

DO NOT WRITE ON THIS EXAM – ONLY WRITE ON THE ANSWER SHEET!

**Multiple Choice Questions** (30 points) – for each question, please choose the best answer and circle your answer on the answer sheet (**do not write on this exam**). One point each.

1. The Burgess Shale fauna is significant because it contains the:

- A. first shelled animals
- B. carbonized impressions of many extinct soft-bodied animals
- C. fossils of rare marine plants
- D. earliest known benthic community
- E. conodont animal

2. The age of the Burgess shale is:

- A. Cambrian
- B. Ordovician
- C. Silurian
- D. Devonian
- E. Mississippian

3. The three invertebrate groups that comprised the majority of Cambrian skeletonized life were:

- A. trilobites, archaeocyathids, brachiopods
- B. echinoderms, corals, bryozoans
- C. brachiopods, archaeocyathids, corals
- D. trilobites, echinoderms, corals
- E. trilobites, brachiopods, corals

4. During which Paleozoic cratonic sequence were cyclothems common?

- A. Sauk
- B. Absaroka
- C. Kaskaskia
- D. Zuni
- E. Tippecanoe

5. During which period did extensive glaciation of the Gondwana continent occur?

- A. Cambrian
- B. Silurian
- C. Devonian
- D. Carboniferous
- E. Permian

6. Which was the first Paleozoic orogeny to occur in the Cordilleran mobile belt?

- A. Acadian
- B. Alleghanian
- C. Antler
- D. Caledonian
- E. Ellesmere

7. The economically valuable deposit in a cyclothem is:

- A. gravel
- B. metallic ore
- C. coal
- D. carbonates
- E. evaporites

8. Which orogeny was not involved in the closing of the Iapetus Ocean?

- A. Alleghanian
- B. Acadian
- C. Taconic
- D. Caledonian
- E. Antler

9. Which was the first major transgressive sequence onto the North American craton?

- A. Absaroka
- B. Sauk
- C. Zuni
- D. Kaskaskia
- E. Tippecanoe

10. What type of plate interaction produced the Taconic orogeny?

- A. divergent
- B. transform
- C. oceanic-oceanic convergent
- D. oceanic-continental convergent
- E. continental-continental convergent

11. During which sequence did the eastern margin of Laurentia change from a passive plate margin to an active plate margin?

- A. Zuni
- B. Tippecanoe
- C. Sauk
- D. Kaskaskia
- E. Absaroka

12. An elongated area marking the site of mountain building is a(n):

- A. cyclothem
- B. mobile belt
- C. platform
- D. shield
- E. craton

13. The ocean separating Laurentia from Baltica is called the:

- A. Panthalassa
- B. Tethys
- C. Iapetus
- D. Atlantis
- E. Perunica

14. Which mobile belt is located on the eastern side of North America?

- A. Franklin
- B. Cordilleran
- C. Ouachita
- D. Appalachian
- E. answers A and B

15. During the deposition of the Sauk sequence, the only area above sea level besides the Transcontinental Arch was the:

- A. Cratonic margin
- B. Canadian shield
- C. Queenston Delta
- D. Appalachian mobile belt
- E. Taconic highlands

16. One type of Proterozoic that indicates some free oxygen was present in the atmosphere is:

- A. continental red beds
- B. carbon-conglomerate assemblages
- C. ultramafic lava flows
- D. Wilson Cycle deposits
- E. prokaryotic accumulates

17. A large landmass composed mostly of Greenland and North America that evolved during the Proterozoic is called:

- A. Grenvillia
- B. Ediacara
- C. Laurentia
- D. Pannotia
- E. Romania

18. Cells with a membrane-bound nucleus and internal structures called organelles are called \_\_\_\_ cells.

- A. komatiitic
- B. endosymbiotic
- C. porphyritic
- D. aphanitic
- E. eukaryotic

19. A sequence of rocks on land made up of mantle rocks overlain by oceanic crust and deep sea sediments is a(n):

- A. granite-gneiss complex
- B. turbidite sequence
- C. ophiolite
- D. continental red bed
- E. Supercycle

20. Columnar masses of rock resulting from the activities of cyanobacteria (blue-green algae) are:

- A. heterotrophs
- B. endosymbionts
- C. orogens
- D. Stromatolites
- E. trilobites

21. The widely accepted theory explaining the origin of eukaryotic cells holds that these cells formed by:
- A. endosymbiosis
  - B. parthenogenesis
  - C. binary fission
  - D. pangenes
  - E. Autotrophism
22. The origin of life from nonliving matter is known as:
- A. outgassing
  - B. abiogenesis
  - C. cratonization
  - D. biotic accretion
  - E. polymerization
23. The ancient, stable part of a continent made up of a shield and platform is called a:
- A. stromatolite
  - B. greenstone belt
  - C. craton
  - D. black smoker
  - E. komatiite
24. Photochemical dissolution is a process whereby:
- A. plants synthesize organic molecules
  - B. carbon dioxide forms as a metabolic waste product of animal respiration
  - C. continents grow along their margins by accretion
  - D. gases emitted from Earth's interior release methane and ammonia into the atmosphere
  - E. water molecules are disrupted to yield hydrogen and oxygen
25. Stromatolites are produced by cyanobacteria which are also known as:
- A. blue-green algae
  - B. eukaryotic cells
  - C. black smokers
  - D. heterotrophs
  - E. polymers
26. Granite-gneiss complexes are:
- A. the most widespread Archean-age rocks
  - B. found at oceanic spreading ridges
  - C. mostly likely turbidite deposits
  - D. noted from their fossil plants and animals
  - E. green because they contain the minerals epidote and chlorite
27. The exposed part of the craton of North America is called the:
- A. Canadian shield
  - B. Wyoming province
  - C. Adirondack terrane
  - D. Michigan basin
  - E. Midcontinent platform

28. Which one of the following sequences of geologic time designations is in the correct order from oldest to youngest:

- A. Archean-Phanerozoic-Proterozoic
- B. Proterozoic-Phanerozoic-Archean
- C. Phanerozoic-Archean-Proterozoic
- D. Archean-Proterozoic-Phanerozoic
- E. Proterozoic-Archean-Phanerozoic

29. The origin of greenstone belts is not fully resolved, but many geologists agree that some of the formed in:

- A. continental shelf environments
- B. back-arc marginal basins
- C. carbonate-evaporite depositional areas
- D. transform boundary shear zones
- E. river floodplain environments

30. The vertical sequence of the Tapeats Sandstone, Bright Angel Shale and Muav Limestone represents:

- A. a transgression
- B. time transgressive formations
- C. rocks of the Grand Canyon, Arizona
- D. sediments deposited in the Sauk Sea
- E. All of the previous answers

**Essay Question (20 points):** In a well-written essay, summarize the geologic history of the continent that we now call North America during the Paleozoic. Your essay must include all of the following geologic events:

The Acadian, Antler, Alleghanian/Ouachita and Taconic orogenies  
The assembly of the continents Laurasia, Laurentia and Pangaea  
The complete loss of the Iapetus Ocean  
The Absaroka, Kaskaskia, Sauk and Tiptecanoe transgressions

You must include the relative age of each event (in which geologic period each geologic event occurred and how are they related to each other in time) and what caused all of the geologic events except the transgressions. Your essay must be written in Standard English as an essay, not a list of phrases. Spelling does count. You will be provided with a geologic time scale to help you with your essay.

The essay must be an essay, not a list of sentences. Your essay will be graded based on content, syntax, grammar and spelling. You will lose points if I cannot understand what you have written.

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