

The following questions are similar to questions that will be asked on the final exam. The topics are in the order in which we covered them. Please go through your book and answer them as a way to review for the final. You will earn 20 points of test credit on top of your final exam grade if you answer all of the questions! Typed and printed copies are not allowed. **You must hand write unless you clear it with me first!** Writing questions and answers on note cards is encouraged.

| Section   | Topic                              | Questions to Ponder   |
|---|------------------------------------|---|
| <b><u>Chapter 10: Earthquakes</u></b>                   |                                    |   |
| 10.1  | How and Where Earthquakes Occur    | <ul style="list-style-type: none"> <li>▪ How do earthquakes relate to plate tectonics?</li> <li>▪ What causes earthquakes?</li> <li>▪ What are the different types of earthquake waves? What are their characteristics?</li> </ul>  |
| 10.2  | Locating and Measuring Earthquakes | <ul style="list-style-type: none"> <li>▪ What is a seismograph and how does it work?</li> <li>▪ How do you interpret a seismogram?</li> <li>▪ How do you locate the epicenter of an earthquake? Know how to read a seismogram, calculate P-S travel time differences, calculate the distance to an earthquake, and triangulate an earthquake's epicenter.</li> <li>▪ What is the difference between intensity and magnitude? What scales are used to measure each?</li> <li>▪ By how much does the energy of an earthquake change between scales of magnitude?</li> <li>▪ What is moment magnitude? What are the things that determine the moment magnitude of an earthquake?</li> </ul>  |
| 10.3  | Earthquake Hazards                 | <ul style="list-style-type: none"> <li>▪ What are hazards associated with earthquakes?</li> <li>▪ What are tsunamis? How do they form? What should you do to avoid getting killed by one?</li> <li>▪ How does the ground type that you live on determine the intensity of the earthquake?</li> <li>▪ What can you do to prevent earthquake damage and loss of life?</li> <li>▪ What goes into a good earthquake safety kit? What makes a good earthquake safety plan?</li> <li>▪ What should you do when an earthquake strikes? What shouldn't you do?</li> <li>▪ What are the areas of major earthquake risk in the world?</li> <li>▪ Can we predict earthquakes? If so, how?</li> <li>▪ How do differences in engineering determine the amount of damage received by structures?</li> </ul> |
| <b><u>Chapter 11: Mountain Building</u></b>             |                                    |   |
| 11.2  | How Mountains Form                 | <ul style="list-style-type: none"> <li>▪ What are the types of stress in the earth?</li> <li>▪ What are synclines and anticlines?</li> <li>▪ What is strike? What is dip? How can knowing both of them help a geologist to map the subsurface geology of sedimentary folds?</li> <li>▪ Why does oil become trapped in anticlines?</li> <li>▪ What are the types of faults in the earth's crust?</li> <li>▪ What is a hanging wall? What is a foot wall?</li> <li>▪ What is the difference between normal, reverse, thrust, and strike-slip faults?</li> </ul>   |
| 11.3  | Types of Mountains                 | <ul style="list-style-type: none"> <li>▪ How do folded mountains form?</li> <li>▪ How do dome mountain form?</li> <li>▪ How do fault block mountains form?</li> <li>▪ What is horst? What is graben? How were the mountains and valleys of the Basin and Range province of the Western United States formed?</li> </ul>   |
| <b><u>Chapter 25 and Section 24.3: Earth's Moon</u></b> |                                    |   |
| 25.1  | Origin and Properties of the Moon  | <ul style="list-style-type: none"> <li>▪ What is the impact theory and how does it explain the formation of the moon?</li> <li>▪ What are the surface features on the moon?</li> <li>▪ How do the rocks found on the moon similar to those on Earth?</li> <li>▪ What is your weight on the moon compared to here on Earth?</li> <li>▪ *How do you use <math>F_{\text{gravity}} = Gm_1m_2/r^2</math> to calculate your weight on the moon or another planet?</li> </ul>  |
| 25.2  | The Moon's Motions                 | <ul style="list-style-type: none"> <li>▪ How does the moon orbit the Earth?</li> <li>▪ How many minutes later does the moon rise each day/night?</li> <li>▪ What are the phases of the moon? Waxing, waning, gibbous, crescent, full moon, new moon, first quarter, third quarter?</li> <li>▪ What are lunar eclipses and how do they form?</li> <li>▪ What are solar eclipses and how do they form?</li> </ul>   |

| <b>Final Study Guide Questions</b><br>Geology <span style="margin-left: 150px;">Spring 2016</span> <span style="float: right;">Mr. Traeger</span> |  |   |
|---|--|---|
| Section   | Topic  | Questions to Ponder   |
| 24.3  | Tides  | <ul style="list-style-type: none"> <li>▪ What causes tides?</li> <li>▪ What are spring tides and in what phases of the moon do they occur?</li> <li>▪ What are neap tides and in what phases of the moon do they occur?</li> <li>▪ What has more effect on tides? The moon or the sun?</li> <li>▪ *Know how to calculate the comparative tidal force of the moon and the sun using <math>F_{gravity} = Gm_1m_2/r^3</math></li> </ul>  |
| <b>Chapter 4: Earth's Motion</b>  |  |   |
| 4.2   | Earth's Rotation                             | <ul style="list-style-type: none"> <li>▪ Who was Jean Foucault and what did he do?</li> <li>▪ Who was Gaspard Coriolis and what did he do? In other words: What is the Coriolis Effect?</li> <li>▪ What is the evidence for Earth's rotation?</li> <li>▪ What is the difference between rotation and revolution?</li> <li>▪ In what direction does Earth rotate? West to East or East to West?</li> <li>▪ How did the ancient people measure time?</li> <li>▪ How many time zones are there? Why do we use time zones?</li> </ul>   |
| 4.3   | Earth's Revolution                           | <ul style="list-style-type: none"> <li>▪ What is the evidence that Earth is revolving around the sun?</li> <li>▪ What are the reasons for the seasons?</li> <li>▪ What time of year are we closest to the sun? Farthest?</li> </ul>   |
| <b>Chapter 26: The Sun and the Solar System</b>   |  |   |
| 26.1  | Sun's heat, size, and structure              | <ul style="list-style-type: none"> <li>▪ What is nuclear fusion and how does it create energy in the core of the sun?</li> <li>▪ What are the different layers of the sun? Be able to diagram them!</li> <li>▪ What are sunspots and how hot are they?</li> <li>▪ What is the solar wind and how does it cause the northern lights (aurora borealis)?</li> <li>▪ What is the UV Index? What do we use it for?</li> <li>▪ What are variables that determine how the UV Index is calculated?</li> <li>▪ Why is it so necessary to wear sunscreen, a hat, and sunglasses?</li> </ul>   |
| 26.2  | History of Solar System and Planetary Orbits | <ul style="list-style-type: none"> <li>▪ What is the geocentric model?</li> <li>▪ What is the heliocentric model?</li> <li>▪ Who are Ptolemy, Copernicus, Brahe, Kepler, Galileo, and Newton? What did each one of them do?</li> <li>▪ What are Kepler's Three Laws of Planetary Motion and what do they mean?</li> <li>▪ *How do you calculate eccentricity using <math>e = c/a</math>?</li> <li>▪ *How do you calculate the period of revolution of a planet going around the sun using <math>p^2 = a^3</math>?</li> <li>▪ What is an astronomical unit (AU) and when do we use it?</li> <li>▪ *How do we convert from Kilometers to AU's or AU's to Kilometers?</li> <li>▪ What are the basic properties of an ellipse?</li> <li>▪ What does Newton's Law of Gravitation say?</li> </ul> |
| <b>Chapter 27: The Planets and the Solar System</b>   |  |   |
| 27.1  | Inner Planets                                | <ul style="list-style-type: none"> <li>▪ What are the inner planets?</li> <li>▪ What are the characteristics of the inner planets? Are they solid or gas?</li> <li>▪ Which of the inner planets have moons? What are they?</li> <li>▪ Which planets have atmospheres, volcanoes, etc?</li> <li>▪ Which planets are only visible from earth either in the morning or the evening?</li> <li>▪ Which planets might have had life other than earth?</li> <li>▪ What are the basic ingredients needed for life on a planet to occur?</li> </ul>  |
| 27.2  | Outer Planets                                | <ul style="list-style-type: none"> <li>▪ What are the outer planets?</li> <li>▪ What are the characteristics of the outer planets? Are they solid or gas?</li> <li>▪ Do all of the outer planets have moons? What are the main moons of each planet and what are their characteristics?</li> <li>▪ Why was Pluto demoted from a planet to a dwarf planet?</li> <li>▪ What are the Roman mythological name origins of the planets?</li> </ul>  |
| 27.3  | Planetary Satellites                         | <ul style="list-style-type: none"> <li>▪ What are the characteristics of the main moons of each planet?</li> </ul>  |
| 27.4  | Solar System Debris                          | <ul style="list-style-type: none"> <li>▪ What are comets? How and where do they orbit the sun?</li> <li>▪ What are asteroids? How and where do they orbit the sun?</li> <li>▪ What are the differences among meteors, meteoroids, and meteorites?</li> </ul>  |
| <b>Chapter 28: Stars and Galaxies</b>   |  |   |

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| Section | Topic                           | Questions to Ponder   |
|---------|---------------------------------|---|
| 28.1    | Light                           | <ul style="list-style-type: none"> <li>▪ What is light? Does it only exist in the form we can see?</li> <li>▪ What is the electromagnetic spectrum? Know the different parts of this! (e) Infrared, Visible, etc.</li> <li>▪ Why do we use different parts of the spectrum in astronomy?</li> <li>▪ What are continuous, emission, and absorption spectra?</li> <li>▪ How can we figure out a star's chemistry based upon the light that we receive from it?</li> <li>▪ What is the Doppler Effect and how do we use it to gauge the expansion of the Universe?</li> <li>▪ What is red shift? What is blue shift? What do they tell us?</li> <li>▪ *How can we use the Doppler Effect to calculate the velocity and direction of a galaxy using <math>v = \lambda \times C/\lambda_0</math></li> </ul>  |
| 28.2    | Stars and Their Characteristics | <ul style="list-style-type: none"> <li>▪ What is the difference between astronomy and astrology?</li> <li>▪ What determines a person's sign of the zodiac?</li> <li>▪ What are constellations? Do the same constellations appear throughout the whole year?</li> <li>▪ What is significant about the North Star (Polaris)?</li> <li>▪ What is the apparent magnitude of a star? How is it different from absolute magnitude?</li> <li>▪ What is a light year? How far away is one light year?</li> <li>▪ What is parallax and how do we use it to measure distances to stars?</li> <li>▪ *How do we measure distance using <math>d = 1/p</math>?</li> <li>▪ *How do we convert from parsecs to light years?</li> <li>▪ What stars are hotter? Blue, yellow, white, or red?</li> <li>▪ *How can we use Wien's Law (<math>\lambda_{max} = 2,900,000/\text{Temperature}</math>) to find the peak emission wavelength (color) of a star in nanometers?</li> <li>▪ What is luminosity and absolute magnitude?</li> </ul> |
| 28.3    | Life Cycles of Stars            | <ul style="list-style-type: none"> <li>▪ What is the Hertzsprung-Russell (H-R) diagram and how do we use it to know the life stage of a star?</li> <li>▪ How is a star born?</li> <li>▪ How do stars live their main sequence lives?</li> <li>▪ How do stars die? (See life cycle of stars on pages 628-629)</li> <li>▪ What are the remains of stars? Black Holes, etc.</li> <li>▪ What is a black hole? Why are they black?</li> <li>▪ *What is the event horizon? Schwarzschild Radius? Singularity?</li> <li>▪ *How do we calculate Schwarzschild radius of a black hole using the formula <math>r_s = 2Gm/c^2</math>?</li> <li>▪ How do gravity and fusion determine the size of a star?</li> <li>▪ Which stars burn fuel quicker and die younger in a supernova?</li> <li>▪ What will be the fate of our sun, a main sequence star?</li> </ul>  |
| 28.4    | Galaxies and the Universe       | <ul style="list-style-type: none"> <li>▪ What are galaxies and what are the different types of galaxies?</li> <li>▪ What is the theory for the origin of the Universe? How did we get to this theory?</li> <li>▪ Is our Universe expanding? How do we know?</li> </ul>  |

**Geology Final Exam Schedule for Spring Semester 2016**

| Date               | Period | Who Takes It? | Subject | Time        |
|--------------------|--------|---------------|---------|-------------|
| Monday, 5/23/16    | 5      | EVERYONE      | Geology | 12:32-2:37  |
| Tuesday, 5/24/16   | 4      | EVERYONE      | Geology | 7:45-9:50   |
| Wednesday, 5/25/16 | 3      | EVERYONE      | Geology | 10:20-12:25 |

**Frequently Asked Questions about Traeger's Final Exam**

- What should I bring to the final? Bring your brain, a #2 pencil, a calculator, and any work that is due on the final day.
- What items are NOT allowed to be in use during the test? Notes, cheat sheets, cell phones, iPhones, Blackberries, iPods, your moving mouth, and wandering eyes are not allowed on the final.
- How much of my semester grade is the final worth? The final exam will be about 12-15% of your overall semester grade. The final exam will be included in the test category.
- What if I need extra time? There will be plenty of time to take the test.
- What is the format of the test? The test will be all multiple choice/true false/matching. I do not have time to grade a written portion on the Spring Final Exam.
- What is the best way to study for this test? Use this review sheet and answer EVERY question if you want 20 points added to your final exam grade. Use your book and the class website [PowerPoint notes](#).
- How do I get help studying for the final? Email Mr. Traeger at [traeger@lcsud.net](mailto:traeger@lcsud.net) or come by at lunch or after school!