

Ph.D. Competitive exam (Analytical Chemistry) 2015-2016

- Q1- A compound was analyzed and found to contain 13.5g Ca, 10.8 g O and 0.675 g H. What is the empirical formula of the compound:
- Q2- Calculate the pH of a solution resulting from mixing of 12 m.mol of CH_3COOH ($\text{pK}_a = 4.74$) and 8 m.mol of CH_3COONa in 100 ml
- Q3- Calculate the ionic strength of mixing $\text{KNO}_3 + \text{Na}_2\text{SO}_4$ have 0.1 M to each one
- Q4- Calculate the pAg for a solution resulting from 50 ml of 0.1M NaCl titration with 10 ml of 0.1 M AgNO_3 ($K_{sp_{\text{AgCl}}} = 1.32 \times 10^{-10}$)
- Q5- A solution has absorbance 0.235 at 630 nm. What is the % transmittance of the solution at this wavelength
- Q6- UV-VIS Spectroscopy is very useful in determining the ratio between a ligand and a metal; numerate those methods: 1....., 2....., 3..... .
- Q7- Classification chromatography method based on mobile phase, :,.....
- Q8- The equation of calculated N at 4.4 %
- Q9- Calculate the $t_{\text{in mb.ph.}}$, $t_{\text{in stat. ph.}}$, & **Corrected retention volume** from the giving: retention time of mobile phase = 30 sec, retention time of analyte in stationary phase = 4.5 min, flow rate of mobile phase = 75ml/min :,.....&
- Q10 - Describe Tg, DTA & DSC curves (plotting only)
- Q11- The types of interferences in AAS :,.....&.....
- Q12- Numerate two line sources in AAS :,.....&
- Q13- Main steps of MS :,.....&
- Q14 - What use the main component of Laser
- Q15- The ion – selective electrode for calcium ion analysis is,..... While the use of SCE as a
- Q16- If the specific conductivity for an electrolyte solution 0.1 N is $8.3 \times 10^3 \text{ Sm}^{-1}$, therefore the equivalent conductivity for the same electrolyte at this concentration is :