

Final Review:

Chapter 15: Geologic Structures

Types of folds: Anticline, syncline, asymmetrical, dome, basin

Types of Faults: Normal, reverse, thrust, strike-slip, left/right lateral

Headwall, footwall

Features of Faults:

Normal faults: horst, graben, scarp, triangular facets

Strike slip faults: offset stream, shutter ridge, sag ponds, linear valleys

Chapter 16: Earthquakes

Origins of Quakes: Elastic Rebound, Volcanoes, Landslides, Bombs, etc

Anatomy of a Fault: focus, epicenter, fault plane

Earthquake waves: Primary(P), Secondary(S), Rayleigh (LR), Love(LQ)

Nature of waves, propagation, velocity, potential for damage

Wave behavior: reflection, refraction, velocity changes in rocks

Seismographs:

Epicenter location by triangulation

Earthquake magnitude: Local (Richter)

Mercalli Intensity

Damage from Earthquakes:

Ground Rupture: Quakes and creep

Ground shaking:

Liquefaction:

Landslides, Dam Failures, Tsunami, Seiches, Fires

Chapter 17: Earth Interior

Earthquake waves: Primary (P), Secondary(S).

Nature of waves, propagation, velocity.

Wave behavior: reflection, refraction, velocity changes in rocks

Mohorovicic Discontinuity (Crust-mantle boundary)

Gutenberg Discontinuity (Mantle-core boundary) and Shadow Zone

Benioff Zones (subduction zones)

Low Velocity Layer (top of asthenosphere)

Isostasy and isostatic readjustment

Magnetic Field and paleomagnetism

Chapter 18: Seafloor

Ocean basins: abyssal plains, trenches, island arcs, mid-ocean ridge/rift

Continental Shelf, Slope and Rise, Submarine Canyons, Guyots, Seamounts and Coral Atolls

Sediments: Terrigenous and Pelagic (biogeneous, hydrogenous)

Ophiolite Sequences: Pillow Basalts, Sheet Dikes, Gabbro Plutons

Chapter 19: Plate Tectonics

Evidence concerning continental drift and plate tectonics:

Fit of continents, rock and structure similarities, fossils, paleoclimate

Polar wandering, paleomagnetic reversals, age and thickness of seafloor sediments

Plate Tectonics:

Divergent boundaries: oceanic, continental

Convergent boundaries: ocean-ocean, ocean-continent, continent-continent

Accretionary Wedge, Forearc Basin, and Magmatic Arc

Transform:

Hot spots

Exotic terranes

History of Pangea: Laurasia, Gondwana, Tethys Sea, Atlantic Ocean

Chapter 20: Mountain Belts and Continental Crust

Large scale features of the continents: Mountain (Orogenic) belts, craton, shield

Types of Mountain Ranges: Volcanic, Fold-thrust, Fault-block, Upwarped

Chapter 9: Mass Wasting

Type of motion, rate of motion, material involved

Rapid Mass Wasting: Mudflow, Debris Avalanche, Rockfall

Slow Mass Wasting: Soil Creep, Solifluction, Earthflow-Slump

Chapter 10: Streams and Floods

Hydrologic Cycle

Distribution of water on earth

Overland Flow: Sheetflow and rivulet flow

Stream Discharge ($Q=AV$)

Flood Hydrograph: Lagtime, factors that change lagtime

Valley Enlargement: Downcutting, headward erosion, widening

Stream Erosion: Hydraulic Action, Abrasion, Solution

Transportation: Dissolved, suspended, and bed loads

Competency and capacity

Factors affecting stream velocity: Gradient, channel shape, sediment load, water volume

Drainage patterns: Dendritic, braided, rectangular, trellis, radial, deranged

Stream piracy and beheaded streams

Floodplains: Meander, cutoff, cutbank, oxbow, yazoo stream, natural levee

Alluvial fan

Deltas: fan (wave-dominated), birdfoot (river-dominated), tide-dominated

Chapter 11: Groundwater

Zone of Aeration: (vadose zone), soil water belt, intermediate belt, capillary fringe

Zone of Saturation (phreatic): groundwater table

Influent (losing) and Effluent (gaining) streams, springs

Porosity and Permeability

Perched water table

Aquifer, aquiclude, artesian system

Problems of groundwater pollution and withdrawal

Karst Topography: Sinkhole, blind valley, disappearing stream, haystack

Caverns: Speleothems: dripstone, flowstone

Chapter 12: Glaciers

Glacial movement: basal slippage, plastic flow, rigid zone

Zone of Accumulation, Ablation (wastage), snowline

Erosion: abrasion and plucking

Erosional Landforms: Horn, arete, cirque, col, tarn, U-shaped valley, hanging valley, fjord

Depositional Landforms: Outwash plain, valley train, moraine lake, kettle, esker]

Moraines: Terminal, lateral, recessional, medial, ground

Ice ages: causes and effects

Pluvial Lakes, isostatic rebound, deranged streams, sea level changes

Alpine (valley) glaciers and Continental ice sheets

Chapter 13: Deserts and Wind

Distribution of deserts: rainshadow and subtropical

Desert erosional landscapes: (Internal drainage)

Basin and Range: alluvial fan, bajada, playa, inselberg, pediment

Plateaus: Mesa, butte and spire

Wind erosion: Abrasion, deflation, blowout, ventifact, loess

Sand dunes: Barchan, transverse, longitudinal, star (irregular), coastal (parabolic)

Chapter 14: Coasts and Shorelines

Formation of waves, wave refraction and reflection

Shoreline erosion: terraces, sea stacks, arches, headlands, coves

Longshore current and transport: spit, barrier bar, tombolo

Environmental problems: groin, jetty, breakwater

Emergent and submergent coastlines

Comprehensive:

Know the details of plate tectonics: all the boundaries, types of faults, folds, mountains, and rocks that can be found at each

Know the main rock-forming minerals, their structure, and relative melting points (Bowens Reaction Series)

Know the most common of the igneous, sedimentary, and metamorphic rocks

Know the type and composition of volcanoes and volcanic landforms

Know the large-scale features of the ocean basins and continents

Know the structure of the atom and types of chemical bonding

Know the soils (pedalfer, pedocal, laterite) and types of physical and chemical weathering

Know the details of earthquakes, including the types of waves

Know the layers of the interior of the earth: core, mantle, crust, asthenosphere, lithosphere

The last minute advice:

Don't do all your cramming on the last night before the test. You won't learn anything. Start your studies immediately, and work on it throughout the weekend. Take breaks often, and **get enough sleep** the night before. If you aren't alert, you will do much worse.

If you don't know the correct answer, **try to eliminate the obviously wrong answers.** Your odds of getting the question correct will be much improved.

You are being awarded points for correct answers. If you don't answer a question, you can't possibly get it right. If you've run out of time, answer as many as you can since you have a 1 in 5 chance of getting it right (of course, as a principled teacher, I can't really advocate this approach, but points are points).

Don't even think of cheating. You are working with different test versions, and I will pull your test and fail you in the class if I catch you looking at other tests.

Good Luck!