

GEOLOGY 11 EXAM 3 STUDY QUESTIONS

What is metamorphism and what kind of changes occur to a rock during metamorphism? What conditions produce metamorphism? Are these changes linked or independent? Can you explain your answer? What does it mean to be high or low grade?

What is devolatilization and how and when does it occur in minerals?

Metamorphism occurs over a broad pressure and temperature range. How can we determine the pressure and temperature at which a rock metamorphosed? Where/How are rocks metamorphosed by high temperatures and low pressures? by high pressures and low temperatures? by high pressures and temperatures?

What is contact metamorphism and how can it be distinguished from regional metamorphism?

What is a metamorphic facies? an index mineral? an isograd?

What does it mean that the earth has an AGD magnetic field? What does it mean that the field "reverses"?

What is secular variation? What is polar wobble? Does the pole wander?

What is a magnetic anomaly? How do they arise? Why do anomalies over the ocean floor occur as bands? Are there stripes on the ocean floor?

How does a rock become permanently magnetized? What is the "Curie temperature"?

How is oceanic crust made at divergent boundaries? Why is it considered a "chemical derivative" of the mantle? What is the most abundant volcanism on earth?

What are the rocks and igneous structures that make up an ophiolite?

How does the lithosphere mature as it moves away from a mid-ocean ridge? (What is a mid-ocean ridge and why do they exist?)

How does a transform boundary between two ridge segments work? What is the bathymetric expression of a transform boundary between two ridge segments?

The bathymetric expression of a transform boundary can commonly be seen many 100's of km away from related mid-ocean ridges. Why? Why is the transform only seismically active between the ridge segment and not away from the ridge? What kind of earthquakes occur at transform boundaries and at what depth?

What kind of structures are produced at a rifting continent?

What rock sequences are produced during the rift phase of continental divergence? During the drift phase?

Why can't continents remain a part of an active divergent boundary?

What is the bathymetric expression of a subduction zone? What is its seismologic expression?

Why do volcanic arcs form where the subducting plate reaches 100 km depth?

Why don't subducting plates melt? If they don't melt, where does the magma in the arc come from?

If the parent magma below an arc is basaltic (and it is!) why are andesites so common in arcs?

What types of igneous rocks are common in an arc built on ocean crust? What types are common in an arc built on a continent? How and why do they differ?

What is an accretionary wedge? What kind of rocks are found in an accretionary wedge? What is a melange?

What is the difference between a mountain belt and an orogenic belt?

What kind of structures are produced during continental collision? What kind of rocks are drawn into continental collision zones? What kind of rocks are produced in continental collision zones?

The origin of granites is linked to the development of metamorphism in orogenic belts. How?

Can you draw an idealized cross section of an orogenic belt? Which rocks were once part of the down going plate? Which rocks were once part of the over-riding plate? How would we recognize the "suture" between the two? What would you see in the "core" of the orogenic belt?

What is a hot spot? Name three presently active hot spots. What kind of igneous rocks are made at hot spots.

Can you name the most common setting or settings of formation for each of the six main types of igneous rocks (basalt, gabbro, andesite, diorite, rhyolite and granite)?

Where would you go on earth today to find each of the following features: divergent plate boundary; rifting continent; convergent plate boundary with ocean crust on the over-riding plate (an island arc); convergent plate boundary with continental crust on the over-riding plate (a continental arc); continental collision?

Do you still know the names of the periods of the Geologic Time Scale (in order) and the dates (in Ma) of the major time boundaries?