

THE OPEN UNIVERSITY OF SRI LANKA
Foundation Programme in Science/Continuing Education Programme
LEVEL 2- ASSIGNMENT TEST 1 (NBT) 2006/2007
PSF 2303/PSE 2303 – CHEMISTRY – LEVEL 2
DURATION : 1 HOUR



DATE : 2006 – 12 – 18(Monday)

TIME : 3.00 p.m. TO 4.00 p.m.

Part A – Multiple choice Questions (marks $3 \times 15 = 45$ marks)

Part B – Structured essay type Questions 55 marks

Answer all the questions

Choose the most correct answer to each question and mark a cross over the answer on the **given answer sheet**. Any answer with more than one cross will not be counted. Each **correct answer** will carry 3 marks. 0.5 marks will be deducted for **each incorrect answer**.

Gas constant, (R)	$= 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$
Avogadro constant, (L)	$= 6.023 \times 10^{23} \text{ mol}^{-1}$
Plank constant, (h)	$= 6.63 \times 10^{-34} \text{ Js}$
Velocity of light, (c)	$= 3 \times 10^8 \text{ ms}^{-1}$
Standard atmospheric pressure, (Π)	$= 10^5 \text{ Pa}$
$\text{Log}_e(X)$	$= 2.303 \text{ log}_{10}(X)$
1 atm	$= 1 \times 10^5 \text{ Nm}^{-2}$

- 300 ml of a gas at 27°C is cooled to -3°C at constant pressure. Its final volume is
(1) 135 ml (2) 405 ml (3) 33.33 ml (4) 270 ml (5) 276 ml
- Which of the following gases would have highest root mean square velocity at 25°C
(1) CO_2 (2) O_2 (3) CO (4) SO_2 (5) NO_2
- Sodium hydroxide does not react with
(1) Al (2) Zn (3) Cl_2 (4) Br_2 (5) Cu
- NaNO_3 decomposes above 800°C to give
(1) N_2 (2) O_2 (3) NO_2 (4) Na_2O (5) NO
- Be^{2+} has a strong tendency to form covalent bonds in its compounds because of its
(1) High ionic potential (2) Low ionic potential (3) Low ionization energy
(4) High ionization energy (5) None of the above
- The order of increasing thermal stabilities of
(a) K_2CO_3 (b) MgCO_3 (c) CaCO_3 (d) BeCO_3
(1) $d < b < c < a$ (2) $a < b < c < d$ (3) $d < b < a < c$ (4) $b < d < c < a$ (5) $d < c < b < a$

7. The polarity of B - X bonds is in the order B - F < B - Cl < B - Br but Lewis acidity shows the sequence

- (1) $\text{BCl}_3 < \text{BBr}_3 < \text{BF}_3$ (2) $\text{BF}_3 < \text{BCl}_3 < \text{BBr}_3$ (3) $\text{BBr}_3 < \text{BF}_3 < \text{BCl}_3$
(4) $\text{BCl}_3 < \text{BF}_3 < \text{BBr}_3$ (5) $\text{BF}_3 < \text{BBr}_3 < \text{BCl}_3$

8. LiH react with AlCl_3 to give

- (1) LiCl_3 (2) AlH_3 (3) $\text{LiAlH}_4 + \text{LiCl}$ (4) Li (5) $\text{AlH}_3 + \text{Cl}_2$

9. $\text{SiCl}_4 + \text{LiAlH}_4 \rightarrow \text{A} + \text{AlCl}_3 + \text{LiCl}$

A is

- (1) H_3SiH_4 (2) Si_2H_6 (3) Si_6H_{14} (4) Si_4H_{10} (5) None of the above

10. When N_2 goes to N_2^+ the N-N bond distance

- (1) decreases (2) Remains the same (3) increases (4) Reduces to half (5) None of the above

11. 10 g sample of FeS was oxidized to SO_2 by using 10.0 ml of 0.05 M $\text{K}_2\text{Cr}_2\text{O}_7/\text{H}^+$ Solution. Calculate the percentage of FeS in the sample is

- (1) 1.10% (2) 1.20% (3) 1.23% (4) 1.32% (5) 1.45%

12. HF can form HF_2^- while HCl cannot form HCl_2^- . This is due to,

- (1) Fluorine atom is small and can form H-bond (2) F_2 is more reactive
(3) HF is more reactive (4) F_2 is highly electronegative
(5) None of the above

13. Point out the **false** statement. Strong oxidizing character is favoured by

- (1) High electron affinity of the halogen atom
(2) Low ionization energy of the halogen atom
(3) High hydration energy of the gaseous halide ions
(4) Low heat of dissociation of the molecular nitrogen
(5) None of the above

14. High boiling point of water is due to

- (1) Its high specific heat (2) Low dissociation constant (3) Its dipole moment
(4) Its molar mass (5) Inter molecular hydrogen bonding

15. The number of d electrons in Fe^{2+} (Z=26) is equal to that of the

- (1) p-electrons in Cl (Z=17) (2) d-electrons in Fe (3) p-electrons in Ne (Z=10)
(4) p-electrons in S (Z=16) (5) s-electrons in Mg (Z=12)