Name _____

HOMEWORK #7 – The Outer Moons

Due Friday, June 9th IN CLASS

Special Note:

This homework will be graded over the weekend of June 10-11.

You can pick up your graded homework from the Earth Sciences Office (188 Galbraith Hall) from Tuesday June 13th onwards during Finals Week.

Answers to the questions must be given in complete sentences (except where indicated), using correct grammar and spelling. Please be as brief and to-the-point as possible (*more is not necessarily better)*.

You are encouraged to explore the web for help but **DO NOT COPY DIRECTLY FROM WEBSITES.**

Homework assignments must be legible. Handwritten or typed responses are permitted. Make sure that your assignment is stapled!

Grading Summary:

Question 1: 25 points

Question 2: 16 points

Question 3: 19 points

Question 4: 20 points

Question 5: 20 points

Total: 100 Points

*** Note: Textbook may be helpful for this assignment!**

Name _____

1. The Galilean Satellites: Individual Characteristics

a. **Active Moon Io:** What is the source of energy that drives volcanism on Io's surface?

b. **Icy Moon Europa:** State the two possible theories that explain the structure of Europa's ice/water ocean layers (ie. surface & underlying region).

c. **Life on Europa?:** Europa has become a prime target in the search for extraterrestrial life. What are two pieces of *possible* evidence that may support such a search?

d. **Cratered Moon Callisto:** Callisto's surface has many impact craters and is often compared to the highland region of Earth's Moon. However, the two surfaces have different compositions that change the appearance of surface craters. Identify the primary surface composition of both Callisto and the Moon. How does the this compositional difference contribute to the differences in surface features?

e. **Groovy Ganymede:** Ganymede exhibits two distinct surface terrain colors – dark and light. Describe one major type of surface feature found on each terrain (ie., list one feature unique to the dark terrain and one for the light terrain).

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2. Galilean Satellites: Internal Structure

Make sketches (by hand) to show cross sections of the internal structure of each of the **4** moons of Jupiter. **Label each moon (name)**. Mark each layer and its composition (rock, ice, etc.). Also indicate the overall average density of each moon.

3. Sizes and Shapes

Indicate the radius (in km) of each of the following solar system bodies and place in order of DECREASING size:

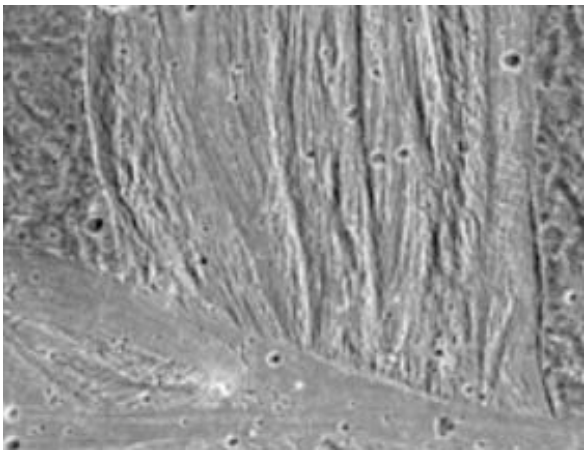
Mercury, Moon, Io, Europa, Ganymede, Callisto, Titan

LARGEST ⟶ SMALLEST

Name _____

4. Surface Features

In the spaces provided below, identify the feature/terrain shown in each image and indicate the moon from which the image was taken.



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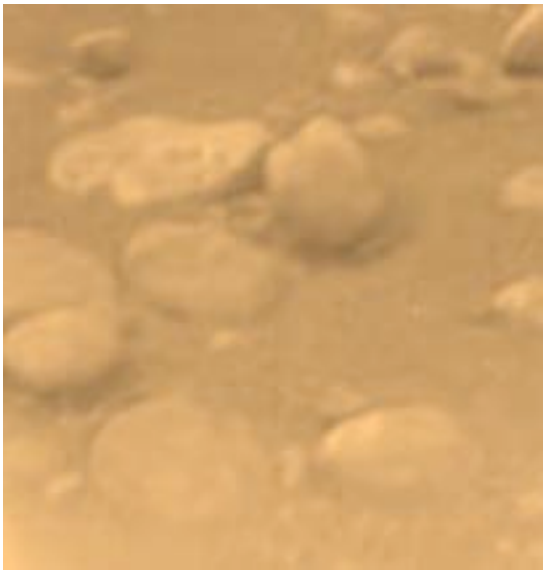

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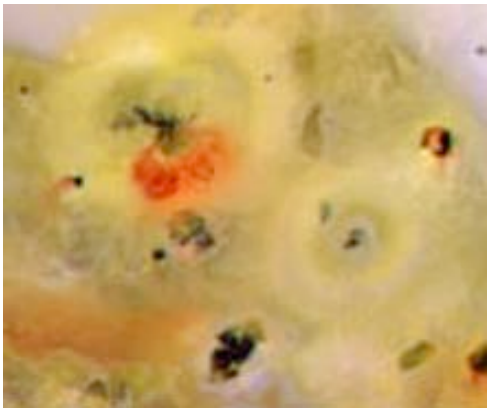

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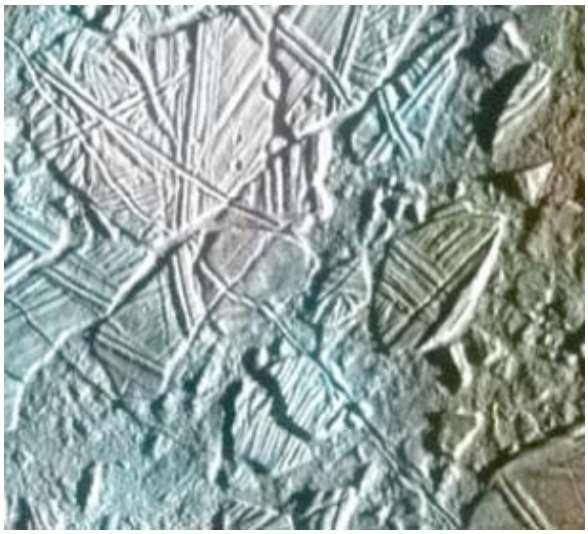

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5: Planets Final Review

5.1) Which planet has the largest volcano?
a. Jupiter
b. Mercury
c. Venus
d. Mars
e. Earth

5.2) On which planet or moon do coronae occur?
a. Mercury
b. Venus
c. Earth
d. Mars
e. Io

5.3) About how old is the Earth?
a. 500 thousand years
b. 4.6 million years
c. 500 million years
d. 4.6 billion years
e. 4.6 hundred years

5.4) New crust on the Earth is created at
a. Subduction zones
b. Strike-slip faults
c. Mid-ocean ridges
d. The equator
e. The Himalayas

5.5) The dominant constituent of the Venus atmosphere is
a. Oxygen
b. Nitrogen
c. Carbon dioxide
d. Sulfur dioxide
e. Water

5.6) Which planet(s) rotates on its axis in a retrograde direction?
a. Pluto
b. Venus
c. Uranus
d. Neptune
e. a, b, and c

Name _____

5.7) Of the following choices, when are tides on the Earth greatest?

a. First quarter
b. New moon
c. 3rd quarter
d. Leap day
e. When the planets are aligned

5.8) Where do asteroids come from?

a. The Kuiper belt
b. The Oort cloud
c. A belt between Neptune and Pluto
d. A belt between Jupiter and Mars
e. The sun

5.9) Mercury exhibits spin-orbit coupling. Which of the following statements is true:

a. Mercury rotates three times for every two orbits
b. Mercury rotates twice for every three orbits
c. Mercury's orbital period and rotation period are the same
d. Mercury always has the same side facing the Sun.
e. Mercury is tidally locked to its moon

5.10) How many geologists have landed on the moon?

a. 1
b. 2
c. 4
d. 6
e. 8