



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

OUTCOME BASED CURRICULUM

LATERAL ENTRY STUDENTS FROM ITI (Remedial Course)

NAME OF THE PROGRAMME: ELECT, E&TC, EEE, ELECT&INST.

COURSE CODE

:6809

COURSE TITLE : ENGG SCIENCES

	Content (Theory)	Hrs/Unit	Marks/Unit
Unit – 1 UNITS, DIMENSIONS & MEASUREMENTS	<p>Measurement - Need of Measurement in engineering and science, unit of a physical quantity, requirements of standard unit, systems of units</p> <p>Accuracy - Accuracy, Precision of instruments, Errors in measurement, Estimation of errors</p> <p>Instruments - Basic Measuring instruments- Vernier Caliper, Micrometer screw gauge, ammeter, voltmeter with their least count, range, accuracy and precision</p>	14	14
Unit – 2 LIGHT	<p>Properties of light Reflection and, refraction, Snell's law, physical significance of refractive index (simple problems), Total internal reflection, dispersion, diffraction and polarization of light (only introduction)</p> <p>Wave theory of light & Interference Newton's corpuscles theory of light, Huygen's wave theory, wave front, Types of wave front-spherical, cylindrical and plane Huygen's principle of propagation of wave front, Principle of superposition of waves, Interference of light, constructive and destructive interference, Young's experiment. Analytical treatment of interference, conditions for stationary interference pattern.</p> <p>Laser Light amplification by stimulated emission of radiation, properties of laser, spontaneous and stimulated emission, population inversion, pumping methods, He-Ne laser-construction, working and application</p>	14	14
Unit – 3 SOUND	<p>Photo electricity Plank's hypothesis, properties of photons, photo electric effect, laws and characteristics of photoelectric effect, Einstein's photoelectric equation,(simple problems), construction and working of photoelectric cell, applications of photoelectric cell</p> <p>X-rays Production of X-rays, types of X-ray spectra-continuous and characteristics, X-ray wavelength (simple problems), properties of X-rays, applications of X-rays.</p>	14	14
	TOTAL	52	52
Laboratory Experiments :			
Sl. No.	Any 5 experiments to be performed		
1.	Use of Vernier calipers for the measurement of dimensions of given object.		
2.	Use of micrometer screw gauge for the measurement of dimensions of given object		
3.	Verification of laws of refraction of light and determination of refractive index of glass slab		
4.	Determine of focal length of a convex lens by U-Vmethod.		

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7.	Determine of focal length of a convex lens by Displacement method.
Sl. No.	Title of the Book
1.	Physics – I &II
2.	Physics. Part – I & II
4.	Physics - I
5.	Engineering Physics
6.	Concept of Physics. Vol.- I &II
7.	Engineering Physics
8.	अनुप्रयुक्तभौतिकी

PART -B

S.No.	Course Contents	Hrs/Unit	Marks/Unit
Unit -4	POLYMERS Polymerization and condensation, classification of plastics, Compounding and Moulding constituents of plastics. Preparation Properties and uses of PVC, polyethene, polystyrene, polyamides, polyesters , Bakelite. Synthetic fibers – nylon, rayon, decron, and polyesters. Definition ,characteristics , classification and properties of insulators. Glass, wool and thermocole. Idea about rubber and vulcanization. Classification of fuel, gross and net calorific value, Determination of a solid fuel by bomb calorimeter , octane and cetane number. Proximate analysis of fuel, its utility, crude petroleum, products of fractional distillation. Fire extinguishers – Description and use.	15	14
Unit -5	THEORIES OF IONISATION,ELECTROCHEMISTRY ,FUEL CELLS and WATER Arrhenius theory of ionization, factors affecting ionization. pH meaning (numerical), Buffer solutions and Buffer actions, choice of indicators (acidimetry and alkalimetry).Electrolytes and non-electrolytes,Electrolysis, Electrolytic cell, Electrodes. Mechanism of electrolysis , Electrochemical series. General idea of fuel cells and its application. Solar cells and panels. Faraday's laws of electrolysis, Numerical problems on Faradays Law, Applications of electrolysis-electroplating, Electro refining. Sources of water, types of water, hardness of water, its causes, types and removal, Boiler feed water, harmful	15	14



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S.No.	Course Contents	Hrs/Unit	Marks/Unit
	– effects of hard water in boiler. Determination of hardness of water by O. Hehner's method, EDTA and soap solution method.		

LIST OF EXPERIMENTS

1.Volumetric Analysis: Acid base titration 2.Determination of strength of ferrous ammonium sulphate.
3.Determination of hardness of water by any two methods: (i)EDTA Method (ii)Soap Solution Method. (iii)Determination of hardness of water by O. Hehner's method.

PART B:

1. PHYSICAL CHEMISTRY – BAHL AND TULI
2. INORGANIC CHEMISTRY – SATYAPRAKASH
3. MODERN TEXT BOOK OF APPLIED CHEMISTRY – DR. G. C. SAXENA, JAIN PRAKASHAN, INDORE
4. APPLIED CHEMISTRY - DR. G. C. SAXENA, DEEPAK PRAKASHAN, GWALIOR
5. APPLIED CHEMISTRY – SHRIVASTAVA & SINGHAL, PBS PUBLICATION, BHOPAL
6. APPLIED CHEMISTRY – SHRIVASTAVA & SINGHAL, PBS PUBLICATION, BHOPAL
7. ENGINEERING CHEMISTRY – UPPAL
8. ENGINEERING CHEMISTRY – RAO AND AGARWAL
9. ENGINEERING CHEMISTRY – P.C. JAIN
10. POLYMER CHEMISTRY – O.P. MISHRA
11. APPLIED CHEMISTRY – H.N. SAHNI, DEEPAK PRAKASH
12. PRAYOGIK RASAYAN VIGYAN – SHARMILA JAIN, SANJAY PUBLICATIONS , JAIPUR
13. POLYTECHNIC RASAYAN VIGYAN - SHARMILA JAIN, SANJAY PUBLICATIONS , JAIPUR