

## LAMPIRAN

### Hasil Pengamatan

- Tabel Hasil Pengamatan Sampel Air Sungai UNDIP

Waktu (Menit)	pH	Volume Sampel (ml)	Volume KMnO <sub>4</sub> (ml)	Warna Sebelum	Warna Sesudah	Kadar Fe (%)
0	5	10	8,6	Bening	Merah muda	0,482

- Tabel Hasil Pengamatan Sampel Variabel Buka Valve 3/3

Output	Waktu (menit)	pH	Volume sampel (ml)	Volume KMnO <sub>4</sub> (ml)	Warna Sebelum	Warna Sesudah	Kadar Fe (%)
Kation	20	7	10	6,2	Bening	Merah muda	0,347
Anion	20	7	10	5,8	Bening	Merah muda	0,325
Karbon Aktif	20	7	10	4,9	Bening	Merah muda	0,274

- Tabel Hasil Pengamatan Sampel Variabel Buka Valve 2/3

Output	Waktu (menit)	pH	Volume sampel (ml)	Volume KMnO <sub>4</sub> (ml)	Warna Sebelum	Warna Sesudah	Kadar Fe (%)
Kation	20	7	10	3,7	Bening	Merah muda	0,207
Anion	20	7	10	3,6	Bening	Merah muda	0,201
Karbon Aktif	20	7	10	3,3	Bening	Merah muda	0,185

- Tabel Hasil Pengamatan Sampel Variabel Buka Valve 1/3

Output	Waktu (menit)	pH	Volume sampel (ml)	Volume KMnO <sub>4</sub> (ml)	Warna Sebelum	Warna Sesudah	Kadar Fe (%)
Kation	20	7	10	2,6	Bening	Merah muda	0,146
Anion	20	7	10	2,4	Bening	Merah muda	0,134
Karbon Aktif	20	7	10	1,6	Bening	Merah muda	0,089

### Hasil Pengamatan pH Inlet dan Outlet

- **Tabel Pengamatan pH Inlet dan Outlet**

No	Bukaan valve	pH Inlet	pH Outlet	$\Delta$ pH
1.	3/3	5	7	2
2.	2/3	5	7	2
3.	1/3	5	7	2

### Hasil Perhitungan

- **Perhitungan  $\text{KMnO}_4$  0,01 N**

$$N = \frac{\text{gr}}{\text{Mr}} \times \frac{1000}{v} \times \text{valensi}$$

$$0,1 = \frac{x}{158} \times \frac{1000}{100l} \times 2$$

$$X = 0,79 \text{ gr}$$

- **Perhitungan Asam Oksalat 0,1 N**

$$N = \frac{\text{gr}}{\text{Mr}} \times \frac{1000}{v} \times \text{valensi}$$

$$0,1 = \frac{x}{126} \times \frac{1000}{100} \times 2$$

$$X = 0,63 \text{ gr}$$

- **Perhitungan  $\text{H}_2\text{SO}_4$  2 N**

$$N = \frac{\text{gr}}{\text{Mr}} \times \frac{1000}{v} \times \text{valensi}$$

$$0,1 = \frac{x}{9,8} \times \frac{1000}{100} \times 2$$

$$X = 9,8 \text{ gr}$$

$$\rho = \frac{\text{berat pikno isi} - \text{berat pikno kosong}}{\text{volume pikno}}$$

$$\rho = \frac{28,21 - 9,4}{10}$$

$$\rho = 1,9 \text{ gr/ml}$$

$$V = \frac{m}{\rho}$$

$$V = \frac{9,8}{1,9}$$

$$V = 5 \text{ ml}$$

### Perhitungan Kadar Fe

$$\text{Kadar Fe} = \frac{fp \times Ar \text{ Fe} \times N \text{ KMnO}_4 \times \text{Volume KMnO}_4}{100000 \text{ ml}} \times 100\%$$

- Sampel Awal

$$\text{Kadar Fe} = \frac{10 \times 56 \times 0,1 \times 8,6}{100000 \text{ ml}} \times 100\% = 0,482 \%$$

- Variabel 3/3

$$\text{Kation} = \frac{10 \times 56 \times 0,1 \times 6,2}{100000 \text{ ml}} \times 100\% = 0,347 \%$$

$$\text{Anion} = \frac{10 \times 56 \times 0,1 \times 5,8}{100000 \text{ ml}} \times 100\% = 0,325 \%$$

$$\text{Karbon Aktif} = \frac{10 \times 56 \times 0,1 \times 4,9}{100000 \text{ ml}} \times 100\% = 0,274 \%$$

- Variabel 2/3

$$\text{Kation} = \frac{10 \times 56 \times 0,1 \times 3,7}{100000 \text{ ml}} \times 100\% = 0,207 \%$$

$$\text{Anion} = \frac{10 \times 56 \times 0,1 \times 3,6}{100000 \text{ ml}} \times 100\% = 0,201 \%$$

$$\text{Karbon Aktif} = \frac{10 \times 56 \times 0,1 \times 3,3}{100000 \text{ ml}} \times 100\% = 0,185 \%$$

- Variabel 1/3

$$\text{Kation} = \frac{10 \times 56 \times 0,1 \times 2,6}{100000 \text{ ml}} \times 100\% = 0,146 \%$$

$$\text{Anion} = \frac{10 \times 56 \times 0,1 \times 2,4}{100000 \text{ ml}} \times 100\% = 0,134 \%$$





$$\text{Karbon Aktif} = \frac{10 \times 56 \times 0,1 \times 1,6}{100000 \text{ ml}} \times 100\% = 0,089 \%$$

### LAMPIRAN FOTO

- Seperangkat Alat Ion Exchanger



- Gambar hasil analisa Sebelum dan Sesudah Titiasi

variabel	Sebelum titiasi	Sesudah titiasi
1/3		
2/3		
3/3	