

# MY SO PRACTICE TEST

DIVISION C - HIGH SCHOOL, GRADES 9-12

## PRACTICE TEST

### Instructions

- There are 25 questions on this test.
- You have 50 minutes to complete this test.
- You may write your answers directly in the test.
- You may use any notes or resources you have created or collected.
- You may use a calculator and scratch paper if necessary.
- Good Luck!

### Test Questions

1. What is the approximate gravitational force that the Earth exerts on the sun? Earth is 154,000,000 km from the sun.
  - a.  $3.8 \times 10^{21}$  N
  - b.  $3.3 \times 10^{22}$  N
  - c.  $4.1 \times 10^{21}$  N
  - d.  $2.1 \times 10^{25}$  N
  - e.  $3.6 \times 10^{19}$  N
2. Galaxy NGC 4442 is 120 Mpc away. Due to the expansion of the universe, how fast is it moving?
  - a.  $820 \text{ Cm}^3 / \text{gs}^2$
  - b. 72 km/s
  - c.  $1100 \text{ km}^3 / \text{gs}^s$
  - d. 8200 km/s
  - e. 1.76 km/s
3. Which single property is most responsible in determining the evolutionary stages of a star?
  - a. The mass of the star
  - b. The diameter of the star
  - c. The atomic makeup of the star
  - d. The temperature of the star
  - e. The asymptotic angle of the star

4. From what gases does a star form?
  - a. Carbon and Hydrogen
  - b. Helium and Oxygen
  - c. Hydrogen and Helium
  - d. Hydrogen, Helium, and Carbon
  - e. Oxygen and Carbon
  
5. What causes the pulsing appearance of pulsars?
  - a. Weak magnetic fields
  - b. Explosive movements on crust
  - c. Star rotation
  - d. Ionizing radiation
  - e. None of the above
  
6. Which of the following correctly puts the stellar classes in order of increasing luminosity?
  - a. K F B A
  - b. M G F B
  - c. F G K M
  - d. F O B A
  - e. K A F B
  
7. What force stops a white dwarf from collapsing into a neutron star?
  - a. Neutron degeneracy pressure
  - b. Gravity
  - c. Electron degradation pressure
  - d. Neutron degradation pressure
  - e. Electron degeneracy pressure
  
8. Which of the following is not one of the general shapes of galaxies?
  - a. Spiral
  - b. Elliptical
  - c. Obtuse
  - d. Irregular
  
9. What assumption was key in modelling the early life of galaxies?
  - a. Helium and hydrogen filled the early universe somewhat uniformly
  - b. Low density regions could collapse to form protogalactic clusters
  - c. Matter would only be traveling in one direction
  - d. Stars are produced at a constant annual rate.
  
10. What determines if a galaxy is an Active Galactic Nuclei?
  - a. The type of light emitted
  - b. The amount of light emitted
  - c. The regularity of X-ray bursts
  - d. The location of the source of light
  
11. How did the luminosity of quasar 3C 273 compare to the luminosity of the sun?
  - a. 100 billion times greater
  - b. 100 trillion times greater
  - c. 1000 billion times greater
  - d. 1000 trillion times greater

12. About how long have astronomers known about the existence of quasars?
- 50 years
  - 15 years
  - 100 years
  - 80 years
13. What is the specific cause of the continuous spectral energy emission of blackbody radiation?
- The wavelength of the energy
  - The temperature of the object
  - The distance of the object
  - The amount of incident radiation
14. There is/are \_\_\_ in population 1 stars, and \_\_\_ in population 2 stars.
- More heavy elements, more heat
  - Less helium, more heat
  - More heat, less luminosity
  - More heavy elements, more luminosity
15. The Chandrasekhar Limit is around \_\_\_ solar masses.
- 3
  - 1.8
  - 2.4
  - 1.4
16. The color index of a star provides information about that star's
- Luminosity
  - Temperature
  - Absolute magnitude
  - Age
17. Which of the following is NOT a use for Hertzsprung-Russell diagrams?
- Determining the distance of stars with high accuracy
  - Recognizing patterns in types of stars
  - Tracking the life cycle of stars
  - Categorizing stars based on their characteristics
18. What is the best description of a WHIM?
- Highly dense, inert
  - Globular, inert
  - Filamentary, highly ionized
  - Highly ionized, dispersed and amorphous
19. Which of these observation structures was responsible for the detection of a large WHIM reservoir in 2010?
- Spitzer
  - Chandra
  - ISS
  - Newton

20. Which of the following is not true about dark matter?
- Galaxy rotation was a clue to its existence
  - Accounts for the majority of matter in the universe
  - Classified according to free streaming length
  - Dark matter directly bends light to create a lensing effect
21. What is the order of the spectral classes from hottest to coolest?
- ABFGKMO
  - OBAFGKM
  - BAMFGKO
  - OBGMAFK
22. What is the spectral class of the Sun?
- G2
  - O1
  - B7
  - A2
23. What color are O class stars?
- Red
  - Yellow
  - White
  - Blue
24. Which part of the electromagnetic spectrum has the shortest wavelength?
- Radio
  - Micro
  - Gamma
  - X-ray
25. In the electromagnetic spectrum, what is the range of visible light?
- 380 km – 750 km
  - 380 nm – 750 nm
  - 380 mm – 750 mm
  - 380 cm – 750 cm

# ANSWER KEY

- |     |          |     |          |
|-----|----------|-----|----------|
| 1.  | <b>B</b> | 15. | <b>D</b> |
| 2.  | <b>D</b> | 16. | <b>B</b> |
| 3.  | <b>A</b> | 17. | <b>A</b> |
| 4.  | <b>C</b> | 18. | <b>C</b> |
| 5.  | <b>C</b> | 19. | <b>B</b> |
| 6.  | <b>B</b> | 20. | <b>D</b> |
| 7.  | <b>E</b> | 21. | <b>B</b> |
| 8.  | <b>C</b> | 22. | <b>A</b> |
| 9.  | <b>A</b> | 23. | <b>D</b> |
| 10. | <b>D</b> | 24. | <b>C</b> |
| 11. | <b>C</b> | 25. | <b>B</b> |
| 12. | <b>A</b> |     |          |
| 13. | <b>B</b> |     |          |
| 14. | <b>C</b> |     |          |