GianiZail Singh Campus College of Engineering & Technology

Maharaja Ranjit Singh Punjab technical University, Bathinda

Department of Applied Chemistry

Session: Jul-Dec-2019

Batch 2019

Course: B. Tech

Semester:1st

Branch: Electrical Engineering

Subject name: Chemistry-1

Subject Code: BCHEM0101   **L T P C: 3 1 0 4**

Duration: 42hrs

Hours Per Unit	S.No.	Topics Covered	Dates*
		Unit 1: Atomic and Molecular Structure	
	1	Bohr Theory of Hydrogen atom and Spectrum of H atom	19/08/19
	2	Tutorial	19/08/19
	3	Sommerfeld extension of Bohr Theory, Particle and wave nature of electron, De-Broglie equation and Aufbau principle	20/08/19
	4	Compton effect, Schrodinger wave equation, Laplacian and Hamiltonian operator	23/08/19
	5	Linear Combination of atomic orbitals. Molecular orbitals of diatomic molecules and Energy level diagrams of homonuclear and heteronuclear diatomic molecules	26/08/19
	6	Tutorial	26/08/19
12 Hrs	7	Pi-molecular orbitals of butadiene and benzene and aromaticity	27/08/19
	8	Crystal field theory	30/08/19
	9	Energy level diagrams for transition metal ions	02/09/19
	10	Tutorial	02/09/19
	11	Magnetic properties of transition metal complexes	03/09/19
	12	Band structure of solids and the role of doping on band structures	06/09/19
		Unit II: Spectroscopic Techniques and Applications and Intermolecular Forces and Potential Energy Surfaces	
	13	Principles and selection rules of Electronic spectroscopy and its applications	09/09/19
	14	Tutorial	09/09/19
	15	Fluorescence spectroscopy and its applications	10/09/19
	16	Principles and selection rules of Vibrational and rotational spectroscopy of diatomic molecules	13/09/19
12Hrs	17	Applicationsof Vibrational and rotational spectroscopy	16/09/19
	18	Nuclear magnetic resonance up to spin-spin coupling and magnetic resonance imaging.	23/09/19
	19	Tutorial	23/09/19
	20	Continue serial no-18	24/09/19
	21	Ideal gas equation, Ionic, dipolar and van Der Waals interactions	27/09/19
	22	Real gas equation. Equations of state of real gases and critical phenomena	30/09/19

	23	Tutorial	30/09/19
	24	Potential energy surfaces of H3 and HCN	01/10/19
		Unit III: Use of Free Energy in Chemical Equilibria and Periodic Properties	
10Hrs	25	Ideal Solution, Non Ideal Solutions, Thermodynamic functions: energy, entropy and free energy	04/10/19
	26	Numerical problems based on entropy and free energies	07/10/19
	27	Tutorial	07/10/19
	28	Free energy and emf. Cell potentials, the Nernst equation and applications	11/10/19
	29	Acid base, oxidation reduction and solubility equilibria. Thermodynamic properties of ideal solutions.	14/10/19
	30	Tutorial	14/10/19
	31	Introduction to Electrochemical Corrosion and its mechanism. Use of free energy considerations in metallurgy through Ellingham diagrams	15/10/19
	32	Effective nuclear charge, penetration of orbitals, variations of s, p, d and f orbital energies of atoms in the periodic table, electronic configurations	18/10/19
	33	Atomic and ionic sizes, ionization energies, electron affinity and electronegativity, polarizability, oxidation states	21/10/19
	34	Tutorial	21/10/19
	35	coordination numbers and geometries, hard soft acids and bases principle	22/10/19
		Unit IV: Stereochemistry and Organic Reactions and Synthesis of a Drug Molecule	
8Hrs	36	Representations of 3-dimensional structures, structural isomers and stereoisomers, configurations and symmetry and chirality,	25/10/19
	37	enantiomers, diastereomers, optical activity, absolute configurations and conformational analysis of butane.	28/10/19
	38	Tutorial	28/10/19
	39	Isomerism in transitional metal compounds.	01/11/19
	40	Continue serial no 29	04/11/19
	41	Tutorial	04/11/19
	42	Introduction to reactions involving substitution, addition, and elimination	05/11/19
	43	Introduction to reactions involving oxidation, reduction, cyclization and ring openings	08/11/19
	44	Synthesis of a commonly used drug molecule – β lactum, Paracetamol, Chloroquine and Aspirin	11/11/19
	45	Tutorial	11/11/19

*Dates mentioned are tentative

CHEMISTRY LAB.-I   (SUBJECT CODE- BCHM0-102) L T P C 0 0 2 1   Total hrs - 30

S.NO of lab.	TOPIC OF EXPERIMENTS
1	Preparation of a standard solution
2	Determination of surface tension and viscosity
3	Thin layer chromatography
4	Determination of total Alkalinity/ Acidity of a water sample.
5	Determination of residual chlorine in water sample
6	Estimation of total, temporary and permanent hardness of water
7	Determination of the rate constant of a reaction
8	Determination of strength of an acid conductometrically
9	Potentiometry - determination of redox potentials and emfs
10	Synthesis of a polymer
11	Saponification /acid value of an oil
12	. Detection and confirmation of organic functional groups.
13	Models of spatial orientation
14	To test the validity of Lambert Beer law/ Determination of λmax / Determination of unknown concentration of a solution
15	Determination of the partition coefficient of a substance between two immiscible liquids
16	Adsorption of acetic acid by charcoal
17	Synthesis of a drug – Aspirin
18	Synthesis of a drug – Acetaminophen

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MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY, BATHINDA
(DEPARTMENT OF ELECTRICAL ENGINEERING)

COURSE: B.Tech I (EE & ECE) **SEMESTER: 1 st** **BATCH:2019**

Subject: Mathematics-I (Calculus and differential equations) Subject Code- BMATH3-101

Teacher Name: Gurdeep Kaur Session: Aug. to Dec. 2019

Unit	Lecture No.	Tentative Plan Topics & subtopics to be covered	Actual Covered
Unit-I (14 Hrs.) Calculus and Sequences and Series	1	Rolle's Theorem and Mean Value Theorem	
	2	Taylor's and Maclaurin's Theorem	
	3	Indeterminate forms and L-Hospital's rule, Maxima and Minima	
	4	Evaluation of definite and improper integrals	
	5	Beta and gamma functions and their properties	
	6,7	Application of definite integrals and to evaluate surface area and volume	
	8,9,10,11	Convergence of sequences and series and test for convergence	
	12,13,14	Taylor series, Series of exponential, Trigonometric and logarithmic functions	
Unit-II (7 Hrs.) Multivariable Calculus	15	Limit, Continuity and partial derivatives	
	16,17	Total derivative, Tangent Plane and Normal Plane, Maxima Minima abd Saddle Point	
	18,19,20, 21	Method of Lagrange's Multiplier, Gradient Curl and Divergence, Geometrical Interpritation and Basic Properties, Directional derivatives	
Unit-III (10 Hrs.) Multivariable Calculus and Integration	22,23	Multiple Integration	
	24	Change of order of integration in double integrals	
	25	Change of variables (Cartesian to polar)	
	26,27,28	Application of area and volume by double integration, Center of mass and gravity	
	29,30,31	Green and stoke's theorems (without proofs) and their applications	
Unit-IV (11 Hrs.) First Order Differential Equation and Higher Order	32	Linear and Bernauli's Equations	
	33,34,35	Equation not of 1st degree, solvable for p & solvable for y & equation solvable for x	
	36,37,38	Clairaut's type,second order linear differential equation	
	39,40	Method of variation of parameters,cauchy's- euler'equation	
	41,42	Power series solution & frobenius method	

Gurdeep Kaur

Signature of the Subject Incharge

GIANI ZAIL SINGH CAMPUS COLLEGE OF ENGINEERING & TECHNOLOGY, MRSPTU, BATHINDA-151001
DEPARTMENT OF ELECTRICAL ENGINEERING

TEACHING PLAN

SESSION: JULY-DEC 2019(ODD)
COURSE: B.TECH
BATCH: 2K19
SUBJECT: BASICS OF ELECTRICAL ENGG.
SEMESTER: 1st
SUBJECT I/C: ER. SANDEEP PAL SINGH (AP), EE DEPTT.
SUBJECT CODE: BELEE0-101

L T P C 3 1 0 4

DURATION: 42 Hrs.

Proposed hrs.	S. No.	Topics	Date
		UNIT 1	
8 Hrs. *As per syllabus	1	Introduction to DC circuits and AC circuits	16/8/19
	2	Electrical circuit elements (R, L and C)	20/8/19
	3	Ohm's law, Kirchhoff current and voltage laws	22/8/19
	4	Analysis of simple circuits with dc excitation	23/8/19
	5	Superposition theorem	27/8/19
	6	Thevenin theorem	29/8/19
	7	Norton theorem	30/8/19
		UNIT II	
12 Hrs. *As per syllabus	8	Representation of sinusoidal waveforms	3/9/19
	9	Introduction to average, peak and rms values	5/9/19
	10	Phasor representation, real power, reactive power, apparent power, power factor	6/9/19
	11	Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC series	10/9/19
	12	R, L, C, RL, RC, RLC series and parallel combinations, series and parallel resonance	12/9/19
	13	Three phase voltage source, phase sequence,	13/9/19
	14	Three phase balanced circuits	24/9/19
	15	Voltage and current relations in Star and Delta connections	26/9/19
		UNIT III	
10 Hrs. *As per syllabus	16	Overview of transformer	27/9/19
	17	Magnetic materials	1/10/19
	18	BH characteristics	3/10/19
	19	Single-phase Transformer, no load and full load conditions	4/10/19
	20	Phasor diagrams, equivalent circuit	8/10/19
	21	Calculation of losses in transformers	10/10/19
	22	Regulation and efficiency	11/10/19
	23	Auto-transformers, their applications and.	15/10/19
	24	Comparison with two winding transformers	17/10/19

Basics of Electrical Engg.

		UNIT IV	
12 Hrs * As per syllabus	25	Introduction to Electrical machines	18/10/19
	26	Generation of rotating magnetic fields	22/10/19
	27	Construction and working of a three-phase induction motor	24/10/19
	28	Direct-On-Line starter	25/10/19
	29	Star delta starter	29/10/19
	30	Construction working of single phase motors(split phase)	31/10/19
	31	Shaded pole, capacitor start motors	1/11/19
	32	Capacitor run, capacitor start and run motors	5/11/19
	33	Components of LT Switchgear, Switch Fuse Unit (SFU)	7/11/19
	34	Miniature Circuit Breaker (MCB)	8/11/19
	35	Earth Leakage Circuit Breaker (ELCB)	14/11/19
	36	Ideal Case Circuit Breaker (MCCB)	15/11/19
	37	Types of wiring and earthing	26/11/19
	38	Discussion of old question paper	27/11/19

1ST MID SEMESTER TEST:17TH-22TH SEPT,2019

2ND MID SEMESTER TEST: 18-22ND NOV.2019

Note: Rest of the contact hours are assigned to tutorials