

DPP

DAILY PRACTICE PROBLEMS

Class : XIIth
Date :

Subject : PHYSICS
DPP No. : 8

Topic :-Nuclei

- The half-life of radon is 3.8 days. How many radon will be left out of 1024 mg after 38 days
a) 1 mg b) 2 mg c) 3 mg d) 4 mg
- For a radioactive nucleus, the mean life is T , If the number of decays per unit time is n at $t = 0$, the number of decays between time 0 and t , is
a) $nTe^{-t/T}$ b) $n(1 - e^{-t/T})$ c) $nT(1 - e^{-t/T})$ d) $ne^{-t/T}$
- ${}^7N^{14}$ is bombarded with ${}^2He^4$. The resulting nucleus is ${}^8O^{17}$ with the emission of
a) Neutrino b) Antineutrino c) Proton d) Neutron
- The example of nuclear fusion is
a) Formation of barium and krypton from uranium
b) Formation of helium from hydrogen
c) Formation of plutonium 235 from uranium 235
d) Formation of water from hydrogen and oxygen
- Isotopes are atoms having
a) Same number of protons but different number of neutrons
b) Same number of neutrons but different number of protons
c) Same number of protons and neutrons
d) None of the above
- If the radius of a nucleus of mass number 3 is R , then the radius of a nucleus of mass number 81 is
a) $3R$ b) $9R$ c) $(27)^{1/2}R$ d) $27R$
- Which of the following radiations has the least wavelength
a) X-rays b) γ -rays c) β -rays d) α -rays
- An atomic power nuclear reactor can deliver 300 MW. The energy released due to fission of each nucleus of uranium atom U^{238} is 170 MeV. The number of uranium atoms fissioned per hour will be
a) 30×10^{25} b) 4×10^{22} c) 10×10^{20} d) 5×10^{15}
- The ratio of the kinetic energy to the total energy of an electron in a Bohr orbit is
a) -1 b) 2 c) 1 : 2 d) None of these
- The rad is the correct unit used to report the measurement of
a) The ability of a beam of gamma ray photons to produce ions in a target
b) The energy delivered by radiation to a target
c) The biological effect of radiation
d) The rate of decay of a radioactive source

11. It is easier to ionize hydrogen as compared to deuterium, because
- a) Hydrogen is lighter than deuterium b) Atomic number of hydrogen is lesser than deuterium
- c) Hydrogen is a diatomic gas d) The statements is wrong
12. The first line of Balmer series has wavelength 6563 \AA . What will be the wavelength of the first member of Lyman series
- a) 1215.4 \AA b) 2500 \AA c) 7500 \AA d) 600 \AA
13. Which of the following pairs is an isobar
- a) ${}_1H^1$ and ${}_1H^2$ b) ${}_1H^2$ and ${}_1H^3$ c) ${}_6C^{12}$ and ${}_6C^{13}$ d) ${}_{15}P^{30}$ and ${}_{14}Si^{30}$
14. If N_0 is the original mass of the substance of half life period $T_{1/2} = 5 \text{ years}$, then the amount of substance left after 15 years is
- a) $N_0/8$ b) $N_0/16$ c) $N_0/2$ d) $N_0/4$
15. Mean life of neutron is about
- a) 100 seconds b) 1000 seconds c) 10 seconds d) 1 seconds
16. An element A decays into element C by a two step process
- $$A \rightarrow B + {}_2He^4$$
- $$B \rightarrow C + 2 {}_{-1}e^0$$
- Then
- a) A and C are isotopes b) A and C are isobars c) A and B are isotopes d) A and B are isobars
17. In the reaction identify X
- $${}_7N^{14} + \alpha \rightarrow {}_8X^{17} + {}_1p^1$$
- a) An oxygen nucleus with mass 17 b) An oxygen nucleus with mass 16
- c) A nitrogen nucleus with mass 17 d) A nitrogen nucleus with mass 16
18. Ionisation potential of hydrogen atom is 13.6 eV . Hydrogen atoms in the ground state are excited by monochromatic radiation of photon energy 12.1 eV . The spectral lines emitted by hydrogen atoms according to Bohr's theory will be
- a) One b) Two c) Three d) Four
19. Heavy water is used in a nuclear reactor to
- a) Absorb the neutrons b) Slow down the neutrons
- c) Act as coolant d) None of the above
20. A radioactive element A decay into stable element B , initially a fresh sample of A is available. In this sample variation in number of nuclei of B with time is shown by

