describe what the earth’s rotation is.
* Describe earth’s orbit around the sun?
* Define what a revolution is in respect to the earth.
* The earth’s tilt is pointed toward what?

The Seasons

* Be able to explain each of the following:
  + Summer Solstice
  + Winter Solstice
  + Autumnal Equinox
  + Vernal Equinox

**BE ABLE TO CORRECTLY DRAW AND LABEL THE EACH SEASON AS IT RELATES TO EARTH’S ORBIT.**

Precession

* What is precession?
* What does precession have to do with the earth’s axis being pointed toward Polaris?

**Chapter 4 - Plate Tectonics**

**Section 4.1 Continental Drift**

* What observations did explorers make more than 400 years ago?
* Explain Wegener’s hypothesis of continental drift.

Evidence of Continental Drift

* List evidence for Wegener’s hypothesis of continental drift.

Seafloor Spreading

* Describe seafloor spreading.
* What is the Mid-Atlantic Ridge?
* What did the study of rocks from the ocean floor reveal?

The Renewal of the Ocean Floor

* Who is Harry Hess? And why is he important?

**Section 4.2 The Theory of Plate Tectonics**

* Summarize the theory of plate tectonics.
* Know the two types of crust.
* Distinguish between the specific parts of the mantle and their functions.

Lithospheric Plate Boundaries

* Compare and contrast the three types of plate boundaries
  + Divergent Boundary
  + Convergent Boundary
  + Transform Fault Boundary
    - What is another name for this type of boundary?
* Describe what a rift valley is.
* What is a subduction zone?
* Define what an ocean trench is.
* What is an island arc? What’s an example of an island arc?

Causes of Plate Motion

* Define convection.
* Describe what a convection current is in detail.
* Explain the possible role of convection currents in plate movement.

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**Chapter 6 Earthquakes and Chapter 7 Volcanoes**

**Section 6.1 Earthquakes and Plate Tectonics**

* What is the definition of an earthquake?
* What kind of scientist studies earthquakes?
* Explain why earthquakes generally occur at plate boundaries.
* What’s the difference between an earthquake’s focus and epicenter?
* What are the 3 Major Earthquake and Volcano Zones?

**Section 6.2 Recording Earthquakes**

* What is a seismograph?
* How do scientist use the data from a seismograph to locate an earthquake epicenter? (Refer to Earthquake Virtual Lab)

Types of Seismic Waves

* Compare and contrast the three types of seismic waves:
  + P Waves
  + S Waves
  + L Waves
* Which types of seismic waves are used to detect the epicenter of an earthquake?

Earthquake Measurement

* What is a microquake?
* What is the difference between an earthquake’s magnitude and intensity?
* What’s the purpose of the Richter scale?

**Section 6.2 Earthquake Damage**

* What is a tsunami?

**Section 7.1 Volcanoes and Plate Tectonics**

* What is the difference between magma and lava?
* Define volcanism.
* What is a volcano vent?
* What are hot spots? Provide an example.

**Section 7.1 Volcanic Eruptions**

* Describe the two types of volcanic lava.
* What is pahoehoe?
* What is aa?
* Define tephra. What is another name for it?
* What are the three types of volcanoes?
* Define what a crater is.
* Define what a caldera is.

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**Chapter 10 Rocks**

Section 10.1 Rocks and the Rock Cycle

* What are the three major types of rock? Describe each one in detail.
* Describe the rock cycle.

Section 10.2 Igneous Rock

* Explain the difference between intrusive and extrusive igneous rocks. Provide an example for each.

Section 10.3 Sedimentary Rock

* Describe in detail the process that form sedimentary rock.
* What are the 3 formations of sedimentary rock? What are some examples of each that we went over in class?
* Name and describe common sedimentary rock features.

Section 10.4 Metamorphic Rock

* Define metamorphism.
* Describe the difference between contact metamorphism and regional metamorphism.
* What are the two classifications of metamorphic rocks?

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**Chapter 25 Weather**

Bill Nye Video

* What is El Nino? Describe its effects to water and marine life.

**Section 25.2 Fronts**

* What is a front?
* Why is it that fronts do not exist in the tropics?

Types of Fronts

* What are the four types of fronts? Describe each one in detail.
* What is a squall line? How does it form?

Hurricane

* What is a hurricane?
* How are hurricane and typhoon similar? How are they different?
* What is the eye of a hurricane? Describe it.
* What is the most dangerous aspect of a hurricane?
* Most deaths during hurricanes are caused by what?

Thunderstorms

* What is a thunderstorm?
* What causes thunder?
* What causes lightning?
* What are some safety measures one should take during a thunderstorm?

Tornadoes

* What is a tornado?
* The destructive power of a tornado is due to what?
* What is the significance of ‘Tornado Alley’? Explain in detail.
* What is a waterspout?
* What’s the difference between a water spout and a tornado?

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