

## 2018 EXAM 2 Review

**True/False** *Indicate whether the statement is true or false.*

T\_\_1. The focus of most earthquakes is less than 100 km.

F\_\_2. The Richter scale is the most effective measure of an earthquakes magnitude

F\_\_3. An earthquake epicenter is that point where an earthquake's energy is released.

F\_\_4. The first motion of an earthquake seismic wave recorded on many seismographs provide only one solution for the orientation of the associated fault plane. **54%**

T\_\_5. The S-wave shadow zone is evidence that the outer core is liquid.

T\_\_6. 95% of earthquakes occur at tectonic plate boundaries where rocks converge, diverge, or slip past each other.

T\_\_7. A one-integer increase in earthquake magnitude represents an increase of about 30 times the amount of seismic energy released. **32%**

T\_\_8. Positive magnetic anomalies are evidence that the subsurface might locally contain iron-bearing minerals.

T\_\_9. Liquefaction occurs when water-saturated sediment mixes and destabilizes due to local earthquake seismicity

F\_\_10. Sedimentary beds exposed in the Delaware Water Gap dip steeply southeast.

T\_\_11. Sediment includes minerals extracted from water by organisms to build their shells

T\_\_12. Crystalline is a term used to describe igneous and metamorphic rocks.

F\_\_13. Compaction and cementation rarely occur together.

F\_\_14. Most tsunamis are caused by shallow submarine earthquakes along oceanic spreading centers. **30%**

F\_\_15. Angular unconformities are used to help establish absolute rock ages.

T\_\_16. A half-life is the time it takes for half of the parent element to decay to the daughter element.

F\_\_17. Superposition means that undisturbed strata are oldest toward the top.

F\_\_18. Sandstone is more common at Earth's surface than mudrock. **65%**

F\_\_19. The earliest recorded attempts at estimating the age of the Earth resulted in too old of planet.

F\_\_20. Short-lived radioactive isotope pairs in igneous rocks provide the most accurate dates.

**Multiple Choice** Identify the choice that best completes the statement or answers the question.

\_\_\_21. Seismology has produced a great amount of information about

- A. the mechanisms of plate tectonics. **4%**
- B. the physical and chemical state of Earth's interior.
- C. what causes mountain building.
- D. A and B **39%**
- E. all of the above **57%**

\_\_\_22. Which of the following is true with respect to metamorphic grade?

- A. mudstone < slate < gneiss < schist < marble **20%**
- B. mudstone < slate < schist < gneiss < migmatite **35%**
- C. mudstone < schist < slate < migmatite < gneiss **13%**
- D. mudstone < slate < marble < gneiss < schist **9%**
- E. mudstone < gneiss < schist < marble < quartzite **24%**

\_\_\_23. Liquefaction is when water-saturated sediment becomes

- A. compacted and dense.
- B. buried by new sediment, thereby expelling some liquid.
- C. mixed by burrowing organisms.
- D. mixed and destabilized to behave like a fluid **87%**
- E. separated into liquid and solid fractions.

\_\_\_24. The guiding principle of geology is

- A. uniformitarianism **93%**
- B. stratigraphic succession
- C. time
- D. radiometric age dating
- E. the rock cycle

- \_\_\_25. Surface waves generated by an earthquake
- A. travel faster than body waves.
  - B. travel slower than body waves.
  - C. are more destructive to human infrastructure than body waves
  - D. are not common.
  - E. B and C **78%**

- \_\_\_26. Departures from Earth's expected gravitational attraction would NOT be due to
- A. subsurface hydrocarbon resources **15%**
  - B. subsurface metal ore bodies **4%**
  - C. differences in substrate density **4%**
  - D. differences in surface temperature **30%**
  - E. all of the above **46%**

- \_\_\_27. Turbidity current deposits are
- A. poorly sorted mixtures of mud and sand. **9%**
  - B. known as turbidites. **9%**
  - C. built-up to form submarine fans. **0%**
  - D. caused by slumps induced by earthquakes. **13%**
  - E. all of the above **69%**

- \_\_\_28. Continental shelves are widest when associated with
- A. island arcs and volcanism. **11%**
  - B. passive margins. **52%**
  - C. intense earthquake activity. **7%**
  - D. active margins. **22%**
  - E. ocean trenches. **9%**

\_\_\_29. The two types of glacial drift are

- A. erratics and dropstones
- B. pluvial and ephemeral
- C. moraines and erratics
- D. till and moraines
- E. till and stratified drift **93%**

\_\_\_30. The two types of glaciers are

- A. Continental and oceanic
- B. Valley and continental **89%**
- C. Fast and slow moving
- D. Valley and polar
- E. Polar and oceanic

\_\_\_31. Dolostone (or dolomite) is different from limestone because it

- A. has magnesium replacing some calcium **27%**
- B. iron replacing calcium **8%**
- C. it is more compacted **8%**
- D. manganese on its surface **4%**
- E. B and C **52%**

\_\_\_32. Detrital sediment consists of solid particles, products of

- A. chemical and mechanical weathering **35%**
- B. meteorite strikes
- C. mechanical weathering only **65%**
- D. metamorphic activity
- E. chemical weathering only

\_\_\_33. The principle types of metamorphism are

- A. fast, slow, and retrograde
- B. schist, gneiss, and marble
- C. contact, dynamic, and regional **85%**
- D. shallow, deep, and hydrothermal

\_\_\_ 34. Ripple marks are formed by

- A. sand moving up the slope of a dune
- B. sand settling down after crossing a dune crest
- C. mud baked in the sun
- D. foraging and burrowing organisms
- E. directional wind or water currents **98%**

\_\_\_35. Metamorphism involves

- A. fluid activity
- B. mineral crystallization
- C. transport of elements by water
- D. heat and pressure
- E. all of the above **87%**

\_\_\_ 36. Transportation of sediment results in

- A. fossil development **9%**
- B. fossil growth **0%**
- C. rock particles always being in suspension **0%**
- D. rounding and sorting **70%**
- E. all of the above **22%**

\_\_\_37. The seismic energy released by an earthquake stems from

- A. the rocks porosity and permeability.
- B. the rocks density.
- C. the rocks plasticity.
- D. the rocks elasticity. **76%**

\_\_\_38. The magnitude of an earthquake is another term for

- A. its intensity.
- B. the damage created.
- C. the energy released. **76%**
- D. the duration of trembling.
- E. frequency of occurrence

\_\_\_39. What is the primary scientific use of conodont fossils for the petroleum industry?

- A. Determining the percentage of hydrocarbon in the source rock
- B. Determining the thermal maturity of the source rock and reservoir
- C. Determining the pressure conditions of the source rock and reservoir
- D. Determining the geological age of the reservoir
- E. Locating natural gas deposits

\_\_\_40. Hornfels is a metamorphic rock

- A. resulting from the interaction of an igneous body with existing sedimentary rock **61%**
- B. resulting from the interaction of an igneous body with existing igneous rock **26%**
- C. resulting from dynamic recrystallization **9%**
- D. resulting from deep-seated shearing and uplift **2%**
- E. results from burial and compression **2%**

\_\_\_41. The major depositional settings are

- A. Glacial, rift basins, and mountain belts.
- B. Extensional, compressional, and neutral
- C. Continental, transitional, and marine **85%**
- D. Convergent, divergent, and transform
- E. Dynamic, hydrothermal, and contact metamorphic

\_\_\_ 42. A radioactive decay curve

- A. is representative of a linear curve
- B. is representative of a geometric curve
- C. can be used to determine the proportion of parent atom remaining
- D. can be used to determine a sister product

E. B and C **78%**

\_\_\_ 43. A marine transgression occurs when sea level \_\_\_ with respect to the land

A. falls

B. rises **85%**

C. fluctuates

D. retreats

\_\_\_ 44. At a boundary between materials of different density and elasticity, P- and S-waves are

A. reflected **4%**

B. refracted **15%**

C. reflected and refracted **57%**

D. not affected **7%**

E. absorbed **17%**

\_\_\_ 45. Cross-cutting relationships are

A. one of the fundamental principles of original horizontality

B. one of the fundamental principles of absolute age dating

C. one of the fundamental principles of relative age dating **89%**

D. one of the fundamental principles of stratigraphic succession

\_\_\_ 46. Surfaces of discontinuity in a stratigraphic sequence that encompass significant periods of time are

A. Subconformities

B. Malconformities

C. Proconformities

D. Unconformities **89%**

E. Broconformities

\_\_\_\_ 47. The type of rock is

- A. medium-grade metamorphic
- B. low-grade metamorphic
- C. detrital sedimentary
- D. chemical sedimentary
- E. high-grade metamorphic

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- A. medium-grade metamorphic
- B. low-grade metamorphic
- C. detrital sedimentary
- D. chemical sedimentary
- E. high-grade metamorphic

\_\_\_\_ 49. The type of rock is

- A. gneiss
- B. schist
- C. slate
- D. sandstone
- E. conglomerate

\_\_\_\_ 50. What are two minerals seen in the rock for question 47?

- A. Mica and garnet
- B. Hornblende and garnet
- C. Pyroxene and zircon
- D. Biotite and zircon
- E. Quartz and calcite