

Transfer prepared standard solution and unknown solution into different colorimetric test tubes

Take image of all test tube solution using smart phone camera

Open the image processing app

Go to gallery, open the image stored in app and extract RGB values for each image/conc.

Process the RGB values (R/G) or (R/B) or (G/B) etc., till to get linear response

Plot the calibration curve using RGB linear response vs concentration

Find the unknown conc using the calibration curve

Table 1: Experimental Data

S. No.	Data collected from Colorimetric device		Data collected from smartphone device*					
	Conc. (ppm)	Abs (Y- axis)	R	G	B	R/G	G/B	R/B
1.	1	0.124	153	90	39	1.7	2.3	3.9
2.	2	0.243	162	70	19	2.3	3.7	8.5
3.	3	0.378	141	38	5	3.7	7.6	28.2
4.	4	0.516	148	48	14	3.9	3.4	10.6
5.	Unknown	0.342	166	67	10	2.5	6.7	16.6

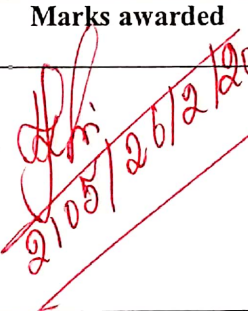
* Corresponding ratio that is linearly increasing with analyte concentration is used for plotting Fig. 2.

Result:

(i). Concentration of Fe in steel sample (using colorimetry) = 2.7 ppm (mg/L)

(ii). Concentration of Fe in steel sample (using digital imaging) = _____ ppm (mg/L)

Evaluation of Result:

Sample number	Experimental value (ppm)	Actual value (ppm)	% of error	Least error % value	Marks awarded
6	Colorimetry method				
	Digital-imaging method				