Multiple Choice: Each group of questions has a set of possible answers, labeled A through E. Choose the best answer for each question. Some answers can be used more than once, some not at all.

1. Hubble’s Law
2. This relation shows that a hotter star is bluer than a cooler star.
3. Einstein’s energy-mass equivalence relation
4. The relation describing parallax
5. Stellar luminosity formula
6. Which relation, inverted, provides an estimate of the age of the universe?
7. Which relation provides the basis for absolute measurement of stellar distances?
8. This describes the energy released in matter-antimatter and nuclear reactions.
9. This equation can explain why small but very hot stars can be less powerful than some cooler stars.

A. $E = mc^2$  
B. $v = HD$  
C. $L = 4\pi R^2\sigma T^4$  
D. $\lambda_{max} = 0.29 \text{ cm}/T(\text{K})$
E. $D = 1/\theta$

Arrange these in order of increasing distances (label them A–E):
10. the Earth-Sun distance
11. the radius of the Sun
12. the diameter of our Galaxy
13. the distance to the nearest star
14. the radius of the Earth
A. smallest  
B.  
C.  
D.  
E. largest

15. The Sun’s diameter is how many times the Earth’s diameter?
16. The Sun’s mass is how many times the Earth’s mass?
17. A parsec is how many times larger than an AU?
    A. 100  
    B. 10,000  
    C. 200,000  
    D. 300,000  
    E. 1,000,000

True/False: Answer A=true, B=false

18. All atoms have at least one proton.
19. Elements are distinguished by their total number of neutrons.
20. Most elements heavier than helium found in the Universe were made in the Big Bang.