

Name:

Date: - 29 – 04 – 2020

Chemistry: -1st year Test # 1

Q. No 1 MCQs Encircle the correct possible answer

Time:20 min.....

17

- The largest number of molecular are present in:
(a) 3.6g H₂O (b) 5.4g of N₂O₅ (c) 2.8g of CO (d) 4.8g of C₂H₅OH
- When 2g hydrogen reacts completely with 32 g of O₂ than amount of water produced is:
(a) 18g (b) 36g (c) 72g (d) 90g
- A compound has 85.71% Carbon and 14.29% Hydrogen by mass composition, its empirical formula is:
(a)CH₄ (b)CH₃ (c) CH₂ (d) CH
- The number of moles of CO₂ which contain 4.0 g of oxygen:
(a)0.25 (b) 0.50 (c) 1.0 (d) 1.50
- The minimum %age of nitrogen is available in:
(a) urea (b) ammonia (c) Ammonium nitrate (d) Ammonium chloride
- How many covalent bonds are there in 1.6g of marsh gas?
(a)1 x 6.02 x 10²² (b)2 x 6.02 x 10²³ (c)3 x 3.01 x 10²³ (d)4 x 6.02 x 10²²
- The volume occupied by 5.36 x 10²² molecules of Ne at STP:
(a)1dm³ (b)2dm³ (c)2.24dm³ (d)112.dm³
- How many positive charges are there in 4.9g of Sulphuric acid?
(a) 3.01 x 10²² (b) 2 x 3.01 x 10²² (c) 3.01 x 10²³ (d) 2 x 6.02 x 10²²
- A Gooch crucible is made up of:
(a)Metal (b)Glass (c)Filter paper (d)Porcelain
- Which one of the following substances is a sublime material:
(a) Silica (b) dry ice (c) Potash alum (d) table salt
- A substance used as decolorizing agent:
(a) Silica gel (b) Conc. H₂SO₄ (c) P₂O₅ (d) Animal charcoal
- Which of the following will have the same number of molecules at STP?
(a) 44g of CO₂ and 11.2 dm³ of CO (b) 28g of N₂ and 506 dm³ of NO₂
(c) 11.2dm³ of O₂ and 32g of O₂ (d) 280cm³ of CO₂ and 280 cm³ of NO₂
- The deviation of a gas from ideal behavior is minimum at:
(a)100°C and 2 atm (b) -10°C and 5 atm (c) -10°C and 2 atm (d) 0°C and 2 atm
- If absolute temperature of a gas is doubled and the pressure is reduced to one half , the volume of the gas will
(a) reduce to ¼th (b) increases 4 times (c)be doubled (d)remain unchanged
- Density of a gas decreases when there is increase in:
(a) Pressure (b) Molar mass (c) Temperature (d) none of these
- If a gas has an original volume of 546cm³ at 0°C if this gas with original volume 546 cm³ is cooled by 1°C then for this 1°C fall in temperature the decrease in volume is:
(a) 1cm³ (b) 2cm³ (c) 3cm³ (d) 4cm³
- Which one will be the unit of energy?
(a) molK⁻¹ (b) atm dm⁻³ (c) mol dm⁻³ (d) atm dm³

SUBJECTIVE:

Date: -... - 04 - 2020

Time Allowed: 2hrs:40min.....

Q. 2 Give short answers of all questions

8x2=16

- i. What are ions? How are they generated?
- ii. Compare the masses of 0.6 moles of C_2H_4 & I_2 .
- iii. Justify that no individual neon atom in a sample of neon gas has a mass of 20.18 a.m.u.
- iv. What is the difference between a molecule of an element and that of a compound?
- v. 180g of Glucose and 342g of sucrose have same number of molecules but different number of atoms present in them. Justify it.
- vi. What will be the number of molecules in 10.0 g of ice?
- vii. Why actual yield is always less than that of theoretical yield?
- viii. What are the basic assumptions while doing stoichiometric calculations?

Q. 3 Give short answers of all questions

8x2=16

- i. What are critical constants? ii. How colored resins from crystals are separated?
- iii. Derive the SI units for Van - der - Waal's constant?
- iv. Why liquids are less common than other physical states of matter?
- v. Derive Charles's Law from the kinetic molecular theory of gases
- vi. How will you determine the numerical value of R in SI unit?
- vii. How will you verify the Charles's law experimentally?
- viii. What do you know about Joule Thomson effect?

Q. 4 Give short answers of all questions

6x2=12

- i. What do you understand by the term 'mother liquor'?
- ii. What is meant by R_f value?
- iii. What are those major steps involved for a complete quantitative analysis?
- iv. What is the basic principle of solvent extraction?
- v. Name any four volatile solvents used in the laboratory.
- vi. How will you suggest a safe and reliable method of drying crystals?

Extensive Questions

8x3 = 24

NOTE: Attempt any three questions

- Q. 5** (a) A sample of 0.5439 grams of a liquid organic compound was subjected to combustion analysis. On combustion this yields 1.039 grams of CO_2 and 0.6369 grams of water vapors. Determine the molecular formula if the molecular formula mass of that compound is 46 amu. 4
- (b) Differentiate between Diffusion and Effusion? 4
- Q. 6** (a) Calculate the amount of Al_2S_3 produced by the reaction of 20g of Al and 30g of S. Also find out the amount of reagent in excess. 4
- (b) Explain the Boyle's law graphically 4
- Q. 7** (a) A well-known ideal gas is enclosed in a container having volume $500cm^3$ at S.T.P. Its mass comes out to be 0.72 g. What is the molar mass of this gas? Also calculate the number of molecules present. 4
- (b) Discuss the non-ideal behavior of gases. 4