
Rahula College - Matara



First term test, Grade 12 Time 1.30 hrs,

Chemistry II

- Answer all Questions,

01). First ionization of Some elements are given below.

element	A	B	C	D	E	F	G
Atomic number	Z - 2	Z - 1	Z	Z + 1	Z + 2	Z + 3	Z + 4
I, KJ mol ⁻¹	1680	2080	494	736	577	786	1060

i). Identify the groups of A,B,C,D,E,F,G,.

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ii). A,B, and (Z-3) are gases under room temperature. Identify

A,B,C,D,E,F, exactly in the periodic table..

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iii). Draw the variation of covalent radii of the above element in the given graph,



iv). C,D,E,F,G, Arrange the increasing order of electro negativity of above elements.

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v). Plot the consecutive ionization energies with ionization number of element A.

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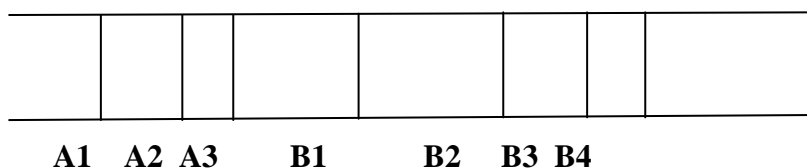
vi). Write the electronic configuration of 'C'

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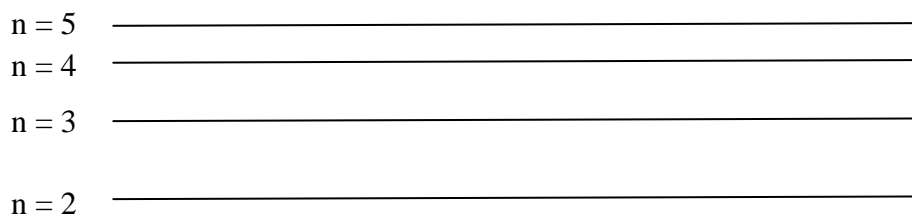
vii). What is the chemical formula between 'C' and 'A' Explain its' bonding type.

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02) Two consecutive series of H – spectrum is given below.



i). Draw the electron transitions of the above series in the given energy levels, using arrows and correct symbols.



n = 1 _____

ii). Name the given two series of the above spectrum?

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iii). What are the transitions for the above two series in the electro – magnetic spectrum,

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iv). Mention the direction to where the frequency is increased,

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v). What is the relationship among E – energy, frequency and h – plank constant of a photon?

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vi). Wave length of a yellow light obtained from a sodium lamp is 589 nm. Calculate the frequency and energy of a photon.

Plank constant = $6.624 \times 10^{-34} \text{Js}$

Velocity of the ray = $2.998 \times 10^8 \text{ms}^{-1}$

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03) i). What are the possible resonance structures for N_2O molecule.

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ii). Select the most stable and unstable structures of the above .

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iii). Write the hybridizations of certain elements in the given circles.

04) i). Fill in the table.

molecule	Electron pairs of valence shell in the mid – atom	No. of bonds around the mid atom.	No. of lone pairs around the mid - atom	Shape/ geometry.
SF ₄				
PCl ₆				
ICl ₃				
I ₃				
Xe F ₄				
HOCl				
NH ₄				

ii). Draw the electron pair arrangement around the mid – atoms of SF₄ , I₃ , PCl₆, show a bond by a line and a lone pair by structure.

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05) Calculate the followings.

i). What is number of total atoms in 0.2 mol of C₆ H₁₂ O₆ molecule?

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ii). What is the number of moles which consist of 3.011×10^{24} amount of Na – atoms?

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iii) What is the number of moles in 0.49 g of H_2SO_4 ?

(H = 1, S = 32, O = 16)

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iv). What is the mass of 4.5 mol of N_2O_3 ? (N = 14)

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v). What is the mass of a Cl_2 molecule? (Cl = 35.5)

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vi) What is the mass of a K – atom ? (K = 39)

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vii). Calculate the concentration of the solution when 2g of Na OH is dissolved in 250 cm^3 of water?

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viii 5). What is the required mass of $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ to prepare 500 cm^3 of 0.5 mol dm^{-3} CaCl_2 solution (Ca = 40)

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ix). What is the volume of 1.5 mol dm^{-3} CuSO_4 solution that consist of 0.03 mol of CuSO_4 ?

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x). 200 cm^3 of 3 mol dm^{-3} KNO_3 solution and 400 cm^3 of 2 mol dm^{-3} KNO_3 solution were mixed together. What is the concentration of new solution?

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