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| **PT1/CH/1119B 19/05/2019** | | | | | |
| **PERIODIC TEST - I (2019-20)** | | | | | |
| **Subject: CHEMISTRY**  **Grade: XI** | | **Max. Marks: 30**  **Time: 1 Hr 10 Mins** | | | |
| **Name:** | | | **Section:** | **Roll No:** | |
| ***General Instructions:***   * ***This question paper consists of 2 printed pages.*** * ***All answers to be written in the answer sheet provided.*** | | | | | |
| 1. | Why molality is considered better for expressing the concentration as compared to molarity? | | | | 1 |
| 2. | State the law of multiple proportions. | | | | 1 |
| 3. | What does the negative electronic energy for hydrogen atom mean? | | | | 1 |
| 4. | Calculate the number of moles of hydrogen atoms in two moles of ethane. | | | | 1 |
| 5. | de Broglie wave associated with a moving car is not observable, while it is observable for an electron. Justify with the associated rule. | | | | 1 |
| 6. | Calculate the energy associated with the 2nd orbit of He+. What is the radius of this orbit? | | | | 2 |
| 7. | A compound with molar mass 180g/mol contains C, H and O in the molar ratio 1:2:1. What are its empirical and molecular formulae? | | | | 2 |
| 8. | a) State Heisenberg’s Uncertainty Principle. | | | | 2 |
|  | b) Which of the two, an electron or a neutron will show more accuracy in its position, if there is an equal uncertainty in their velocities, and why? | | | |  |
| 9. | Give two limitations of Bohr’s model of H-atom. | | | | 2 |
| 10. | 100g of calcium carbonate is treated with 500ml of M/2 solution of HCl. Find out the volume of CO2 evolved at STP, if the balanced chemical equation is represented as-  CaCO3 + 2 HCl → CaCl2 + H2O + CO2 | | | | 3 |
| 11. | What is the energy in joules, required to shift the electron of the hydrogen atom from the first Bohr orbit to the fifth Bohr orbit and what is the wavelength of the light emitted in nanometers when the electron returns to the ground state?The ground state electron energy is –2.18 X 10–11ergs. (1 erg = 1 x 10-7 J) | | | | 3 |
| 12. | Commercially available sulphuric acid contains 98% by mass and has a density of 1.10 gcm-3. Calculate  a) the molarity of the solution  b) volume of concentrated acid required to prepare 2.5L of 0.50 M HCl. | | | | 3 |
| 13. | If the kinetic energy of a moving electron is 3.0 x10 –25 J, calculate its wavelength. | | | | 3 |
| 14. | a) Determine the empirical formula of an oxide of iron in which the mass percent of iron and oxygen are 69.9 and 30.1 respectively. [ Atomic mass of Fe=55.85u; O =16u]  b) i) Define Limiting reagent.  ii) If 80 g of hydrogen gas is reacted with 80 g of oxygen gas to form water, find the mass of water obtained. Which substance is the limiting reagent? | | | | 5 |
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