## **RADIOACTIVITY EXERCISE**

Q1: The neutral atoms of all isotopes of the same element contain the same number of \_\_\_\_\_\_.

- a. neutrons only.
- b. Electrons
- c. Mass numbers
- d. Masses

Q2: The atomic number is not changed by which type of radioactive decay?

- a. Beta
- b. Gamma
- c. Alpha
- d. The atomic number is affected by all forms of radioactive decay

Q3: Isotopes of an element have a different number of

- a. Proton
- b. Neutron
- c. Electron
- d. atom

Q4: Three types of radioactive elements are emitted when unstable nuclei undergo radioactive decay. Which of the following is not one of them

- a. Beta
- b. Gamma
- c. Alpha
- d. delta

Q5: A nuclear fission reaction becoming self-sustaining depends on

- a. electrons
- b. Neutrons
- c. Energy
- d. Protons

Q6: Helium nuclei particles are called

- a. Gamma particles
- b. Beta particles
- c. Alpha particles
- d. No particles that are helium nuclei

Q7: When two atomic nuclei combine it is called as

- a. Chain reaction
- b. Nuclear fusion
- c. Nuclear decay
- d. Nuclear fission

Q8: The number of protons or atomic number is reduced to 2 by which form of radioactive decay?

- a. Beta-decay
- b. Gamma decay
- c. Alpha decay
- d. None of the above

Q9: Which statement is true for all three types of radioactive emission?

- a. They are deflected by electric fields
- b. They ionise gases
- c. They are completely absorbed by a thin aluminium sheet
- d. They emit light

Q10: A nuclide of the element plutonium 94 Pu 242. What is the number of neutrons in its nucleus?

- a. 242
- b. 336
- c. 148
- d. 94
- Q11. What will happen in a time of 7 hours, if a radioactive substance has an average life of 7 hours?
  - a. Half of the active nuclei decay
  - b. Less half of the active nuclei decay
  - c. More than half of the active nuclei decay
  - d. All active nuclei decay
- Q12. A freshly prepared radioactive source of half-time 2h emits radiation of intensity which is 64 times the permissible safe level. Minimum time after which it would be possible to work safely with this source is which of the following?
  - a. 6 h
  - b. 12 h
  - c. 24 h
  - d. 20 h
- Q13. Which will be the unknown nucleus formed when  $^{22}\mbox{Ne}_{10}$  decays into two  $\alpha\mbox{-particles}$  and an unknown nucleus?
  - a. Fluorine
  - b. Carbon
  - c. Neon
  - d. Oxygen

Q14. A 300-day old radioactive substance shows an activity of 5000 dps, 150 days later its activity becomes 2500 dps. What was its initial activity?

- a. 25000 dps
- b. 20000 dps

c. 32000 dps

d. 5000 dps

Q15. The electron emitted in  $\beta$  – radiation originates from where?

- a. Inner orbits of atoms
- b. Free electrons existing in nuclei
- c. The decay of a neutron in nuclei
- d. Photon escaping from the nucleus

Q16. Radioactive material decays by simultaneous emission of two particles with respective halflives 1620 and 810 years. The time, in years, after which one-fourth of the material remains?

- a. 1080
- b. 2430
- c. 3240
- d. 4860

## Answers key

1.(b)	2.(b)	3.(b)	4.(d)	5.(b)	6.(c)	7.(b)	8.(c)	9.(b)	10.(c)
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11.(c) 12.(b) 13.(b) 14.(b) 15.(c) 16.(a)