

Hayrenzi Special Secondary and preparatory School Physics Worksheet for grade 12

1. Describe (a) Rutherford's model.

(b) Bohr model of atom.

2. State some of the nuclear properties.

3. How nuclear stability determined by the binding energy per nucleon?

4. State some uses of radioactive isotopes.

5. What is black body?

6. Define photoelectric effect

7. What is the work FUNCTION of a metal?

8. Explain the wave particle duality?

9. Define radioactivity

10. Explain the difference between fission and fusion reaction?

11. What is binding energy?

12. If the sample of 100 million carbon-14 atom were left for 50 years, how many carbon-14 atoms would remain? Take decay constant = 3.84×10^{-12} / sec.

Answer: 99.39×10^6 atom.

13. Compute the binding energy per nucleon of ${}^{12}_6\text{C}$.

Answer: 7.4 MeV

14. Define the term half life

15. An ultraviolet lamp is used to illuminate a clean zinc surface and photoelectron are emitted. The maximum kinetic energy of the photoelectric is 1 eV and the work FUNCTION of zinc is 4.31 eV. Determine the wave length of the ultraviolet radiation. (Take plank constant = 6.63×10^{-34} J.s)

Answer: 2.35×10^{-7} m

16. Which of the following is correct about the meaning of photon?

A. Quantum of matter.

B. Positively charged particle.

C. Negatively charged particle.

D. Quantum of light.

17. The half life of radium₂₂₄ is 3.5 days. What fraction of the sample remains undecaed after 14-days?

A. 1/2. B. 1/4. C. 1/8. D. 1/16

18. When the radioactive element ${}_{60}\text{Nd}^{144}$ decays to ${}_{58}\text{Ce}^{140}$, which one of the following particle is emitted?

A. A beta particle.

B. An alpha particle.

C. A proton.

D. A game Ray

19. What is the string nuclear force?

20. How is the release of energy in nuclear reaction associated with achange in mass?

21. Identify the nature of the three types of emission from radioactive substances.

22. How do unstable nucleous become more stable; by absorbing or reducing energy?

23. A freshly prepared sample of a certain radioactive isotope has an activity of 12mCi. After 5 hours, the activity is10mCi.

A. Find the decay constant and half life of the isotope.

B. How many atoms of the isotope were obtained in the freshly prepared sample?

C. What is the simplest activity 30 hours after it is prepared?

The end.