FIRST TERM EVALUATION 2014 - 2015

Chemistry

Std. 10

Time : 1½ hrs.
Score : 40

Instructions :
- The first 15 minutes of cool - off time.
- This time is to be spent for reading the question paper.
- You are not supposed to write anything during the cool - off time.
- Read the instructions carefully and attempt the questions.

1. Mathematical expressions of some gas laws are given.

$[P_1V_2 = P_2V_1, \quad PV = VT, \quad P_1V_1 = P_2V_2, \quad T_1V_1 = T_2V_2]$

   a. Which above relation is appropriate to Boyle's law? **(1)**

   b. The space occupied by a fixed mass of nitrogen gas at 2 atm pressure is 20mL. What is the volume of this gas when pressure is increased to 10atm? Temperature remains constant? **(2)**

2. Take marble ($CaCO_3$) piece and dilute hydrochloric acid in a testtube. A colourless gas is evolved.

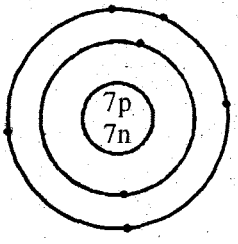
   a. Name the formed gas? **(1)**

   b. Write chemical equation of this reaction? **(1)**

   c. What change takes place in the speed of chemical reaction when well powdered marble is used? Why? **(1)**

   d. What change is carried out in the concentration of acid to increase the speed of reaction? Why? **(1)**

3. Bohr model of an element is given



   a. Calculate atomic number and mass number of this element? **(1)**

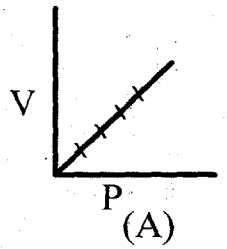
   b. Identify subshells of each shell of this element? **(1)**

   c. Write sub shell electronic configuration of this element? **(1)**

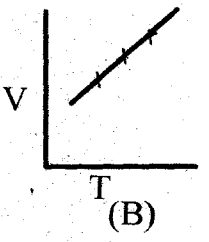
   d. Find out group and period of this element? **(1)**

(P.T.O.)

4. Some graphs are given



(A)



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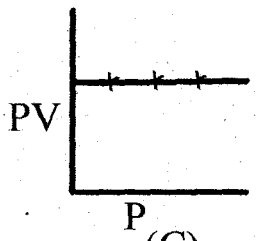

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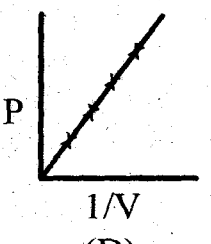

(D)

a. Which above graph is most suitable to Charle's law? **(1)**

b. Among A, B, C and D which of them are applicable to Boyle's law? **(1)**

5. Two carbon compounds are given

Glucose - $C_6H_2O_6$, Sugar - $C_{12}H_{22}O_{11}$

a. Find out molecular mass of these compounds? **(1)**

b. Calculate mass of five moles of glucose? **(1)**

c. Calculate number of molecules present in 3420g of sugar? **(1)**

Hints : atomic mass C-12, H-1, O-16

6. Sub - shell electronic configurations of three elements are given

Element	Electronic configuration
A	$1S^2\ 2S^2\ 2P^6\ 3S^2$
B	$1S^2\ 2S^2\ 2P^6\ 3S^2\ 3P^6\ 4S^2\ 3d^4$
C	$1S^2\ 2S^2\ 2P^6\ 3S^2\ 3P^5$

a. Which above electronic configuration is wrong? **(1)**

b. Find out block of each element? **(1)**

c. Which above elements belong to the same period? **(1)**

d. Find out group of elements A and C? **(1)**

7. The melting point and boiling point of a substances are 403K and 473K. On the basis of this answer the following questions?

   a. In which state this subtance is exist at 398K? **(1)**

   b. Are you agree with the statement that this substance is exist in liquid state at 443K? Why? **(1)**

   c. Is this substance obey Boyle's law at 498K? Why? **(1)**

8. Following chemical equation represent the decomposition of hydrogen perioxide.

   $$2H_2O_2 \longrightarrow 2H_2O + O_2$$

   a. Suggest any one method to identify the gas formed from this chemical reaction? **(1)**

   b. Suggest any one method to increase the amount of formed oxygen gas? **(1)**

   c. Write any two uses of H_2O_2? **(1)**

9. 112L of CO_2 gas is taken at STP.

   a. Calculate number of moles present in 112L? **(1)**

   b. Calculate mass of this moles of CO_2? **(1)**

   c. Calculate mass of this volume of ammonia (NH3) at STP? **(1)**

   Hints : Atomic mass - C-12, O-16, N - 14, H-1

10. Atomic number of iron (Fe) is 26. This element is belong to d-block

    a. Write sub - shell electronic configuration of this element? **(1)**

    b. Find out group of Fe? **(1)**

    c. Calculate the period of this element? **(1)**

11. The pressure experienced on a cylinder which contains 500mL of helium gas at 373K is 1 atm. Calculate the volume of this gas when temperature pressure are reduced to 273K and 0.5 atm respectively? **(2)**

12. Sulphuric acid is the pollutant emitted from a rayon factory. Lime is used to neutralise this acid.

    a. Write chemical equation to represent the reaction between lime and sulphuric acid? **(1)**

    b. Calculate molecular mass of H_2SO_4 and $Ca(OH)_2$? **(1)**

    c. Find out mass of lime required to neutralise 980g of H_2SO_4? **(1)**

    Hints : Atomic mass Ca-40, O-16, S-32, H-1

13. Which of the following statements are related to gases

i. intermolecular distance is very low.

ii. have define shape

iii. rate of diffusion is very high

iv. have no shape and volume **(1)**

14. Two samples are given

A - 40g helium

B - 40g hydrogen

a. Find out number of atoms present in the sample B? **(1)**

b. Calculate number of molecules present in these two samples? **(1)**

Hints : Atomic mass H - 1, He - 4