Physics 1061. Stars and Galaxies

Quiz REVIEW. The Sun Name:_____

1. What is the temperature of the Sun's surface (the photosphere)?

   (a) 600 K (b) 2000 K (c) 3800 K (d) 5800 K (e) 10,000 K

2. This layer of the Sun's atmosphere includes gas with temperatures ranging from 15,000 K to about 1,000,000 K.

   (a) photosphere (b) radiative zone (c) transition region (d) chromosphere (e) convective zone

3. Above the radiative zone of the Sun is a zone where heat is transferred upward by bulk motion of gas, a process called _____.

   (a) conduction (b) convection (c) radiation (d) projection (e) reflection

4. The Sun generates all of its energy in a region called the _____.

   (a) core (b) fun zone (c) radiative zone (d) convective zone (e) nucleus

5. The most powerful, short-lived explosions on the Sun's surface are called _____.

   (a) coronal holes (b) flares (c) prominances (d) filaments (e) fusion

6. Which of these surface features on the Sun is the most short-lived?

   (a) sunspots (b) flares (c) supergranules (d) prominances (e) coronal holes

7. Which of these features is visible in narrow-band (Hα) images and may be the mechanism that heats the corona?

   (a) sunspots (b) filaments (c) supergranules (d) spicules (e) coronal holes

8. When a gas is maintaining a stable, spherical shape, gravity is balanced by _____

   (a) temperature (b) pressure (c) density (d) frictional forces (e) electrical sources

9. Evidence for convection on the Sun is seen in bubble-like features about 1000 km across called _____

   (a) flares (b) Texans (c) granules (d) prominences (e) sunspots

10. The inhibition (prevention) of convection in regions of strong magnetic fields gives rise to _____

    (a) sunspots (b) prominences (c) flares (d) granules (e) the sunspot cycle

11. The Sun's chromosphere is more difficult to observe (fainter) than the photosphere because it is _____

(a) more colorful (b) cooler (c) farther away (d) less dense (more diffuse) (e) eclipsed by the Sun

12. What is the deepest layer that we can see of the Sun in visible wavelengths?

    (a) corona (b) chromosphere (c) photosphere (d) convective zone (e) radiative zone

13. Which layer of the Sun emits most of the photons that reach our eyes directly?

    (a) corona (b) chromosphere (c) photosphere (d) convective zone (e) radiative zone

14. T or F. The density and temperature in the solar corona are much higher than in the photosphere.

15. Name a region of the Sun that produces an emission line spectrum, in accordance with Kirchoff's laws.

    _____

16. In what surface feature of the Sun would you expect to observe absorption lines that are split into 3 lines because of a strong magnetic field? _____

17. The nearest star to the Earth can be easily resolved by telescopes. It is called _____.

18. What provides the most direct evidence of nuclear reactions currently occuring in the Sun's core?

    (a) visible light emitted from the core
    (b) gamma rays emitted from the core
    (c) x-rays
    (d) helioseismic vibrations on the surface
    (e) neutrinos emitted from the core

19. The *number* of sunspots on the Sun increases and decreases with a period of about _____.

20. The latitude of sunspots on the Sun increases and decreases with a period of about _____.

21. After one, 11 year sunspot cycle, things are back to the starting state except that the _____ of the sunspot pairs is reversed.

22. The CME's from the Sun can lead to _____ on Earth.

    (a) coronas (b) annihilation (c) auroras (d) migraines (e) helioseismology

23. What is the name of the particular nuclear fusion process that provides most of the Sun's power?

    _____

24. T or F. The total mass of 4 H atoms (protons) is 0.7% more than the total mass of the Helium atom they fuse into. The lost mass becomes energy.

25. T or F. Since neutrinos can pass through light years of lead without obstruction, we can't construct a neutrino detector on Earth.

26. T or F. Neutrino oscillations are actually wiggles in the particles path causing them to go undetected.