NOVA SCOTIA ADVANCED PHYSICS 12 · UNIT E

Modern Physics and Radioactivity — Practice Test

Nova Scotia Advanced Physics 12 • 25 questions

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **A sample has activity 800 becquerels. After 2 half lives its activity, in becquerels, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

2 **A sample has activity 1600 becquerels. After 3 half lives its activity, in becquerels, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

3 **A sample has activity 400 becquerels. After 1 half lives its activity, in becquerels, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

4 **After 2 half lives the percent of undecayed nuclei remaining is**

ANSWER _____

Understand It with Pulse | Flag a mistake

5 **After 3 half lives the percent of undecayed nuclei remaining is**

ANSWER _____

Understand It with Pulse | Flag a mistake

6 **After 1 half lives the percent of undecayed nuclei remaining is**

ANSWER _____

Understand It with Pulse | Flag a mistake

7 **Light of frequency 100 hertz has photon energy 2 electronvolts. Light of double the frequency has photon energy, in electronvolts, of**

ANSWER _____

Understand It with Pulse | Flag a mistake

8 **Light of frequency 200 hertz has photon energy 3 electronvolts. Light of double the frequency has photon energy, in electronvolts, of**

ANSWER

Understand It with Pulse | Flag a mistake

9 **Light of frequency 50 hertz has photon energy 1.5 electronvolts. Light of double the frequency has photon energy, in electronvolts, of**

ANSWER

Understand It with Pulse | Flag a mistake

10 **A nucleus has total binding energy 84 megaelectronvolts and 12 nucleons. The binding energy per nucleon, in megaelectronvolts, is**

ANSWER

Understand It with Pulse | Flag a mistake

11 **A nucleus has total binding energy 120 megaelectronvolts and 15 nucleons. The binding energy per nucleon, in megaelectronvolts, is**

ANSWER

Understand It with Pulse | Flag a mistake

12 **A nucleus has total binding energy 90 megaelectronvolts and 10 nucleons. The binding energy per nucleon, in megaelectronvolts, is**

ANSWER

Understand It with Pulse | Flag a mistake

13 **A mass defect of 1 atomic mass units releases energy at 931 megaelectronvolts per unit. The energy released, in megaelectronvolts, is**

ANSWER

Understand It with Pulse | Flag a mistake

14 **A mass defect of 2 atomic mass units releases energy at 931 megaelectronvolts per unit. The energy released, in megaelectronvolts, is**

ANSWER

Understand It with Pulse | Flag a mistake

15 **A mass defect of 0.5 atomic mass units releases energy at 931 megaelectronvolts per unit. The energy released, in megaelectronvolts, is**

ANSWER

Understand It with Pulse | Flag a mistake

16 **A sample has 50 percent of its original radioactive nuclei left. The number of half lives elapsed is**

ANSWER

Understand It with Pulse | Flag a mistake

17 **A sample has 25 percent of its original radioactive nuclei left. The number of half lives elapsed is**

ANSWER

Understand It with Pulse | Flag a mistake

18 **A sample has 12.5 percent of its original radioactive nuclei left. The number of half lives elapsed is**

ANSWER

Understand It with Pulse | Flag a mistake

19 **The energy of a photon is proportional to its**

- A frequency
- B wavelength
- C speed
- D amplitude

Understand It with Pulse | Flag a mistake

20 **The work function of a metal is the minimum energy needed to**

- A break a bond
- B release an electron from its surface
- C ionise an atom fully
- D heat the metal

Understand It with Pulse | Flag a mistake

21 **In the Bohr model, light is emitted when an electron**

- A rises to a higher level
- B leaves the atom
- C falls to a lower energy level
- D gains mass

Understand It with Pulse | Flag a mistake

22 **Mass-energy equivalence means a small mass can convert into a**

- A small amount of energy
- B new element only
- C photon only
- D large amount of energy

Understand It with Pulse | Flag a mistake

23 **A chain reaction in fission is sustained by**

- A neutrons causing further fissions
- B protons
- C electrons
- D photons

Understand It with Pulse | Flag a mistake

24 **Radioactive decay is a random process, so for a single nucleus it is impossible to predict**

- A what it will become
- B when it will decay
- C its mass
- D its charge

Understand It with Pulse | Flag a mistake

25 **Carbon dating uses the ratio of carbon 14 to carbon 12 because carbon 14**

A increases over time

B is man made

C decays at a known rate while carbon 12 is stable

D never decays

Understand It with Pulse | Flag a mistake

ANSWER KEY

1.	200	**10.**	7	**19.**	A
2.	200	**11.**	8	**20.**	B
3.	200	**12.**	9	**21.**	C
4.	25	**13.**	931	**22.**	D
5.	12.5	**14.**	1862	**23.**	A
6.	50	**15.**	465.5	**24.**	B
7.	4	**16.**	1	**25.**	C
8.	6	**17.**	2		
9.	3	**18.**	3		

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