
Geol 250 – Exam One

The exam will use a pyramid testing technique and will consist of two parts: an individual exam and a group discussion exam. The individual exam will consist of 25 two-point questions and 5 five-point questions (total=75 points). The group discussion exam will consist of 25 one-point questions taken from the individual test (total=25 points). A discussion group may not contain more than 4 students. If you finish your individual exam before other students, please sit quietly and wait for the second part of the exam; do NOT take out any other material or communicate with other students.

No notes, electronic devices or any other material may be taken out during the class meeting during which the exam is administered. If your cell phone or other electronic device goes off (i.e., makes noise) during any part of the exam, your exam will be collected and you will be asked to leave. If you are observed handling anything other than a writing utensil and your exam papers (e.g., electronic devices, folders, bags, etc.), your exam will be confiscated and you will be asked to leave. You may not communicate in any way with other students during the individual exam time. Further actions are at the discretion of the professor.

Topics Covered:

There will be at three metric conversion questions, as well as questions about the metric system of measurement. Please see the sample test questions document for example questions.

Scientific Methods: the definition and purpose of science, scientific accuracy, the natural world, “the” scientific method, hypothesis, theory and accepted theory, definitions of meter, liter, kilogram.

The Universe: molecules, atoms, protons, neutrons, electrons, quarks, elements, isotopes, weak nuclear force, strong nuclear force, electromagnetism, gravity; expanding universe, The Big Bang Theory, nucleosynthesis, hydrogen fusion, elements created during the Big Bang.

Stars: star birth, star life cycle, gravity, pressure, hydrogen fusion, luminosity, absolute luminosity, star color and surface temperature, characteristics of main sequence stars, star size and lifespan, nucleosynthesis (production of new elements) in old stars, star death for small and large stars, supernova and production of heavy elements, kilonovas, stars as agents of change in the universe.

The Solar System: Earth’s Sun (Sol), hydrogen fusion, yellow star (surface temperature=6,000° C), Sol’s electromagnetic radiation, structure of Sol, relative size of Sol versus its planets, order of planets orbiting Sol, relative velocity of planets; planetary axial tilt and seasonality; inner, rocky, terrestrial planets versus outer, gaseous, Jovian planets, the Earth’s Moon and moons of other planets; Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.

Seasonality: what does and does not cause seasons, perihelion and aphelion; the axial tilt of Earth, juxtaposition of seasons in Northern and Southern hemispheres, Sun’s angle at different latitudes, strength of sunlight related to angle of sunlight, changing day length, equinoxes, solstices, subsolar latitude (solar declination), Arctic Circle, Antarctic Circle, Tropic of Cancer, Tropic of Capricorn.