

Exam III:**CA Young Volcanoes and Sedimentary Rocks**

- 1) The California Cascade volcanoes are a result of the subduction of what oceanic plate?
 - A) Gorda Plate
 - B) Juan de Fuca Plate
 - C) Farallon Plate
 - D) Cocos Plate
- 2) Why is Mt. Shasta high in elevation and the Modoc Plateau relatively flat?
 - A) Mt. Shasta is a shield volcano and the Modoc Plateau is rhyolitic in composition
 - B) Mt. Shasta is a stratovolcano and the Modoc Plateau is flood basalt province
 - C) Mt. Shasta is a lava dome and the Modoc Plateau is a caldera
 - D) Mt. Shasta is a cinder cone and the Modoc Plateau is a flood basalt province
- 9) What kind of volcano is Mt. Shasta (e.g. shield, lava dome, cinder cone, or stratovolcano), and how does it compare in size to other Cascade volcanoes?
 - A) shield volcano, smaller in volume
 - B) lava dome, smaller in volume
 - C) stratovolcano, largest in volume
 - D) cinder cone, largest in volume
- 10) How does the volume of the catastrophic, 300,000-year-old event at Mt. Shasta compare to the 1980 rockslide, debris avalanche at Mt. St. Helens?
 - A) 10 times larger
 - B) 15 times larger
 - C) 20 times larger
 - D) 5 times larger

Mt. Shasta

- 3) What occurred during the dramatic eruption at Mt. Shasta about 300,000 years ago?
 - A) a boca eruption of relatively small size
 - B) the eruption of the Rockland Ash
 - C) the formation of Hotlum cone
 - D) Giant debris avalanche
- 4) About how often does Shasta erupt?
 - A) every 400 yrs.
 - B) Every 500 yrs.
 - C) Every 600 yrs.
 - D) Every 300 yrs.
 - E) Every 200 yrs.
- 5) When was the last eruption of Shasta?
 - A) 1886
 - B) 1586
 - C) 1786
 - D) 1686
- 6) What is the name of the topography that resulted after the 300,000 year eruption?
 - A) hummocky
 - B) glacially
 - C) cone
- 7) The oldest of the four different cone-building events that define the current Mt. Shasta (in last 10,000 years) is the _____.
 - A) Hotlum cone
 - B) Mt. Shastinia cone
 - C) Sergeants Ridge cone
 - D) Misery Ridge cone
- 8) The youngest of the four cone-building events that define the current Mt. Shasta is the _____.
 - A) Hotlum cone
 - B) Mt. Shastinia cone
 - C) Sergeants Ridge cone
 - D) Misery Hill cone

Lassen Peak

- 11) What is Brokeoff Mountain a remnant of?
 - A) ancestral Mt. Tehema
 - B) ancestral Mt. Lassen
 - C) ancestral Mt. Dillard
 - D) ancestral Brokeoff Mt.
- 12) What caused Brokeoff Mountain to be "broken"?
 - A) erosion of ancestral volcano
 - B) non-eruption of volcano
 - C) caldera-type eruption and deposition of Rockland Ash
 - D) caldera-type eruption and deposition of Bishop Tuff
- 13) When did the event in question above occur?
 - A) 200,000 years ago
 - B) 1000 years ago
 - C) 500 years ago
 - D) 400,000 years ago
- 14) When were the most recent eruptions at Lassen Peak?
 - A) 1904 to 1911
 - B) 1914 to 1921
 - C) 1924 to 1931
 - D) 1934 to 1941
- 15) What type of volcano is Mt. Lassen?
 - A) stratovolcano
 - B) lava dome
 - C) cinder cone
 - D) shield volcano
- 16) What geological formation erupted during the caldera-forming event at ancestral Mt. Tehema?
 - A) Bishop Tuff
 - B) Valley Springs Tuff
 - C) Rockland Ash
 - D) Chaos Jumbles

Medicine Lake/Lava Beds

- 17) Lava tubes form, in part, by the cooling and hardening of the lava flow surface, which acts as an insulator for lava flowing within the lava tube.
A) True or B) False
- 18) What type of rock dominates Medicine Lake volcano and what type of volcano is it?
A) basalt, shield volcano
B) rhyolite, lava dome
C) andesite, stratovolcano
D) basalt, cinder cone
- 19) Medicine Lake volcano in the _____?
A) Cascade province
B) Sierra Nevada province
C) Modoc Plateau province
D) Klamath province
- 20) The geologic name of the depression in which Medicine Lake sits, on top of the volcano is a ___?
A) Horst
B) Graben
C) Fissure
D) Caldera
- 21) Medicine Lake volcano or Lava Beds is best described as a flood basalt province?
A) Medicine Lake volcano
B) Lava Beds National Monument
C) Long Valley Caldera
D) Salton Buttes
- 22) When were the most recent eruptions at Medicine Lake Volcano?
A) 700,000 years ago
B) 900 years ago
C) 200 years ago
D) 500,000 years ago

Long Valley/Inyo-Mono Chain

- 23) The pyroclastic, ash flow unit that erupted as a result of the catastrophic caldera forming event at Long Valley 760,000 years ago is the?
A) Rockland Ash
B) Bishop Tuff
C) Valley Springs Tuff
- 24) Based on the eruptive history of the Long Valley Caldera volcanic phase, what is the significance in the change in chemistry from post-caldera Devil's Postpile basalts to the rhyolites of the Mono-Inyo volcanic chain?
A) stable, caldera quiescence
B) possibly a new, caldera-forming event
C) possibly a new, basalt event
- 25) The term "craters" accurately describes the volcanoes of the Mono Craters chain.
A) True
B) False

- 26) When were the most recent volcanic eruptions in the Inyo-Mono Chain?
A) 6000 years ago, Mono Craters
B) 400-500 years ago, Inyo domes
C) 50,000 years ago, Mammoth Mtn.
D) 100,000 years ago, Moat Rhyolites
- 27) What is the name of the pyroclastic, ash flow unit that erupted as a result of the catastrophic caldera forming event at Long Valley 760,000 years ago?
A) Rockland Ash
B) Bishop Tuff
C) Valley Springs Tuff
D) Mammoth Tuff
- 28) Based on the eruptive history of the Long Valley Caldera volcanic system (i.e. basalt to rhyolites), what is the significance in the change in chemistry (silica content) from post-caldera Devil's Postpile basalts to the rhyolites of the Mono-Inyo volcanic chain?
a. no significance
b. stable, caldera quiescence
c. possibly a new, caldera-forming event
d. possibly a new, basalt event
- 29) What is the current rate of bulging of the caldera floor?
a. 1 to 2 cm/yr
b. 2 to 3 cm/yr
c. 3 to 4 cm/yr
d. 4 to 5 cm/yr
- 30) When were the most recent volcanic eruptions in the Inyo-Mono Chain?
a. 6000 years ago
b. 400-500 years ago
c. 50,000 years ago
d. 100,000 years ago

Sedimentary Rocks

- 31) What are the deposits of radiolaria on the seafloor known as, and what kind of rock do they eventually form?
A) Calcareous ooze, chert
B) Siliceous ooze, chert
C) Terrigenous sediment, limestone
D) Siliceous ooze, limestone
- 32) In a bedded sequence of sedimentary rocks, what does each bed represent in terms of depositional environments?
A) a different depositional environment, change in energy
B) no change
C) new horizon, same environment
D) none of the above

- 33) What famous geologic formation in California is made of siliceous ooze made of diatoms?
- Franciscan Formation
 - Santa Cruz Mudstone
 - Vaqueros Mudstone
 - Monterey Formation
- 34) Limestone is made of _____.
- the mineral calcite (CaCO_3)
 - the mineral quartz (SiO_2)
 - the mineral halite (NaCl)
- 35) Lithification commonly involves three processes
- weathering, erosion, deposition
 - burial, compaction, cementation
 - deposition, compaction, cementation
- 36) Calcareous oozes form the rock _____.
- chert
 - diatomite
 - limestone
 - rock salt
- 37) Turbidites are deposited by _____ and form on the continental _____.
- gravity, shelf and deep ocean
 - turbidity currents, slope and rise
 - turbidity currents, shelf and deep ocean
 - streams, river banks and lakes
- 38) Which of the following is NOT one reason why sedimentary rocks are important?
- conspicuous
 - fossil fuels
 - aquifer source
 - archives of earth history
- 39) Which of the following is an example of mechanical weathering?
- H_2CO_3 dissolution
 - spheroidal weathering
 - frost heaving
 - H_2CO_3 precipitation
- 40) Foraminifera oozes form the rock called ____.
- chert
 - limestone
 - diatomite
 - rock salt
- 41) Fissile best describes which sedimentary rock?
- claystone
 - siltstone
 - mudstone
 - shale
- 42) What happens at the CCD?
- calcareous oozes dissolve
 - siliceous oozes dissolve
 - clay stone dissolves
 - both a and b
- 43) What does clastic mean?
- cemented
 - sticky
 - fire
 - broken
- 44) The most mature sandstone is ____.
- Greywacke sandstone
 - quartz sandstone
 - arkose sandstone
- 45) The tectonic setting of quartz sandstones is ____.
- continental
 - trailing continental margin
 - active, subduction zone
- 46) The tectonic setting of greywacke sandstone is ____.
- continental
 - trailing continental margin
 - active, subduction zone
- 47) Coccolithophores are protista plankton known as _____, and form _____ oozes
- phytoplankton, calcareous
 - zooplankton, siliceous
 - zooplankton, calcareous
 - phytoplankton, siliceous
- 48) Graded beds deposited on the continental slope and rise are also known as _____.
- turbidites
 - ripple marks
 - cross beds
 - mud cracks
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Answer the following on this exam.

- 49) On the sketch below of a “trailing continental margin” (10 points)
- (1) label the continental shelf, slope, rise, and abyssal plain.
 - (2) Label where both calcareous and siliceous oozes are deposited?
 - (3) Label where sandstones, shales, abyssal clays, and turbidites are deposited?
 - (4) Label the CCD

