Inderprastha Engineering College, Ghaziabad

63 Site IV, Sahibabad Industrial Area, Surya Nagar Flyover Road Sahibabad, Ghaziabad-U.P 201010

DEPARTMENT OF APPLIED SCIENCE AND HUMANITIES
B.Tech.- I SEM Session 2020-21 [ODD SEMESTER]

LECTURE PLAN

SUBJECT: CHEMISTRY (CODE: KAS -102T / 202T) 3-1-0

Name of Course	Sem.	Section	Name of Faculty	Date of Commencement	Total Lecture Planned	Date of Conclusion
ENGINEERING CHEMISTRY (KAS-102 T)	I				45	

SYLLABUS

Unit	Topics	Proposed Lectures
I	**Atomic and Molecular Structure:** Molecular orbital's of diatomic molecules. Band theory of solids. Liquid crystal and its applications. Point defects in solids. Structure and applications of Graphite and Fullerenes. Concepts of Nano-materials and its application.	8
II	**Spectroscopic techniques and Applications:** Elementary idea and simple applications of Rotational, Vibrational, Ultraviolet& Visible and Raman spectroscopy.	8
III	**Electrochemistry:** Nernst Equation and application, relation of EMF with thermodynamic functions (ΔH, ΔF and Δ S). Lead storage battery.**Corrosion**; causes, effects and its prevention.**Phase Rule** and its application to water system.	8
IV	**Water Analysis;** Hardness of water, Techniques for water softening (Lime- soda, Zeolite, Ion exchange resin and Reverse osmosis method).**Fuels:** classification of fuels, Analysis of coal,Determination of calorific value (Bomb calorimeter and Dulong's methods).	8
V	**Polymer;** Basic concepts of polymer-Blend and composites, Conducting and biodegradable polymers. Preparation and application of some industrially important polymers (Buna-S, Buna-N, Neoprene, Nylon-6, nylon-6,6 and Terylene). General methods of synthesis of organometallic compounds (Grignard reagent) and their applications.	8

Text Books:

1. University Chemistry By B.H. Mahan
2. University Chemistry By C.N.R. Rao
3. Organic Chemistry By I.L. Finar

4. Physical Chemistry By S. Glasston

Course Outcomes

ENGINEERING CHEMISTRY (KAS -102T/KAS -202T) Year of Study: (2020-2021)

At the end of the course , student will be able :		Bloom's Level
KAS 102.1	To define and describe different types of water hardness, and techniques for water softening.	**K_1, K_2, K_4**
KAS 102.2	To explain methods for determination of structure with various techniques.	**K_2, K_4**
KAS102.3	Fundamental concepts of polymers & fuels applicable in industrial process.	**K_2, K_3**
KAS102.4	To explain Nernst equation, Corrosion and application of Gibbs phase rule to study different chemical systems in equilibrium.	**K_2, K_5**
KAS 102.5	To analyze theoretical principles of chemical bonding to understand molecular structure and properties.	**K_4,K_5**

Course Outcomes Mapped to Program Outcomes

ENGINEERING CHEMISTRY (KAS-102T/KAS-202T): Year of Study: 2020-2021

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO12
KAS 102.1	3	3	1		1	2	1					**1**
KAS 102.2	3	2		3	2	3	1					**1**
KAS102. 3	3	3	3		1	3	2					**1**
KAS102. 4	3	3			2	2						**1**
KAS 102.5	3				1							**1**
KAS -102	**3**	**3**	**2**	**3**	**1**	**3**	**1**					**1**

LECTURE PLAN - PROPOSED (during COVID-19)

Session:2020-21)

LECTURE DELIVERY SCHEDULE

Lecture No.	Unit	Topics to be Covered	Assignment / Tutorials	Mode of Delivery (Proposed)	Proposed Date
L-1	**I**	Molecular orbital theory and LCAO principle		1. 2. Streaming: Google meet Learning: -Google Classroom 3.Faculty Developed you tube Lectures 4. Faculty notes in Google classroom	
L-2		Application to homo nuclear diatomic molecules			
L-3 & L-4		M.O. diagrams of hetero nuclear diatomic molecules			
L-5		Band Theory of Solids			
L-6		Liquid crystals & their applications			
L-7		Stoichiometric and Non Stoichiometric defect			
L-8		Nanomaterial and its applications			
L-9		Structure & applications of graphite & fullerene			
QUIZ, Doubt Clearing Session for Unit I				Live Chat either through ZOOM/MS TEAM or any Media (if possible)	
L-10 &L-11	**IV**	Hardness of Water & Disadvantage of hard water			
L-12		Water softening techniques: L-S method			

L-13		Zeolite method			
L-14		Ion exchange resin method			
L-15 & L-16		Numerical Problems			
L-17		Fuels & Classification of fuels			
L-18		Determination of calorific value			
L-19		Numerical Problems			
L-20 &L-21		Analysis of coal			
QUIZ, Doubt Clearing Session for Unit IV				Live Chat either through ZOOM/MS TEAM or any Media (if possible)	
L-22	**V**	Basic concepts of polymer		1. 2. Streaming: Google meet Learning: -Google Classroom 3.Faculty Developed you tube Lectures 4. Faculty notes in Google classroom	
L-23		Polymer Blends & Biodegradable polymers			
L-24		Composites			
L-25		Conducting polymers			
L-26		Preparation and uses of Buna-S, Buna-N, Neoprene			
L-27		Preparation and uses of Nylon-6, Nylon-6,6 and Terylene			
L-28		General methods of synthesis of organometallic compounds			
L-29		Grignard reagent and their applications			
QUIZ, Doubt Clearing Session for Unit V				Live Chat either through ZOOM/MS TEAM	

Lecture				**Mode of**	**Proposed Date**

No.	Unit	Topics to be Covered	Assignment/ Tutorials	Delivery (Proposed)	
L-30	**III**	Introduction to Electrochemistry		1. 2. Streaming: Google meet Learning: -Google Classroom 3.Faculty Developed you tube Lectures 4. Faculty notes in Google classroom	
L-31 & L-32		Nernst Equation & It's application			
L-33		Relation of e.m.f. with thermodynamic functions (ΔH, ΔF and Δ S), Lead storage battery			
L-34		Electrochemical theory of corrosion			
L-35 & L-36		Corrosion causes & prevention methods			
L-37		Phase rule			
L-38		Phase diagram of Water system			
QUIZ, Doubt Clearing Session for Unit III				Live Chat either through ZOOM/MS TEAM or any Media	
L-39	**II**	Elementary idea of Spectroscopy		1.Streaming: Google meet 2.Learning: -Google Classroom 3.Faculty Developed you tube Lectures 4. Faculty notes in Google classroom	
L-40		UV-Visible Spectroscopy			
L-41		Applications of UV-Visible			
L-42		Vibrational Spectroscopy			
L-43		Application of Vibrational Spectroscopy			
L-44		Raman spectroscopy and its applications			
L-45		Rotational Spectroscopy			
QUIZ, Doubt Clearing Session for Unit II				Live Chat either throughZOOM/MS TEAM or anyMedia (if possible)	
