XI STANDARD PRE UNIT TEST JULY 2018 CHEMISTRY

I.choose the best answer. 10×1=10

1. An element X has the following isotopic composition $_{200}X$ = 80 %, $_{199}X$ = 10 % and $_{202}X$ = 10 %. The weighted average atomic mass of the element X is closest to (a) 201 u (b) 202 u (c) 199 u (d) 200 u

2.The equivalent mass of a trivalent metal element is 9 g eq^{-1} the molar mass of its anhydrous oxide is (a) 102 g (b) 27 g (c) 270 g (d) 78 g

3) The number of water molecules in a drop of water weighing 0.18 g is
(a) 6.022×10^{23} (b) 6.022×10^{21} (c) 6.022×10^{20} (d) 9.9×10^{22}

4) Splitting of spectral lines in an magnetic field is called
a) Zeeman effect b) Shielding effect c)Compton effect d) Stark effect

5) Two electrons occupying the same orbital are distinguished by a) azimuthal quantum number b) spin quantum number c) magnetic quantum number d) orbital quantum number

6) What is the maximum numbers of electrons that can be associated with the following set of quantum numbers ? n = 3, l = 2 and m = –1 a) 4 b) 6 c) 2 d) 10

7) What would be the IUPAC name for an element with atomic number 212?
a) bibibiium b) biunbium c) didibium d)bibibium

8) Which of the following elements will have the highest electronegativity? a)Cl b) N c)Cs d)F

9) In a given shell the order of screening effect is
a) s > p > d > f b) s > p > f > d c) f > d > p > s d) f > p > s > d

10) Which one of the following is the least electronegative element? a) Br b) Cl c) I d) H

PART-B 4×2=8

11. Define equivalent mass.

12.Calculate the molar mass of the following compounds. i) urea $[CO(NH_2)_2]$ ii) $[H_2SO_4]$

13. State and explain pauli's exclusion principle.

14. Calculate the uncertainty in position of an electron, if Δv = 0.1% and u = 2.2 x10^6 ms^{-1}

15. By using paulings method calculate the ionic radii of K^+ and Cl^- ions in the potassium chloride crystal. Given that $d_{K^+-Cl^-}$ = 3.14 A

16. Define modern periodic law.

PART-C 4×3=12

17. Hydrogen peroxide is an oxidising agent. It oxidises ferrous ion to ferric ion and reduced itself to water. Write a balanced equation.

18) Calculate the empirical and molecular formula of a compound containing 76.6% carbon, 6.38 % hydrogen and rest oxygen its vapour density is 47.

19) How many unpaired electrons are present in the ground state of Fe^{3+} (z=26), Mn^{2+} (z=25) and argon (z=18)?

20) Give the electronic configuration of Mn^{2+} and Cr^{3+} and discuss the stability of Cu and Cr.

21) What is the de Broglie wavelength(in cm) of a 160g cricket ball travelling at140 Km hr^{1}.

22) calculate the covalent radius of hydrogen using the experimental $d_{H\text{-}Cl}$ value is 1.28 Å and the covalent radius of chlorine is 0.99 Å. In pauling scale the electronegativity of chlorine and hydrogen are 3 and 2.1 respectively.

PART-D 4×5=20

23) Explain the calculation of effective nuclear charge on 4s electron and 3d electron in Titanium

24). Calculating the ionic radii of Na^{+} and F^{-} in NaF crystal by pauling method. whose Interionic distance is equal to 231 pm .

25) Which quantum number reveal information about the shape, energy, orientation and size of orbitals?

26) Calculate the de-Broglie wavelength of an electron that has been accelerated from rest through a potential difference of 1 keV.

27) Balance the following equation using oxidation number method

$$As_2S_3 + HNO_3 + H_2O \rightarrow H_3AsO_4 + H_2SO_4 + NO$$

28) A Compound on analysis gave Na = 14.31% S = 9.97% H= 6.22% and O= 69.5% calculate the molecular formula of the compound if all the hydrogen in the compound is present in combination with oxygen as water of crystallization. (molecular mass of the compound is 322).

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