

**SRI VENKATESWARA UNIVERSITY**  
**B.Sc. DEGREE COURSE IN INDUSTRIAL CHEMISTRY**  
**III- SEMESTER**  
**(Syllabus under CBCS w.e.f. 2021-22)**

**Course-III**

**Cosmetics, Fermentation, Food additives, Sugar chemistry and Industrial  
Pollution**

**60hrs (4 hours/week)**

**Course Outcomes:**

At the end of the course student will be able to

- CO1 Write down the preparation and uses of important cosmetics.
- CO2 Write down the preparation and uses.
- CO3 Differentiate the Aerobic and anaerobic fermentation processes.
- CO4 Describe the production of chemicals by fermentation process.
- CO5 Demonstrate the knowledge gained on Food additives.
- CO6 Write down the manufacture of Sugar.
- CO7 Write down the manufacture of Sucrose.
- CO8 Describe about different types of pollutants.

**Unit-1**

**12 Hours**

**Cosmetics and Perfumes**

A general study including preparation and uses of the following: Hair dye, hairspray, Shampoo, Suntan lotions, face powder, lipsticks, talcum powder, nail enamel, creams (cold, vanishing and shaving creams), antiperspirants and artificial flavours. Essential oils and their importance in cosmetic industries with reference to Eugene, Geranial, sandalwood oil, eucalyptus, rose oil, phenyl ethyl alcohol, Jasmine, Civet one, Miscoode.

**Unit-2**

**12 hours**

**Fermentation Industries**

Aerobic and anaerobic fermentation. Production of (i) Ethyl alcohol and citric acid,(ii) Antibiotics; Penicillin and Streptomycin, (iii)Lysine and Vitamin C.

**Unit-3**

**12 hours**

**Food additives**

A general study of food flavours- Flavouring agents: Vanilla, dactyl, is amyl acetate, limonene, ethyl propionate, ally hexanoate ;colours:Briliant blue FCF, fast green FCF, tetrazzini, erythrosine, sunset yellow FCF and preservatives: Sodium carbonate, sodium benzoate, sorbet acid and artificial sweeteners.

#### **Unit-4**

**10 hours**

#### **Sugar Chemistry**

Introduction – Manufacture and recovery of cane sugar from molasses, manufacture of sucrose from beat root, testing and estimation of sucrose.

#### **Unit-5**

**14 hours**

#### **Industrial pollution**

Pollutants and their statutory limits

Air Pollution- various pollutants

Water pollution- Organic and Inorganic pollutants

Noise pollution

#### **Co-curricular activities and Assessment Methods**

- 1. Assessment of Learning:** Summative assessment- Conduct of semester end exams.
- 2. Assessment for Learning:** Formative assessment-Different assessment tools like Minute paper, Muddiest point, Think-Pair-Share, 3-2-1 chart etc.,
- 3. Assessment as learning:** Self-assessment-assignments, slip tests etc.,
- 4. Quizzes, Guest Lecture, Student seminar, educational tour, field trip etc., .**

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**Laboratory Course –III**

**50 Marks**

**Practical Paper- III (at the end of semester III) 30 hours (2 hours/week)**

**Course Outcomes**

At the end of the course student will be able to

- CO1 Carryout the analysis of a given oil and fat.
- CO2 Find out the adulterants in turmeric powder, milk and mustard oil.
- CO3 Estimate the glucose present in the food sample.
- CO4 Prepare Talcum powder, nail polish and face cream.

1. Analysis of oils and fats (iodine value, saponification value, acid value)
2. Testing of turmeric powder, milk and mustard oil for adulterants.
3. Estimation of glucose in food samples.
4. Preparation of talcum powder, nail polish and face cream

**Reference Books**

1. E. Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK
2. J. A. Kent: *Riegel's Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
3. P. C. Jain, M. Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
4. *Practical's and Calculation in Engineering Chemistry* – S.S. Dara
5. A. K. De, *Environmental Chemistry*: New Age International Pvt, Ltd, New Delhi.
6. S.P. MAHAJAN: *Pollution control in process industries*, Tata McGraw-Hill publishing company limited, New Delhi.
7. C.k. Varshney: *Water Pollution and Management*, Wiley Eastern Limited, Chennai

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**MODEL QUESTION PAPER**

**Core Course- III Cosmetics, Fermentation, Food additives, Sugar chemistry and  
Industrial Pollution**

Time: 3 hours

Maximum Marks: 75

**PART- A**

5 X 5 = 25 Marks

Answer any **FIVE** of the following questions. Each question carries **FIVE** marks.

1. Write the uses of artificial flavours.
2. Describe the importance of rose oil.
3. Differentiate between aerobic and anaerobic fermentation.
4. Write a note on flavouring agent 'Vanilla'.
5. What are artificial sweeteners? Explain briefly.
6. Explain in brief the use of sodium carbonate as food preservative.
7. Describe in brief how sucrose is estimated.
8. Write a note on noise pollution.

**PART- B**

5 X 10 = 50 Marks

Answer **ALL** the questions. Each carries **TEN** marks

9. (a) Write the preparation and uses of Sun-tan lotions and vanishing creams.  
(or)  
(b) What are essential oils? Describe the importance of Jasmine and Miscode.
10. (a) Explain the production of ethyl alcohol by fermentation process.  
(or)  
(b) Describe the production of Penicillin by fermentation process.
11. (a) Write a note on the following food colours) Brilliant blue FCF and ii) Erythrosine  
(or)  
(b) Write a note on the following food preservatives i) sodium benzoate and ii) sorbic acid.
12. (a) Explain the manufacture of sugar from molasses.  
(or)  
(b) Explain the manufacture of sucrose from beat root.
13. (a) Write a note on organic pollutants in water.  
(or)  
(b) Explain point and nonpoint sources of air pollution. What are the primary and secondary air pollutants? Give example.