Final Review:

Chapter 15: Geologic Structures

Types of folds: Anticline, syncline, assymetrical, 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)
Gutenburg 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!