

6 th sem chemistry		
sr. no	topic	link
Unit 1		
1	Kinetic Aspects of Metal Complexes : [6] Thermodynamic and kinetic stability of the complexes, factors affecting stability of complexes.	https://youtu.be/PAVdBfqyIGU
2	Brief idea about substitution reactions, SN1-dissociative and SN2-associative mechanism.	https://youtu.be/epkXTEYqG0E
3	Labile and inert complexes.	https://youtu.be/DKR6cVs2qxY
4	Factors affecting lability of complexes namely arrangement of d-electrons (on the basis of VB theory), size of central metal ion, charge of central metal ion, geometry of complexes	https://youtu.be/DZZEOgQpNGo
5	Substitution reactions in square planar complexes mechanism	https://youtu.be/4pJgBEOy_OM
6	Concept of ϵ_{max} , Beer-Lambert's law (https://youtu.be/WP6JpnHZJIQ
7	Calibration curve and its importance	https://youtu.be/7YAlSdhUzFI
8	Validity and limitations of Beer-Lambert's law. Verification of Beer's law.	https://youtu.be/nMqBCkxfrMk
9	Block diagram of colorimeter and spectrophotometer with brief description of each component and its function.	https://youtu.be/Y4iR1t6Mn5E
10	Difference between colorimetric and spectrophotometric technique for determination of concentration of metal ion (Example of determination of Cu(II).	https://youtu.be/4zchWu5dYb4
11	Paper Chromatography :- [4] Definition and classification of chromatographic techniques	https://youtu.be/UT7TW_ursoA
12	Principle of differential migration. Principle and technique of paper chromatography -ascending, descending and circular , R _f value and factors affecting R _f value.	https://youtu.be/YT7fz4K7G6s
Unit 2		
1	Organometallic Chemistry : [5] Definition, nomenclature and classification of organometallic	https://youtu.be/8XF6xWaGxHY

	compounds.	
2	Metal carbonyls- definition and classification. Preparation, properties, structure and bonding in Ni(CO) ₄ , Fe(CO) ₅ , Cr(CO) ₆ . Nature of M-C bond in metal carbonyls	https://youtu.be/u4LBLPMX48g
3	Definition and classification. Silicones: preparation, properties structure and bonding and applications.	https://youtu.be/KbKZR-WeLbU
4	Phosphonitrile halides polymers- preparation, properties, structure and bonding in cyclic polymers	https://youtu.be/vmgTv33klh0
5	Essential and trace elements in biological processes. Biological role of Na ⁺ , K ⁺ , Ca ²⁺ and Mg ²⁺ ions. Metalloporphyrins-Haemoglobin and Myoglobin and their role in oxygen transport.	https://youtu.be/VqE-63nUevQ
Unit 3		
1	Electronic spectroscopy: Introduction, theory, instrumentation, types of electronic transitions, presentation of electronic spectrum, terms used- chromophore, auxochrome, bathochromic shift, hypsochromic shift, hyperchromic effect and hypochromic effect , Applications in the structure determination of dienes, α,β -unsaturated aldehydes and ketones, aromatic compounds.	https://youtu.be/_rlHeWZQajc
2	Infrared spectroscopy: Introduction, Types of molecular vibrations- stretching and bending, Calculation of vibrational modes, force constant, instrumentation, interpretation of IR, H-stretching, triple bond, double bond and Finger print regions, IR spectra of H ₂ O, CO ₂ , C ₂ H ₅ OH, CH ₃ CHO, CH ₃ COOH and CH ₃ CONH ₂ .	https://youtu.be/KGNdg7cSt6M
Unit 4		
1	NMR spectroscopy: Introduction, spin quantum number, instrumentation, Aspects of NMR- number of signals(equivalent and non-equivalent protons), positions of signals(chemical shift), intensities of signals, splitting of signals(spín-spin coupling), coupling constant, applications.	https://youtu.be/BSnyH5doX6I
2	Mass spectroscopy: Introduction, theory, instrumentation-(ion sources), Mass spectra of neopentane and methanol, molecular ion peak, base peak, metastable	https://youtu.be/znXgFKmjizo

	peak, Rules of fragmentation, applications	
Unit 5		
1	Elementary Quantum Mechanics 14L (i) Limitations of classical mechanics. Plank's quantum theory (postulates only). Photoelectric effect - Experiments, observation and Einstein's explanation.	https://youtu.be/YqUSyPUFVVY
2	Compton effect and its explanation. (ii) de Broglie hypothesis of matter waves. de Broglie's equation. Heisenberg's uncertainty principle. (iii) Classical wave equation, derivation of time independent Schrodinger's wave equation in one-dimension and its extension to a three-dimensional space. Well behaved wave function, physical significance of wave function	https://youtu.be/Eqxkl1KwxVM
3	Application of Schrodinger wave equation to a particle in onedimensional box and its extension to a three-dimensional box. Concept of atomic orbital.	https://youtu.be/L2AVIm5kygM
Unit 6		
1	Electrochemistry: (i) Types of electrode - Standard hydrogen electrode, Calomel electrode, Quinhydrone electrode and Glass electrode. Principle of Potentiometric titration.	https://youtu.be/29_mk0B4GeQ
2	Study of acid-base, redox and precipitation titration. (ii) pH of a solution and pH scale.	https://youtu.be/LkDjQmXs5yM
3	Determination of pH of a solution using hydrogen, quinhydrone and glass electrodes.	https://youtu.be/EV-RmW-iyL4
4	Advantage and disadvantage of these electrodes. pH-metric titrations. Determination of pka of a weak acid by pH-metric measurement	https://youtu.be/dDgrSoEJ24c
5	Concentration cells - Types of concentration cells, concentration cell without transfer and determination of its emf.	https://youtu.be/UkCRvZIB-TE
6	Nuclear Chemistry: (i) Shell model of a nucleus - Assumptions, evidences for existence of magic numbers, advantages and limitations. (ii) Liquid drop model of a nucleus - Assumptions, similarities between nucleus and liquid drop, advantages and limitations	https://youtu.be/yBdxuAdBJME
7	explanation of nuclear fission reaction on the basis of liquid drop model. (iii) Nuclear force	

	and its explanation on the basis of Meson theory. (iv) Characteristics	
	of nuclear reaction, difference between nuclear and chemical reactions.	
	Calculation of Q value of a nuclear reaction. (v) Characteristics of	
	nuclear fission reaction, fission yield. Fission reaction as an alternative	
	source of energy. (vi) Nuclear fusion reaction - Characteristic of a	https://youtu.be/kmT1Bnlbiuc
	nuclear fusion reaction. Thermonuclear reactions as a source of energy	
	of sun and other stars. Fusion reactions as a potential future source of	
	energy. (vii) Applications of radio isotopes in industry, agriculture,	
	medicines and bio-sciences with two examples each. (viii) Numericals.	