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| **PT1/CHAK/1122/B 29-AUG-2022** | | | | | |
| **PERIODIC TEST - 1 (2022-2023)** | | | | | |
| **Subject: Chemistry**  **Grade: XI** | | Max. Marks: 35Time: | | | |
| **Name:** | | | **Section:** | **Roll No:** | |
| 1. | d | | | | 1 |
| 2 | a | | | | 1 |
| 3 | b | | | | 1 |
| 4 | a | | | | 1 |
| 5 | d | | | | 1 |
| 6 | Compound 1: C 42.9 g, then O = 100 - 42.9 = 57.1 g, then 100 g C = 57.1\*100/42.9 = 133.1 g O  Compound 2: C 27.3 g, then O = 100 - 27.3 = 72.7 g, then 100 g C = 72.7\*100/27.3 = 266.3 g O  Now 133.1:266.3 will be in the ratio of 1:2, or O reacts with C in a multiple of whole number, which is consistent with the law of multiple proportions (In other words, 1.33 g O/g C and 2.66 g O/g C ) | | | | 2 |
| 7 | We are given En =  -6.053 X 10-20 J and we are trying to find the value of n.  Since this is question is about a hydrogen atom, we can use the equation:  En= -RH/n2     with constant RH= 2.179 X 10-18 J  Since we need to find the value of n to decide if the energy level is likely, we can rearrange this equation to show  n2 = -RH/ En  n2 = (-2.179 X 10-18 J)/(-6.053 X 10-20 J)  n2= 35.999  n = 6 | | | | 2 |
| 8 | Since it is Balmer series; nf = 2  ΔE = 2.18 x 10-18 [1/ni2 - 1/nf2]  = 2.18 x 10-18 [1/42 - 1/22] = 2.18 x 10-18 x -3/4  ν= ΔE/h = (2.18 x 10-18 x -3/4) / 6.626 x 10-34  =0.2467 x 1016Hz  Λ= c/ν= 3x 108 /0.2467 x 1016  = 12.16 x10-8=121.6 nm | | | | 2 |
| 9 | [C6H12O6] | | | | 2 |
| 10 |  | | | | 2 |
| 11 | 1. Emission Spectrum   It is obtained when radiations emitted by the excited substance are analysed in a spectroscope.  It consist of bright coloured lines separated by dark space.  Absorption Spectrum  It is obtained when white light is first passed through the substance (in gaseous or solution) and transmitted light is analysed in spectroscope.  It consists of dark lines in an otherwise continuous spectrum.  b) rn = -(0.0529nm) n2 / Z  r2 = -(0.0529nm) 12 / 2 =0.02645nm | | | | 3 |
| 12 | 1. Wavelength is the distance between two successive peaks or two successive troughs of a wave. So λ = 4 × 2.16 pm = 8.64 pm | | | | 3 |
| 13 |  | | | | 3 |
| 14 | a) No. of moles of HCl = 38/36.5 = 1.041  Volume of solution = 100 × 1.10 = 110  Molarity = 1.041 × 1000 / 110 = 9.46 M  b) V1 M1 = V2M2  V1 × 9.46 = 1 × 0.10  V1 = 1 × 0.10 / 9.46 = .0105 L | | | | 3 |
| 15 | Moles of HCl = M x V = 1/5 x 200/1000 = 1/25 = .04  50 gm of Na2CO3 = 50 / 106 = .47 - 1 mark  Na2CO3 + 2HCl 🡪 2 NaCl + H2O + CO2  1 mole of Na2CO3 reacts with 2 moles of HCl  0.47 will react with 0.94 moles of HCl  As HCl is only 0.4 moles, HCl is limiting reagent -1 mark  2 moles of HCl gives 22.4 L of CO2  So, 0.4 moles will give 0.4 x 22.4 = 4.48 L of CO2 - 1 mark | | | | 3 |
| 16 | 1. Moles of water = 180/18 = 10   Moles of sugar = 34.2/342 = 0.1  Molality = 0.1 × 1000/180 = 0.56m  Mole fraction of sugar = 0.1/10 + 0.1 = 0.0099   1. CH4 + 2O2 ---------🡪 CO2 + 2H2O   16g 44g  x 5.5g  X = 16 x 5.5/44 = 2g   1. Molality is independent of volume which changes with temperature. | | | | 3  1  1 |
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