

VASAVI COLLEGE OF ENGINEERING (A)
DEPARTMENT OF CHEMISTRY
B.E. IV SEMESTER

Open Elective: ELECTRONIC ENGINEERING MATERIALS

Instruction : 1Hour / Week	SEE- Marks : 50	Course Code : OE400CH
Credit : 1	CIE- Marks : 30	SEE- Duration : 2Hours

OBJECTIVES	OUTCOMES
The course will enable the students:	At the end of the course students should be able to:
1. To familiarize with various types of liquid crystals, their chemical constitution and behavior 2. To acquaint with different types of sensors and chemistry involved in them 3. To discuss the conductance in polymers and mechanism of conductance in undoped and doped polymers	1. Explain the classification, types and applications of liquid crystals 2. Discuss the principles, mechanism and applications of potentiometric and amperometric sensors 3. Explain the principle, mechanism and applications of fluorophore based, chromophore based and enzyme based fibre optic biosensors 4. Discuss the mechanism of conduction in undoped and doped polymers and applications of conducting polymers

UNIT-I: Liquid Crystals

Introduction, Classification: Thermotropic and Lyotropic liquid crystals. Chemical constitution & liquid crystalline behavior. Molecular ordering in liquid crystals: Nematic, Smectic and Cholesteric. Applications.

UNIT-II: Conducting Polymers and Sensors

a) Conducting Polymers:

Introduction, Classification: Extrinsic and Intrinsic Conducting Polymers. Mechanism of conduction of doped and undoped polyacetylene & Polyaniline. Applications

b) Sensors:

Introduction, Potentiometric sensors, Amperometric sensors, Fluoride-ion-selective electrode. Fluorophore and Chromophore based Fiber optic Biosensors. Enzyme Based Nonmediated Fiber Optic Biosensors.

Books:

1. P.C.Jain and Monica Jain, "Engineering Chemistry", Dhanpat Rai Pub, Co., New Delhi (2002)
2. S.S. Dara "A text book of engineering chemistry" S.Chand&Co.Ltd., New Delhi (2006).
3. Chemistry of Engineering Materials by R.P Mani and K.N.Mishra, CENGAGE learning

Suggested Reading:

1. S.S. Dara "A text book of engineering chemistry" S.Chand&Co.Ltd., New Delhi (2006).
2. Chemistry of Advanced Materials: CNR Rao, RSC Publication
3. Billmeyer F. W., "Text book of Polymer Science", Wiley-Inter Science, New York, 2002.
4. Joel R. Fried, "Polymer Science and Technology", Prentice Hall of India Pvt. Ltd., India, 2003.
5. Arora M. G., Singh M and Yadav M.S., "Polymer Chemistry", Anmol Publications, New Delhi, 2003.
6. Bahadur P. and Sastry N.V., "Principles of Polymer Science", Narosa Publishing House, New Delhi, 2002.