Earth and Space Science
Final Review ANSWERS
Fall 2015

Multiple Choice

---

1. Hubble's observations led him to develop a theory, what evidence did he show to support his theory?
    a. *He discovered Red Shifting; where the light emanating from stars that were moving away from us was "shifted" into the red spectrum*

2. What type of galaxy is the Milky Way?
    a. *Spiral*

3. A star which can sustain nuclear fusion but whose solar mass is between 0.08 – 0.5 that of the Sun. This star does not have enough mass and heat to fuse helium. We call these stars _____.
    a. *Red Dwarf*
    b. *A red dwarf that originated during the big bang is still burning today (14 billion years later) and is just in its infancy; they burn really really slow*
    c. *They die by just fading and growing colder, we really don't know because none have died yet*

4. What planet has the fastest orbit of the Sun?
    a. *Mercury*

5. What is the hottest planet?
    a. *Venus*

6. Which planet is the largest?
    a. *Jupiter*

7. Which planet has "dry ice" at its poles?
    a. *Mars*

8. Which planet has the most discernable ring system?
    a. *Saturn*

9. What planet has the giant red spot?
    a. *Jupiter*

10. What planet if furthest from the Sun?
    a. *Neptune*

11. Which two planets are almost identical?
    a. *Uranus & Neptune*

12. Hubble's observations led him to develop a theory, what evidence did he show to support his theory?
    a. *Same as #1, I have deleted this duplicate question from the test*

13. What type of galaxy is the Milky Way?
    a. *Same as #2, I have deleted this duplicate question from the test*

14. A star which can sustain nuclear fusion but whose solar mass is between 0.08 – 0.5 that of the Sun. This star does not have enough mass and heat to fuse helium. We call these stars _____.
    a. *Same as #3, I have deleted this duplicate question from the test*

15. The tilt of the Earth on its axis directly affects…
    a. The Seasons

16. In the Arctic Circle one would be getting 24 hours of Sun light during?
    a. The Summer

17. In the Arctic Circle one would be getting 24 hours of darkness during?
    a. The Winter

18. In the Antarctic Circle one would be getting 24 hours of Sun light during?
    a. The Summer

19. In the Antarctic Circle one would be getting 24 hours of darkness during?
    a. The Winter

20. Based on what we have discussed in class, what do the O, A, E & B horizons have in common?
    a. They are the Solum, or "True Soil"

21. The area of land that contributes water to the stream is called the _____.
    a. Drainage Basin

22. Groundwater moves _____.
    a. Slow

23. Where does a cone of depression often form?
    a. Around a pumping well

24. What type of drainage pattern typically develops on isolated volcanic cones and domal uplifts?
    a. Dendritic

25. How does a stream's meander form?
    a. The outer part of the stream picks up speed eroding the back faster
    b. The inner part of the stream slows down allowing the depositing of materials

26. A _____ is a mud flow on the side of a volcano.
    a. Lahar

True / False

27. Know if/how the size of a star affects the manner in which it dies.
    a. *The bigger more massive a star, then the faster it burns out*
    b. *Consequently, the more massive a star, the more violent it dies*

28. Know about Hubble's idea of an expanding universe actually and what theory it lead too
    a. *Hubble's idea of an expanding universe lead to the Big Bang Theory*

29. What was religion's role in the Steady State Theory versus Big Bang Theory debate?
    a. *Scientist's own religious beliefs stood in the way of them accepting the Big Bang Theory*
    b. *This inability to let go of their beliefs led to the rise of the Steady State Theory*

30. How does size of the star affect a stars life span?
    a. *The bigger more massive a star, then the faster it burns out*
    a. *Consequently, the more massive a star, the more violent it dies*

31. Know the facts about stars that are ten times (10x) the size of our Sun.
    a. *Stars that are 10x the mass of our Sun tend to "die" in massive Supernovae*
    b. *Depending on the actual size of the star, after the Supernovae you could either have a neutrino star or a black hole*

32. What was Robert Dicke's role in the search for Cosmic Background Radiation (CBR)?
    a. *Robet Dicke was the leading research for CBR at the time of its discovery*
    a. *He was actually looking for it when other scientists stumbled upon evidence supporting the idea of CBR*

33. Who actually discovered Cosmic Background Radiation (CBR)?
    a. *Robert Wilson and Arno Penzias*

34. What was the importance of CBR?
    a. *The proof of CBR also proved the validity of the Big Bang Theory, and was the death nail for the Steady State Theory*

35. What was then interesting facts associated with Wilson and CBR?
    a. *Wilson was actually a believer in the Steady State theory*
    b. *This is why when they published their findings they didn't talk about Steady State or the Big Bang Theories, they left it up to other scientists to make those conclusions and publish them.*

36. Who is Coach Mesler related too? (Hint: they are a famous person from England)
    a. *Sir Isaac Newton, the Godfather of modern day Physics*

37. Know the life cycle of a star. Make sure to know about the early star from nebular to Main Sequence.
    a. *You are going to have to study this part on your own, #sorrynotsorry*

38. Comets and asteroids in our Solar System are believed to have been formed at the same time as the planets.
    a. *This is important because those same asteroids and comets can give us clues as to what it was actually like during the early moments of our solar system.*

39. Know the differences between a synodic month and a sidereal month.
    a. *Synodic Month – the time it takes the Moon to complete one cycle of phases and thus is measured with respect to the Sun*
    b. *Sidereal Month – the time it takes the Moon to complete one full orbit of the Earth, measured with respect to the stars.*

Matching

40. Study the life cycle of a low mass star (from infancy to death)
    a. *You have to study this on your own, #sorrynotsorry*

41. Study the life cycle of a high mass star (from infancy to death)
    a. *You have to study this on your own, #sorrynotsorry*

---

42. Know the Phases of the Moon
    a. New Moon
    b. Waxing Crescent
    c. Waning Crescent
    d. First Quarter
    e. Third Quarter
    f. Waxing Gibbous
    g. Waning Gibbous
    h. Full Moon

<u>You have to study this on your own, #sorrynotsorry</u>

---

43. Define the following:
    a. Light-Year – *the distance a beam of light travel in one year's time*
    b. Astronomical Unit (AU) – *the average distance between the Earth and the Sun*
    c. Nuclear Fusion – *A nuclear reaction where atoms are fused (combined) together to create new matter*
    d. Cosmic Background Radiation (CBR) – *the remnant radiation left over from the Big Bang*
    e. Gravity – *the attraction of all thing in the universe towards one another*

---

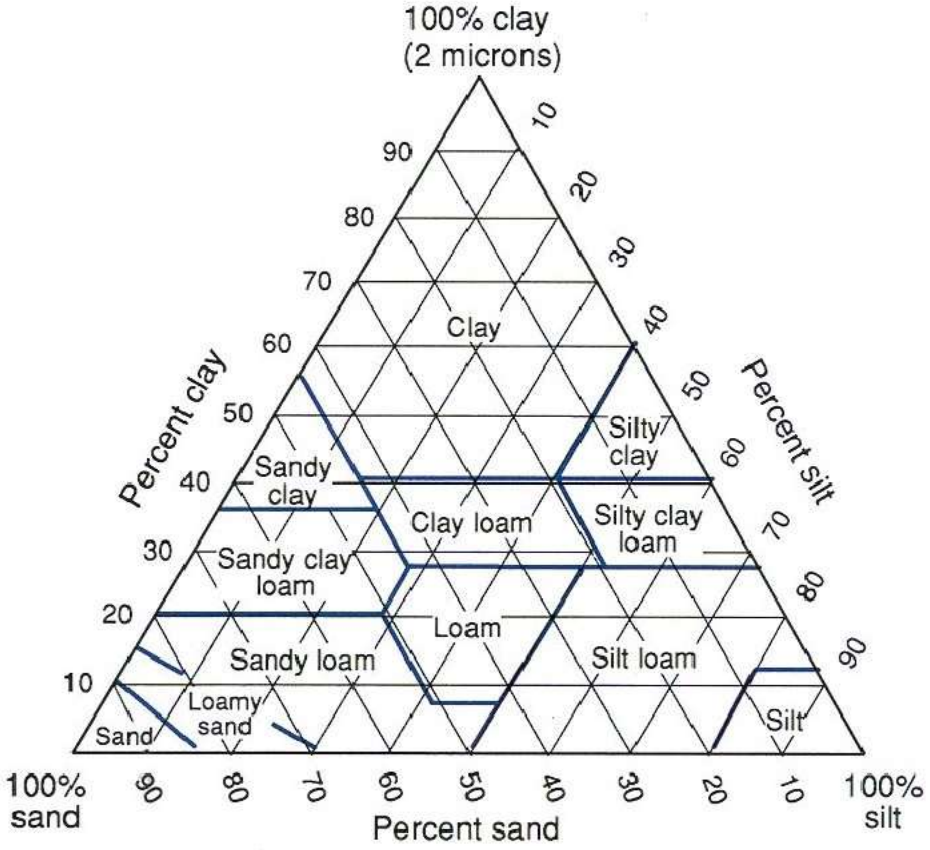
44. Know how we use the following to measure distances
    a. Radar – *for measuring things within our Solar System*
    b. Parallax – *for measuring distances of nearby stars*
    c. Cepheids – *for measuring distances in our galaxy and to nearby galaxies*
    d. Supernovae – *for measuring distances to other galaxies out to 1 billion light years*
    e. Red Shifting & Hubble's Expansion Constant - *for measuring distances further than 1 billion light years*

Match the Planet with its order from the Sun from closest to furthest

45. Know the order of the planets:
    a. 1st – *Mercury*
    b. 2nd – *Venus*
    c. 3rd – *Earth*
    d. 4th – *Mars*
    e. 5th – *Jupiter*
    ab. 6th – *Saturn*
    ac. 7th – *Uranus*
    ad. 8th – *Neptune*

---

46. Know the Rock Cycle (be able to reproduce it)
    a. *You have to study this on your own, #sorrynotsorry*


100% clay
(2 microns)
Percent clay
Percent silt
Percent sand
100%
sand
100%
silt
Clay
Silty
clay
Sandy
clay
Clay loam
Silty clay
loam
Sandy clay
loam
Loam
Sandy loam
Silt loam
Loamy
sand
Sand
Silt