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Roll No. : 01

SESSION ENDING EXAMINATION, 2014-15

SUBJECT - CHEMISTRY

CLASS - XI

Time : 3:00 Hrs.

M.M. 70 MARKS

GENERAL INSTRUCTIONS :

1. All questions are compulsory.
2. Question no. 1 to 5 are very short answer questions and carry 1 mark each.
3. Question no. 6 to 10 are short answer questions and carry 2 marks each.
4. Question no. 11 to 22 are short answer questions and carry 3 marks each.
5. Question no. 23 is value based question and carry 4 marks.
6. Question no. 24 to 26 are long answer type questions and carry 5 marks each.
7. Use log table if necessary , use of calculator is not allowed.

[P.T.O.]

Q.1: What do you understand by "Limiting reagent". (1)

Q.2: State Hiesenberg Uncertainty Principle. (1)

Q.3: The value of Vander waal's constants a and b are as given for two gases :

Gases	a (Atm L ² mol ⁻²)	b (L mol ⁻¹)
CO ₂	3.6	0.043
SO ₂	6.7	0.056

Out of these two gases which gas molecules will possess largest magnitude of intermolecular forces of attraction ? (1)

Q.4: In Lassaigne's test for detection of nitrogen in an organic compound , the blue colour appears due to the formation of (1)

Q.5: For a reaction both enthalpy change and entropy change are positive. Under what conditions the reaction will be spontaneous ? (1)

Q.6: (i) How many subshells are associated with n=4 ?
(ii) How many electrons will be present in the subshells having m_s value of -1/2 for n=4 ? (1+1)

Q.7: (i) Define electron gain enthalpy .
(ii) Why is the electron gain enthalpy of chlorine more negative than fluorine ? (1+1)

Q.8: (i) In what group of the periodic table the element will found having electronic configuration : [Xe] 4f¹⁴ 5d⁴ 6s²
(ii) Why first ionization enthalpy of nitrogen is more than oxygen? (1+1)

Q.9: Which out of NH₃ and NF₃ has higher dipole moment and why ? (2)

[P.T.O.]

OR

Draw the molecular orbital diagram of dioxygen and calculate bond order. (2)

Q.10:(i) Draw the structure of diborane .

(ii) PbCl_4 is less stable than SnCl_4 but PbCl_2 is more stable than SnCl_2 . Why ? (1+1)

Q.11:(i) CO_2 is a gas while SiO_2 is solid at room temperature. Why?

(ii) SiCl_4 can be easily hydrolysed but CCl_4 does not hydrolysed. Why ?

(iii) Silicon shows a higher covalency than carbon. Why ? (1+1+1)

Q.12: An electron beam is accelerated by a potential difference of 10000 volts. What is the wavelength of the wave associated with the electron beam ?

(mass of electron = 9.1×10^{-31} Kg,

Charge of electron = 1.6×10^{-19} C)

OR

Calculate the uncertainty in the velocity of a cricket ball of mass 150 g , if the uncertainty in its position is of the order of 1\AA .

($h = 6.6 \times 10^{-34}$ Kg m² s⁻¹) (3)

Q.13:(i) Draw the orbital structure of ethane .

(ii) Out of H_2O and H_2S which have high boiling point and why?

(iii) He_2 molecule does not exist. why ? (1+1+1)

Q.14:(i) Define " Charles law ". (1)

(ii) Calculate the temperature of 4 mol of gas occupying 5 dm³

[P.T.O.]

evidyarthi