

**OBJECTIVE:**

To estimation of dissolved oxygen concentration of sample water

**CHEMICALS REQUIRED:**

1. Manganous Sulphate (Winkler's -A) solution- Dissolve 480g of  $\text{MnSO}_4 \cdot 4\text{H}_2\text{O}$  or 400g of  $\text{MnSO}_4 \cdot 2\text{H}_2\text{O}$  in one litre of Distilled water.
2. Alkaline Potassium Iodide (Winkler's -B) solution- Dissolve 500g of NaOH, 150g KI (Pottasium Iodide) and 20g of sodium azide in one litre of distilled water.
3. Standard sodium thiosulphate (0.025N or N/40) solution- Dissolve 6.205g of  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$  in one Litre of distilled water.
4. Starch Indicator – Make a thin paste of about 1g of starch in cold water, pour 200ml of boiling water in it and stir, Add 0.1g of salicylic acid or 0.5g of sodium chloride or 0.5ml of formalin as preservative.

**APPARATUS REQUIRED**

Burette, 1ml and 10ml pipettes, 250ml conical flask, DO bottles and a white tile.

**PROCEDURE**

1. Remove carefully the stopper of the 100 ml sample bottle, add 1ml of Winklers-A and 1ml of Winklers-B by means of a 1ml pipette dipped to the bottom of the bottle and slowly drawing out as the reagents are added.
2. Replace the stopper and invert the bottle, three or four times for a through mixing of reagents.
3. A flocculent precipitate will be formed which will settle at the bottom.
4. If the precipitate is whitish in colour, oxygen is very poor, light brown colour indicates high dissolved oxygen.
5. Add 1ml of conc.  $\text{H}_2\text{SO}_4$  to dissolve the precipitate.

6. Transfers 50ml of this solution to a conical flask placed on a white tile and add N/40 sodium thiosulphate solution drop by drop till the colour turns pale yellow.
7. Then add 1ml of starch indicator solution to give a blue colour and titrate it until it becomes colourless.
8. Note down the number of ml of  $\text{Na}_2\text{S}_2\text{O}_3$  solution consumed.

### **CALCULATION**

$$\text{Dissolved Oxygen (DO) = } \frac{\text{No of ml of Na}_2\text{S}_2\text{O}_3 \text{ solution consumed X 1000 X 8}}{50 \text{ X } 40}$$

Ppm (mg/l)

*Experiment 02*

*Date:*

Sample No	Point of Collection	Observed Levels	Date of Collection	Time of Collection	Recommendations

**Rough work**



## EXPERIMENTS 3

Date:

### OBJECTIVE:

Estimation of Dissolved Free Carbon dioxide in sample water

### CHEMICAL REQUIRED:

1. Phenolphthalein indicator – Dissolve 5g of phenolphthalein in one litre of 50% alcohol.
2. N/44 NaOH – Dissolve 0.090g of NaOH pellets in one litre of distilled water.

### APPARATUS REQUIRED

1ml pipette, conical flask and a white tile.

### PROCEDURE

1. Take 50ml of sample in a beaker and add two drops of phenolphthalein indicator.
2. If the water turns pink, there is no free carbon dioxide. If the water remains colourless, add N/44 NaOH drop by drop through a 1ml graduated pipette with a very gentle stirring using a glass rod till the colour turns pink.
3. Record ml of N/44 NaOH used during this titration.

### CALCULATIONS

$$\text{Dissolved Free CO}_2 = \frac{\text{No. of ml of N/44 NaOH used} \times 1000 \times 44}{50 \times 44}$$

(mg/l)

***Experiment 03***

***Date:***

Sample No	Point of Collection	Observed Levels	Date of Collection	Time of Collection	Recommendations

**Rough work**

