

BS8161

PHYSICS AND CHEMISTRY LABORATORY
(Common to all branches of B.E. / B.Tech Programmes)

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OBJECTIVES:

- To introduce different experiments to test basic understanding of physics concepts applied in optics, thermal physics, properties of matter and liquids.

LIST OF EXPERIMENTS: PHYSICS LABORATORY (Any 5 Experiments)

- Determination of rigidity modulus – Torsion pendulum
- Determination of Young's modulus by non-uniform bending method
- (a) Determination of wavelength, and particle size using Laser
(b) Determination of acceptance angle in an optical fiber.
- Determination of thermal conductivity of a bad conductor – Lee's Disc method.
- Determination of velocity of sound and compressibility of liquid – Ultrasonic interferometer
- Determination of wavelength of mercury spectrum – spectrometer grating
- Determination of band gap of a semiconductor
- Determination of thickness of a thin wire – Air wedge method

TOTAL: 30 PERIODS**OUTCOMES:**

Upon completion of the course, the students will be able to

- apply principles of elasticity, optics and thermal properties for engineering applications.

CHEMISTRY LABORATORY: (Any seven experiments to be conducted)**OBJECTIVES:**

- To make the student to acquire practical skills in the determination of water quality parameters through volumetric and instrumental analysis.
 - To acquaint the students with the determination of molecular weight of a polymer by viscometry.
- Estimation of HCl using Na_2CO_3 as primary standard and Determination of alkalinity in water sample.
 - Determination of total, temporary & permanent hardness of water by EDTA method.
 - Determination of DO content of water sample by Winkler's method.
 - Determination of chloride content of water sample by argentometric method.
 - Estimation of copper content of the given solution by Iodometry.
 - Determination of strength of given hydrochloric acid using pH meter.
 - Determination of strength of acids in a mixture of acids using conductivity meter.
 - Estimation of iron content of the given solution using potentiometer.
 - Estimation of iron content of the water sample using spectrophotometer (1, 10-Phenanthroline / thiocyanate method).
 - Estimation of sodium and potassium present in water using flame photometer.
 - Determination of molecular weight of polyvinyl alcohol using Ostwald viscometer.
 - Pseudo first order kinetics-ester hydrolysis.
 - Corrosion experiment-weight loss method.
 - Determination of CMC.
 - Phase change in a solid.
 - Conductometric titration of strong acid vs strong base.

OUTCOMES:

- The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.

TOTAL: 30 PERIODS**TEXTBOOKS:**

- Vogel's Textbook of Quantitative Chemical Analysis (8TH edition, 2014)