

Physics 1061. Stars and Galaxies

Quiz 4 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) prominences (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) prominences (e) coronal holes
7. 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
8. 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
9. 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
10. 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) more diffuse (less dense)
(e) eclipsed by the Sun
11. 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
12. 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
13. T or F. The density and temperature in the solar corona are much higher than in the photosphere.
14. Name a region of the Sun that produces an emission line spectrum, in accordance with Kirchhoff's laws.

15. 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? _____
16. The nearest star to the Earth can be easily resolved by telescopes. It is called _____.
17. What provides the most direct evidence of nuclear reactions currently occurring 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
18. The *number* of sunspots on the Sun increases and decreases with a period of about _____.
19. The latitude of sunspots on the Sun increases and decreases with a period of about _____.
20. After one, 11 year sunspot cycle, things are back to the starting state except that the _____ of the sunspot pairs is reversed.
21. The CME's from the Sun can lead to _____ on Earth.
- (a) coronas (b) annihilation (c) auroras (d) migraines (e) helioseismology
22. What is the name of the particular nuclear fusion process that provides most of the Sun's power?

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