

Chemistry (DPP)

Atomic Structure

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- The atom A, B, C have the configuration

A. $[Z(90) + n(146)]$, B. $[Z(92) + n(146)]$,
 C. $[Z(90) + n(148)]$ So that :-
 (a) A and C - Isotones (b) A and C - Isotopes
 (c) A and B - Isobars (d) B and C - Isobars
 (e) B and C - Isotopes
 The wrong statement's are:-
 (A) a, b only (B) c, d, e only
 (C) a, c, d only (D) a, c, e only
- (i) ${}_{26}\text{Fe}^{54}$, ${}_{26}\text{Fe}^{56}$, ${}_{26}\text{Fe}^{57}$, ${}_{26}\text{Fe}^{28}$ (a) Isotopes
 (ii) ${}_{1}\text{H}^3$, ${}_{2}\text{He}^3$ (b) Isotones
 (iii) ${}_{32}\text{Ge}^{76}$, ${}_{33}\text{As}^{77}$ (c) Isodiaphers
 (iv) ${}_{92}\text{U}^{235}$, ${}_{90}\text{Th}^{231}$ (d) Isobars
 (v) ${}_{1}\text{H}^1$, ${}_{1}\text{D}^2$, ${}_{1}\text{T}^3$
 Match the above correct terms:-
 (A) [(i) - a], [(ii) - d], [(iii) - b], [(iv) - c], [(v) - a]
 (B) [(i) - a] [(ii) - d], [(iii) - d] [(iv) - c] [(v) - a]
 (C) [v - a] [(iv) - c]. [(iii) - d] [(ii) - b] [(i) - a]
 (D) None of them
- Select iso electronic set :-
 (a) Na^+ , H_3O^+ , NH_4^+ (b) CO_3^{2-} , NO_3^- , HCO_3^-
 (c) P^{3-} , HCl , C_2H_6 , PH_3 (d) N^{3-} , O^{2-} , F
 (A) a, b, d (B) b, c, d (C) a, b, c, d (D) a, b, c
- Choose the false statement about deuterium :-
 (A) It is an isotope of hydrogen
 (B) It contains [(1 e⁻) + (1 p⁺) + (1 n)]
 (C) It contains only [(1 p⁺) + (1 n)]
 (D) D₂O is called the heavy water
- If the table of atomic masses were established with the oxygen atom and assigned value of 200, then the mass of carbon atom would be, approximately:-
 (A) 24 (B) 150 (C) 50 (D) 112
- The relative abundance of two rubidium isotopes of atomic weights 85 and 87 are 75% and 25% respectively. The average atomic wt. of rubidium is:-
 (A) 75.5 (B) 85.5 (C) 86.5 (D) 87.5
- The ratio of specific charge of a proton and an α -particle is :-
 (A) 2 : 1 (B) 1 : 2 (C) 1 : 4 (D) 1 : 1
- In an atom ${}_{13}\text{Al}^{27}$, number of protons is (a) electron is (b) and neutron is (c). Hence ratio will be [in order c : b : a]
 (A) 13 : 14 : 13 (B) 13 : 13 : 14 (C) 14 : 13 : 13 (D) 14 : 13 : 14

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9. The charge on the atom containing 17 protons, 18 neutrons and 18 electrons is :-
(A) +1 (B) -2 (C) -1 (D) Zero
10. Which of the following statements concerning the two isotopes ${}_{13}\text{Al}^{27}$ and ${}_{14}\text{Si}^{27}$ are not incorrect:-
(A) The aluminium isotope has more neutrons per atom than the silicon isotope
(B) If ${}_{13}\text{Al}^{27}$ absorbs neutron, silicon isotope is formed
(C) Both the isotopes have a atomic number 27
(D) Both the isotopes contain 27 electrons per atom
11. Atomic weight of Ne is 20.2. Ne is mixture of Ne^{20} and Ne^{22} , Relative abundance of heavier isotope is :-
(A) 90 (B) 20 (C) 40 (D) 10
12. Number of protons, neutrons & electrons in the element ${}_{89}\text{Y}^{231}$ is :-
(A) 89, 231, 89 (B) 89, 89, 242 (C) 89, 142, 89 (D) 89, 71, 89
13. Atom's ${}_{6}\text{C}^{13}$ and ${}_{8}\text{O}^{17}$ are related to each other as:-
(A) Isotone's (B) Isoelectronic (C) Isodiapher's (D) Isoster's
14. Let mass of electron is half, mass of proton is two times and mass of neutron is three fourth of original. The find out new atomic wt. of O^{16} atom :-
(A) increases by 37.5% (B) Remain constant
(C) increases by 12.5% (D) decreases by 25%
15. The atomic mass 25 had 13 neutron's in its nucleus. What its ions will be :-
(A) Mn^{+2} (B) Cr^{+3} (C) Al^{+3} (D) Mg^{+2}
16. Naturally occurring boron has two isotopes whose atomic weights are 10.00 (I) and 11.00 (II). Atomic weight of natural boron is 10.80. The percentage of isotopes (I) and (II) respectively is :-
(A) 20 and 80 (B) 10 and 20 (C) 15 and 75 (D) 30 and 70
17. An isotone of ${}_{32}\text{Ge}^{76}$ is :-
(i) ${}_{32}\text{Ge}^{77}$ (ii) ${}_{33}\text{As}^{77}$
(iii) ${}_{34}\text{Se}^{77}$ (iv) ${}_{34}\text{Se}^{78}$
(A) (ii) & (iii) (B) (i) & (ii)
(C) (ii) & (iv) (D) (ii) & (iii) & (iv)
18. A certain negative ion X^{-2} has in its nucleus 18 neutrons and 18 electrons in its extra nuclear structure. What is the mass number of the most abundant isotope of 'X' :-
(A) 35.46 (B) 32 (C) 36 (D) 39
19. In ${}_{7}\text{N}^{14}$ if mass attributed to electron were doubled & the mass attributed to protons were halved, the atomic mass would become approximately :-
(A) Halved (B) Doubled (C) Reduced by 25% (D) Remain same

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ANSWER KEY

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|-------|-------|-------|-------|-------|
| 1. D | 2. A | 3. D | 4. C | 5. B |
| 6. B | 7. A | 8. C | 9. C | 10. A |
| 11. D | 12. C | 13. C | 14. A | 15. D |
| 16. A | 17. C | 18. B | 19. C | |