

**CHEMISTRY STUDY MATERIALS FOR CLASS 12**  
**(Investigatory Project)-3<sup>RD</sup> PART**  
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***TEST FOR CARBON DIOXIDE***

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***EXPERIMENT:-***

*As soon as the bottles were opened , one by one the sample was passed through lime water. The lime water turned milky.*

***OBSERVATION:***

<i>Serial Number</i>	<i>Name of the Drink</i>	<i>Time Taken (in second)</i>	<i>Conclusion</i>
<b>01</b>	COCA COLA	26.5	CO <sub>2</sub> is present
<b>02</b>	SPRITE	21	CO <sub>2</sub> is present
<b>03</b>	LIMCA	35	CO <sub>2</sub> is present
<b>04</b>	FANTA	36	CO <sub>2</sub> is present

***INFERENCE:***

*All the soft drinks contain dissolved Carbon dioxide in water. The Carbon dioxide dissolves in water to form Carbonic acid, which is responsible for its tangy taste.*

# TEST FOR GLUCOSE

## **EXPERIMENT:-**

Glucose is a reducing Sugar acid. Its presence is detected by the following test:

### **1. BENEDICT'S REAGENT TEST:-**

Small samples of cold drinks of different brands were taken in a test tube and a few drops of Benedict's reagent were added. The test tube was heated for few seconds . Formation of reddish colour confirmed the presence of glucose in cold drinks.

## **OBSERVATION:**

<i>Serial Number</i>	<i>Name of the Drink</i>	<i>Observation</i>	<i>Conclusion</i>
<b>01</b>	COCA COLA	REDDISH COLOUR PRICIPETATE	GLUCOSE IS PRESENT
<b>02</b>	SPRITE	REDDISH COLOUR PRICIPETATE	GLUCOSE IS PRESENT
<b>03</b>	LIMCA	REDDISH COLOUR PRICIPETATE	GLUCOSE IS PRESENT
<b>04</b>	FANTA	REDDISH COLOUR PRICIPETATE	GLUCOSE IS PRESENT

**INFERENCE:** All the samples gave positive test for Glucose with Benedict's reagent. Hence all the drinks contain Glucose.

## **2. FEHLING'S SOLUTION TEST**

### **EXPERIMENT:-**

*Small samples of cold drinks of different brands were taken in a test tube and a few drops of Fehling's reagent A solution and Fehling's B solution was added in equal amount . The test tube was heated in a water bath for 10minutes. Appearance of brown precipitate confirmed the presence of Glucose in Cold drinks.*

### **OBSERVATION:**

<i>Serial Number</i>	<i>Name of the Drink</i>	<i>Observation</i>	<i>Conclusion</i>
<b>01</b>	COCA COLA	REDDISH BROWN PRECIPITATE	GLUCOSE IS PRESENT
<b>02</b>	SPRITE	REDDISH BROWN PRECIPITATE	GLUCOSE IS PRESENT
<b>03</b>	LIMCA	REDDISH BROWN PRECIPITATE	GLUCOSE IS PRESENT
<b>04</b>	FANTA	REDDISH BROWN PRECIPITATE	GLUCOSE IS PRESENT

### **INFERENCE:**

*All the samples gave a positive test for Glucose with Fehling's (A & B) solutions.  
Hence all the cold drink contains Glucose.*

# TEST FOR PHOSPHATE

## **EXPERIMENT:-**

Small samples of each brand of cold drinks were taken in separate test tubes and Ammonium Molybdate followed by concentrated Nitric Acid was added to it. The solutions were heated. Appearance of canary-yellow precipitate confirmed the presence of Phosphate ions in Cold drinks.

## **OBSERVATION:**

<i>Serial Number</i>	<i>Name of the Drink</i>	<i>Observation</i>	<i>Conclusion</i>
<b>01</b>	COCA COLA	CANARY-YELLOW PRECIPITATE	PHOSPHATE IS PRESENT
<b>02</b>	SPRITE	CANARY-YELLOW PRECIPITATE	PHOSPHATE IS PRESENT
<b>03</b>	LIMCA	CANARY-YELLOW PRECIPITATE	PHOSPHATE IS PRESENT
<b>04</b>	FANTA	CANARY-YELLOW PRECIPITATE	PHOSPHATE IS PRESENT

**INFERENCE:** *All the samples gave positive test for Phosphate.*

*Hence all the Cold drinks contain Phosphate ions.*

## **CHEMICAL REACTION INVOLVED**

# ***TEST FOR ALCOHOL***

## **EXPERIMENT:-**

Small samples of each brand of cold drinks were taken in separate test tubes and Iodine followed by Potassium Iodide and Sodium Hydroxide solution was added to each test tube. Then the test tubes solutions were heated in water bath for 30 minutes. Appearance of yellow precipitate confirmed the presence of Alcohol in Cold drinks.

## **OBSERVATION:**

<i>Serial Number</i>	<i>Name of the Drink</i>	<i>Observation</i>	<i>Conclusion</i>
<b>01</b>	COCA COLA	YELLOW PRECIPITATE	ALCOHOL IS PRESENT
<b>02</b>	SPRITE	YELLOW PRECIPITATE	ALCOHOL IS PRESENT
<b>03</b>	LIMCA	YELLOW PRECIPITATE	ALCOHOL IS PRESENT
<b>04</b>	FANTA	YELLOW PRECIPITATE	ALCOHOL IS PRESENT

**INFERENCE:** All the samples gave positive test for Alcohol. Hence all the Cold drinks contain Glucose.  $CH_3CH_2OH + 4I_2 + 6NaOH \rightarrow CHI_3 + HCOONa + 5NaI +$

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