

**Percentage of Revision of M.Sc Chemistry
Syllabus Revised for - 2020-2022 Batch**

M.Sc Chemistry

S.No	Year	Sem	Paper Code	Paper Title	Changes		% of Revision
					Removed (if any)	Added (if any)	
1.	2020	I	20PCY101	Inorganic Chemistry -I	-	Introduction of solid state	10
2.	2020	I	20PCY102	Organic Chemistry -I	-	Tautomerism –keto –enol, amido – imido and nitro –acinitro systems Stork enamine reactions, addition-elimination and cyclic mechanism, Bradsher reaction, Bucherer and Rosendmund Reactions, Von Richter rearrangement, Grignard reactions – Aldol – Claisen –Stobbe – Darsen – Wittig – Thorpe and benzoin condensations – Cannizarro reaction. Dehydro 7alogenations of vicinal dihalides.	20
3.	20	I	20PCY103	Physical Chemistry –I – Group Theory and Chemical Kinetics	Determinatio n of molecular weights - number average, weight average, sedimentation and viscosity average molecular weights of macromolecu les. Kinetics of polymerizatio n - free radical mechanism.	Physical properties of the electronically excited molecules- excited state dipole moment- geometry of some electronically excited molecules – types of photophysical pathways. Fluorescence emission – Phosphorescence – luminescence – Photophysical kinetics of unimolecular processes – Stern-Volmer equation – quenching – delayed fluorescence – study of excited states – flash photolysis, laser, maser and its applications.	20

					Techniques of Polymerisation: bulk, emulsion, solution and suspension, Stereochemistry of polymers, Polymer processing - types of moulding - casting, spinning and vulcanization.		
4.	2020	II	20PCY204	Coordination & Organometallic Chemistry	-	Magnetic Properties – I row transition metal complexes : comparison of magnetic properties of Oh, Td & square planar Fe(II), CO(II), Ni(II) & Cu(II) complexes.	10
5.	2020	II	20PCY205	Organic Chemistry-II – Organic reactions and Stereochemistry	-	Addition of unit title	5
6.	2020	II	20PCY206	Physical Chemistry-II Quantum and Electrochemistry	Current-voltage relationships - Voltammetry – Polarography - mass transfer - diffusion limited currents - kinetic currents - adsorption currents - amperometry,	Kinetics of polymerizations Determination of molecular weights – number average, weight average, sedimentation and viscosity average molecular weights of macromolecules. Kinetics of polymerization – free radical mechanism. Techniques of Polymerisation: bulk, emulsion, solution and suspension, Stereochemistry of polymers, Polymer processing – types of moulding –	20

					coulometry, cyclic voltammetry, rotating disc electrodes, chronoamperometry, chronopotentiometry, chronocoulometry (basic principles and applications only in all the above method).	casting, spinning and vulcanization.	
7.	2020	II	20PCY207	Spectroscopic Techniques Application in Organic Chemistry	Coorelation NMR Spectroscopy	¹³ C NMR Applications in simple organic molecules, 2D NMR Techniques	15
8.	2020	II	20PCY2E1	Major Elective –I Applied Electrochemistry	-	-	-
9.	2020	II	20PCY2E2	Food Science & Technology	Methods of cooking	cereals Pulses methods of analysis	20
10	2020	II	20PCY2N1	Chemistry in mankind	-	milk products sugars fats oils	10
11	2020	II	20PCY2N2	Chemistry in context	-	unit titles included	10
12	2020	II	20PCY208	Inorganic chemistry practical – I	-	Included familiar cations	10
13	2020	II	20PCY209	Organic chemistry practical – I	-	Melting point & Thinlayer Chromatography Demonstration	10

14	2020	II	20PCY210	Physical chemistry practical – I	-	-	5
15	2020	III	20PCY311	Organic chemistry – III- Natural products and organic reagents	-	Unit Title changed	5
16	2020	III	20PCY312	Physical Chemistry – III -Thermodynamics and Catalysis	-	Unit Title changed	60
17	2020	III	20PCY3E3	Research methodology and cyber security	-	All contents of research methodology units are newly introduced	100
18	2020	III	20PCY3E4	Industrial Chemistry	-	New paper	100
19	2020	III	20PCY3A L	Advanced functional materials	-	New paper	
20	2020	IV	20PCY414	Inorganic chemistry – III Bioinorganic and Inner Transition elements	-	-	-
21	2020	IV	20PCY415	Analytical Techniques	Fluorescence & Phosphorescence	Copper – Iron complex –application in ESR Spectroscopy	10
22	2020	IV	20PCY4E5	Major Elective – III Medicinal Chemistry	-	Oxidant drug discovery, computer aided discovery, Drug lead molecule-ADME Properties, Antibiotic resistance, synthesis and uses of chloramphenicol	15
23	2020	IV	20PCY4E6				

Major Elective – III

**Green and Nano
Chemistry**

**Over view of
cyber
security**

Confidentiality, integrity and availability –

Threats:

Malicious software

(viruses,

Trojans,

rootkits,

worms,

botnets),

Memory

exploits

(buffer

overflow,

heap

overflow,

integer

overflow,

format

string).

Network

security:

Network

intrusion

detection and

prevention

system,

firewalls.

Software

security:

Vulnerability

auditing,

penetration

testing,

sandboxing,

control flow

integrity –

web security:

user

authentication

- Legal and

ethical issues:

trade secret,

hacking and

All contents of 3 units are newly introduced

					intrusion, privacy, identity theft.		
					Problem selection- literature survey- primary sources – journals, patents, journals of different fields of chemistry (organic, inorganic, physical, polymer, analytical and nano) – secondary sources- books, indexes, chemical abstracts, review articles – literature searching online. E- journal, plagiarism, Intellectual property rights. Writing a project report – dissertation – style and conventions – title, abstract, introduction, review of literature, experiments, results and		

24	2020	IV	20PCY416		discussion, foot notes, figures, presenting data, tables, summary and bibliography.		100
25	2020	IV	20PCY417	Phytochemical techniques & Health chemistry	-	newly introduced	-
26	2020	IV	20PCY418		-		-
27	2020	IV	20PCY419	Inorganic Chemistry Practical- II	-		-
28	2020	IV	20PCY420	Organic Chemistry Practical- II	-		100
29	2020	IV	20PCY4CE	Physical Chemistry Practical- II	-	Scheme of evaluation pattern framed	-
				Project work & Viva- voce	-		
				Online comprehensive examination			

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