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| **Text  Description automatically generated** | | | | | |
| **PT1/CHQP/1122/A 29-AUG-2022** | | | | | |
| **PERIODIC TEST - I (2022-2023)** | | | | | |
| **Subject: CHEMISTRY**  **Grade: XI** | | Max. Marks: 35Time:1 Hr 15min | | | |
| **Name:** | | | **Section:** | **Roll No:** | |
| ***General Instructions:***  Read the following instructions carefully.  1. There are 16 questions in this question paper.  2. SECTION A - Q. No. 1 to 5 are mcq questions carrying 1marks each.  3. SECTION B - Q. No. 6 to 10 are short answer questions carrying 2 marks each.  4. SECTION C- Q. No. 11 to 15 are short answer questions carrying 3 marks each.  5. SECTION C- Q. No. 16 is a long answer question carrying 5 mark.  6. All questions are compulsory.  7. Use of calculators is not allowed | | | | | |
| **SECTION A** | | | | | |
| 1. | One mole of any substance contains 6.022 × 1023 atoms/molecules. What will be number of molecules of H2SO4 present in 100 mL of 0.02 M H2SO4 solution?  (a) 12.044 × 1020 molecules  (b) 6.022 × 1023 molecules  (c) 1 × 1023 molecules  (d) 12.044 × 1023 molecules | | | | 1 |
| 2 | 8 g of NaOH is dissolved in 18 g of H2O. Mole fraction of NaOH in solution and molality (in mol kg−1) of the solution respectively are  (a) 0.2, 11.11  (b) 0.167, 22.20  (c) 0.2, 22.20  (d) 0.167, 11.11 | | | | 1 |
| 3 | Which of the following series of transitions in the spectrum of hydrogen atom fall in visible region?  (a) Balmer series  (b) Paschen series  (c) Brackett series  (d) Lyman series | | | | 1 |
| 4 | Which transition in the hydrogen atomic spectrum will have the same wavelength as the Balmer transition (i.e. n = 4 to n = 2) of He + spectrum?  (a) n =4 to n = 3  (b)n = 3 to n =2  (c) n =4 to n =2  (d)n =2 to n =1 | | | | 1 |
| 5 | A molar solution is one that contains one mole of solute in:  (a) 1000 g of solvent  (b) 1.0 L of solvent  (c) 1.0 L of solution  (d) 22.4 L of solution | | | | 1 |
| **SECTION B** | | | | | |
| 6 | 1. How any oxygen atoms are present in 16 g of ozone (O3)? 2. A substance has molecular formula C6H12O6. What is its empirical formula | | | | 2 |
| 7 | Write short note on:  a) Continuous and discontinuous spectrum.  b) Absorption and emission spectrum. | | | | 2 |
| 8 | 1. Why is molality preferred over molarity of a solution? 2. In three moles of ethane (C2H6), calculate the following:   (i) Number of moles of carbon atom, (ii) Number of moles of hydrogen atoms | | | | 2 |
| 9 | 1. What does the negative electronic energy (En) for hydrogen atom mean? 2. Calculate the radius of Bohr’s third orbit for hydrogen atom | | | | 2 |
| 10 | The Molarity of a solution of sulphuric acid is 1.35 M. Calculate its molality. (The density of acid solution is 1.02 gcm–3). | | | | 2 |
| **SECTION C** | | | | | |
| 11 | A photon of wavelength 4 × 10–7 m strikes on metal surface, the work function of the metal being 2.13 eV. Calculate (i) the energy of the photon (eV), (ii) the kinetic energy of the emission, (iii) velocity of the photoelectron (1 eV= 1.6020 × 10–19 J). | | | | 3 |
| 12 | Define:   1. Limiting reagent 2. Law of multiple proportion 3. Mole fraction | | | | 3 |
| 13 | Mention 3 applications of line emission spectrum. | | | | 3 |
| 14 | 3.0 g of H2 react with 29.0 g of O2 yield H2O. (i) Which is the limiting reagent. (ii) Calculate the maximum amount of H2O that can be formed (iii) Calculate the amount of reactant left unreacted | | | | 3 |
| 15 | State the observation when during photoelectric effect –   1. Intensity of the light striking the metal surface is increased. 2. Frequency of light striking the metal surface is increased. 3. Frequency less than the threshold frequency strikes the metal surface. | | | | 3 |
| **SECTION D** | | | | | |
| 16 | 1. State Gay-Lussac’s law. 2. Define atomic mass unit. Mention its (i) earlier abbreviation (ii) latest abbreviation according to IUPAC. 3. Calculate the number of atoms in each of the following (i) 52 moles of Ar (ii) 52 u of He | | | | 5 |

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