**BCH 333**

**Lab Sheet #1**

**Materials:**

-Chemicals:

……………………………………………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………………………………………

- Glassware:

……………………………………………………………………………………………………………………………………………………………………………………………………

-Instruments:

……………………………………………………………………………………………………………………………………………………………………………………………………

**Method:**

1. **Absorption Spectrum:**
2. Take a test tube and add the following reagents:

|  |  |
| --- | --- |
| **Reagent** | **Volume (ml)** |
| 0.1 M citrate buffer, pH 2.4 | 9.0 |
| 7.5 x 10 - 5 M bromophenol blue | 0.2 |
| 95% ethanol  | 0.8 |

1. Mix and measure the absorbance of the solution from 320 to 620 nm at 20 nm intervals, using a scanning spectrophotometer, against a water blank. Remember to zero the instrument at each wavelength setting.

Note: Use suitable cuvettes at sets of wavelengths.

**Results:**

|  |  |
| --- | --- |
| **Wavelength (nm)** | **Absorbance** |
| 320 |  |
| 340 |  |
| 360 |  |
| 380 |  |
| 400 |  |
| 420 |  |
| 440 |  |
| 460 |  |
| 480 |  |
| 500 |  |
| 520 |  |
| 540 |  |
| 560 |  |
| 580 |  |
| 600 |  |
| 620 |  |

-Plot a graph of absorbance against wavelength (absorption spectrum curve), From the graph or spectrum determine λmax for (bromophenol blue at pH 2.4)

-λmax for (bromophenol blue at pH 2.4) =……………. nm.

-Did you used one type of cuvettes ?why?

……………………………………………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………………………………………

**2. Standard Curve for Concentrations.**

a) Set up 7 test tubes as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tube No.** | **7.5x10 - 5M bromophenol blue (ml) [std.]** | **95% ethanol (ml)** | **0.1 M citrate buffer [pH 2.4]** **(ml)** | **sample with unknown conc. (ml)** |
| **1** | 0.1 | 0. 9 | 9. 0 | - |
| **2** | 0.2 | 0.8 | 9. 0 | - |
| **3** | 0.4 | 0.6 | 9. 0 | - |
| **4** | 0.6 | 0.4 | 9. 0 | - |
| **5** | 0.8 | 0.2 | 9. 0 | - |
| **6** | 1.0 | - | 9. 0 | - |
| **[sample with unknown conc.]** | - | - | 9. 0 | 1.0 |

b) Mix and measure the absorbance of all the tubes at …………….. nm against a water blank.

**Results:**

a-Record the absorbance in the table below:

|  |  |  |
| --- | --- | --- |
| **Tube No.** | **Molar concentration of****bromophenol blue x 10 - 6** | **Absorbance at ……….. nm** |
| **1** | 0.75 |  |
| **2** | 1.5 |  |
| **3** | 3 |  |
| **4** | 4.5 |  |
| **5** | 6 |  |
| **6** | 7.5 |  |
| **[sample with unknown conc.]** | ................... |  |

b-Plot a standard curve of absorbance against Molar concentration of bromophenol blue x10 **– 6.**

c-From the curve determine the molar concentration for the sample with unknown concentration.

-Concentration of bromophenol blue sample with unknown concentration. (from the curve) =……… x 10 – 6

**Calculations:**

-Calculate the concentration of sample with unknown concentration. using the information corresponding to tube5.

………………………………………………………………………………………………………………………………………………………………………………………………….

………………………………………………………………………………………………………………………………………………………………………………………………….

………………………………………………………………………………………………………………………………………………………………………………………………….

………………………………………………………………………………………………………………………………………………………………………………………………….

………………………………………………………………………………………………………………………………………………………………………………………………….

………………………………………………………………………………………………………………………………………………………………………………………………….

………………………………………………………………………………………………………………………………………………………………………………………………….

At which wavelength, did you draw your standard curve? Why?

………………………………………………………………………………………………………………………………………………………………………………………………….

………………………………………………………………………………………………………………………………………………………………………………………………….

………………………………………………………………………………………………………………………………………………………………………………………………….