

Nuclei-2

- At some instant two radioactive substance are having amount in ratio of 2:1. Their half lives are 12 hours and 16 hours then after two days the ratio of their quantities is
(A) 1 : 1 (B) 2 : 1 (C) 1 : 2 (D) 1 : 4
- 'Rn' decays into 'Po' by emitting α -particle with half life of 4 days. A sample contains 6.4×10^{10} atoms of Rn. After 12 days, the number of atoms of 'Rn' left in the sample will be
(A) 3.2×10^{10} (B) 0.53×10^{10} (C) 2.1×10^{10} (D) 0.8×10^{10}
- Half life of radioactive element is 12.5 Hour and its quantity is 256 gram. After how much time its quantity will remain 1 gram
(A) 50 Hrs (B) 100 Hrs (C) 150 Hrs (D) 200 Hrs
- A sample of radioactive element has a mass of 10 gram at an instant $t=0$. The approximate mass of this element in the sample after two mean lives is
(A) 1.35 gram (B) 2.50 gram (C) 3.70 gram (D) 6.30 gram
- If half-life of a radioactive substance is 60 minutes, then the percentage decay in 4 hours is
(A) 50% (B) 71% (C) 85% (D) 93.7%
- If half life period of radium is 1600 years then its average life is (approx) –
(A) 4200 years (B) 3530 years (C) 2300 years (D) 2800 years
- The fossil bone has a $^{14}\text{C} : ^{12}\text{C}$ ratio, which is $\left(\frac{1}{16}\right)$ of that in a living animal bone. If the half-life of ^{14}C is 5730 years, then the age of the fossil bone is
(A) 11460 years (B) 17190 years (C) 22920 years (D) 45840 years
- The power obtained in a reactor using U^{235} disintegration is 1000 kW. The mass decay of U^{235} per hour is
(A) 10 microgram (B) 20 microgram (C) 40 microgram (D) 1 microgram
- The half life of a radioactive isotope 'X' is 50 years. It decays to another element Y which is stable. The two elements X and Y were found to be in the ratio of 1:15 in a sample of a given rock. The age of the rock was estimated to be
(A) 150 years (B) 200 years (C) 250 years (D) 100 years

10. A mixture consists of two radioactive materials A_1 and A_2 with half lives of 20s and 10s respectively. Initially the mixture has 40g of A_1 and 160g of A_2 . The active amount of the two in the mixture will become equal after :
 (A) 20s (B) 40s (C) 60s (D) 80s
11. The half-life of a radioactive substance is 30 minutes. The time (in minutes) taken between 40% decay and 85% decay of the same radioactive substance is
 (A) 15 (B) 30 (C) 45 (D) 60
12. Radioactive material 'A' has decay constant ' 8λ ' and material 'B' has decay constant ' λ '. Initially they have same number of nuclei. After what time, the ratio of number of nuclei of material 'A' to that 'B' will be $\frac{1}{e}$?
 (A) $\frac{1}{7\lambda}$ (B) $\frac{1}{8\lambda}$ (C) $\frac{1}{9\lambda}$ (D) $\frac{1}{\lambda}$
13. A radioactive material decays by simultaneous emission of two particles with respective half-lives 1620 and 810 years. The time (in years) after which one-fourth of the material remains is
 (A) 1080 (B) 2430 (C) 3240 (D) 4860
14. The half life of a radioactive element is 10 days. If the mass of the specimen reduces to $(1/10)^{\text{th}}$ then the time taken is
 (A) 100 days (B) 50 days
 (C) 33 days (D) 16 days
15. Initial ratio of active nuclei in two different samples is 2:3. Their half lives are 2hr and 3hr respectively. Ratio of their activities at the end of 12hr is
 (A) 1:6 (B) 6:1
 (C) 1:4 (D) 4:1



GROUP OF INSTITUTIONS

Physics Worksheet-30					Nuclei-2					22-02-2019				
1-A	2-D	3-B	4-A	5-D	6-C	7-C	8-C	9-B	10-B	11-D	12-A	13-A	14-C	15-A