

## **PHARMACEUTICAL INORGANIC CHEMISTRY- BP104T**

UNIT: 1 (IMPURITIES IN PHARMACEUTICAL SUBSTANCES)

CLASS: 9

### **TOPIC: MODIFIED LIMIT TEST FOR CHLORIDES**

#### **Principle:**

Modified limit test is performed; if the limit tests for a sample (Coloured compound) cannot be done by normal method. For example, potassium permanganate is de-colourised by boiling with ethanol, filtered to remove precipitated manganese dioxide and the filtrate is subjected to the test. It is based upon the chemical reaction between silver nitrate and soluble chlorides to obtain silver chloride in presence of dilute nitric acid. The silver chloride produced in the presence of dilute nitric acid makes the test solution turbid, the extent of turbidity/opalescence depending upon the amount of chloride present in the substance is compared with a standard turbidity/opalescence produced by addition of silver nitrate to a standard solution having a known amount of chloride and the same volume of dilute nitric acid as used in the test solution. If the turbidity/opalescence from the sample has been less than the standard solution, the sample will pass the limit test and vice versa. Dilute nitric acid is used in the limit test of chloride to make solution acidic and which helps silver chloride precipitate to make solution turbid at the end of process.

#### **Procedure:**

**Preparation of Test Solution (KMnO<sub>4</sub>):** Dissolve 1.5 g in 50 mL of distilled water, heat on a water-bath and add gradually 6 mL of ethanol (95%), cool, dilute to 60 mL with distilled water and filter. Take two 50 ml. Nessler's Cylinders. Label one as "Test" and the other as 'Standard'

| <b>Test</b>                                               | <b>Standard</b>                                                                               |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Take 10ml of the above solution into a Nessler's cylinder | Take 10ml of standard chloride solution into a Nessler's cylinder and 5ml of distilled water. |
| Add 1.0ml of dilute nitric acid solution                  | Add 1.0ml of dilute nitric acid solution                                                      |
| Dilute to 50ml with distilled water                       | Dilute to 50ml with distilled water                                                           |

|                                                                                 |                                                                                 |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Add 1.0ml of 5%AgNO <sub>3</sub> solution.                                      | Add 1.0ml of 5%AgNO <sub>3</sub> solution.                                      |
| Stir with a glass rod and allow it to stand for 5 minutes protected from light. | Stir with a glass rod and allow it to stand for 5 minutes protected from light. |

### 2 MARKS QUESTIONS

1. Write the principle involved in modified limit test for chlorides

### 5 MARKS QUESTIONS

1. Explain the principle and procedure involved in modified limit test for chlorides

### 10 MARKS QUESTIONS

1. Write the principle, procedure, reaction involved in modified limit test for chlorides