

**SARDAR PATEL UNIVERSITY**  
**B.Sc. Semester: V**  
**(Under Choice Based Credit Scheme)**  
**Syllabus with Effect from: 2020-21**

Course Type	Course Code	Name Of Course	T / P	Credit	Contact Hours Per Week	Exam Duration in hrs	Component of Marks		
							Internal	External	Total
<b>Core Course (Any One Group)</b>									
<b>Chemistry</b>	US05CCHE21	Organic Chemistry	T	4	4	3	30	70	100
	US05CCHE22	Inorganic Chemistry	T	4	4	3	30	70	100
	US05CCHE23	Physical Chemistry	T	4	4	3	30	70	100
	US05CCHE24	Analytical Chemistry	T	4	4	3	30	70	100
	US05CCHE25	Practicals (Prac. I, Prac. II & Prac. III)	P	6	12	12	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DCHE26	Organic Spectroscopy	T	2	2	2	==	50	50
	US05DCHE27	Soil Chemistry and Analysis	T	2	2	2	==	50	50
<b>Electronics</b>	US05CELE21	Instrumentation	T	4	4	3	30	70	100
	US05CELE22	Digital System	T	4	4	3	30	70	100
	US05CELE23	8-Bit Microprocessor Programming & Applications	T	4	4	3	30	70	100
	US05CELE24	Analog Communication	T	4	4	3	30	70	100
	US05CELE25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DELE26	Industrial Electronics	T	2	2	2	==	50	50
	US05DELE27	Discrete & Linear Circuits	T	2	2	2	==	50	50
<b>Physics</b>	US05CPHY21	Classical Mechanics	T	4	4	3	30	70	100
	US05CPHY22	Mathematical Methods	T	4	4	3	30	70	100
	US05CPHY23	Thermodynamics and Statistical Mechanics	T	4	4	3	30	70	100
	US05CPHY24	Analog and Digital Circuits	T	4	4	3	30	70	100
	US05CPHY25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DPHY26	Renewable Energy Sources	T	2	2	2	==	50	50
	US05DPHY27	Astronomy and Astrophysics	T	2	2	2	==	50	50

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<b>Applied Physics</b>	US05CAPH21	Quantum and Statistical Mechanics	T	4	4	3	30	70	100
	US05CAPH22	Mathematical Methods	T	4	4	3	30	70	100
	US05CAPH23	Solid State Physics	T	4	4	3	30	70	100
	US05CAPH24	Concepts of Applied Physics and Control Systems	T	4	4	3	30	70	100
	US05CAPH25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DAPH26	8085 Microprocessor Architecture, Programming, and Applications	T	2	2	2	==	50	50
	US05DAPH27	Geophysics and Energy Physics	T	2	2	2	==	50	50
<b>Mathematics</b>	US05CMTH21	Real Analysis	T	4	4	3	30	70	100
	US05CMTH22	Theory of Real Functions	T	4	4	3	30	70	100
	US05CMTH23	Group Theory	T	4	4	3	30	70	100
	US05CMTH24	Metric Spaces and Topological Spaces	T	4	4	3	30	70	100
	US05CMTH25	Mathematics Practical	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DMTH26	Number Theory - I	T	2	2	2	==	50	50
	US05DMTH27	Graph Theory - 1	T	2	2	2	==	50	50
	US05DMTH28	Mechanics - I	T	2	2	2	==	50	50
	US05DMTH29	Operations Research - 1	T	2	2	2	==	50	50
<b>Instrumentation</b>	US05CINS21	8085 Microprocessor Architecture and Programming-1	T	4	4	3	30	70	100
	US05CINS22	Process Measurement Techniques-1	T	4	4	3	30	70	100
	US05CINS23	Introduction to Control Systems	T	4	4	3	30	70	100
	US05CINS24	Programmable Logic Controller-1	T	4	4	3	30	70	100
	US05CINS25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DINS26	Industrial Electronics	T	2	2	2	==	50	50

Course Type	Course Code	Name Of Course	T /P	Credit	Contact Hours Per Week	Exam Duration in hrs	Component of Marks		
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<b>Instrumentation (Voc.)</b>	US05CINV21	Process Measurement Technique – I	T	4	4	3	30	70	100
	US05CINV22	Control System components and Technique – I	T	4	4	3	30	70	100
	US05CINV23	8-Bit Microprocessor Programming & Applications – I	T	4	4	3	30	70	100
	US05CINV24	Analytical Instrumentation	T	4	4	3	30	70	100
	US05CINV25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DINV26	Digital and Analog systems	T	2	2	2	==	50	50
<b>Biochemistry</b>	US05CBCH21	Molecular Biochemistry	T	4	4	3	30	70	100
	US05CBCH22	Enzymology	T	4	4	3	30	70	100
	US05CBCH23	Human Metabolism	T	4	4	3	30	70	100
	US05CBCH24	Human Physiology	T	4	4	3	30	70	100
	US05CBCH25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DBCH26	Analytical Biochemistry	T	2	2	2	==	50	50
	US05DBCH27	Basic Microbiology	T	2	2	2	==	50	50
<b>Bioinformatics</b>	US05CBNF21	PERL Programming Language	T	4	4	3	30	70	100
	US05CBNF22	Relational Database Management Systems	T	4	4	3	30	70	100
	US05CBNF23	Genetic Engineering	T	4	4	3	30	70	100
	US05CBNF24	Bioinformatics Applications	T	4	4	3	30	70	100
	US05CBNF25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DBNF26	Fundamental of Immunotechnology	T	2	2	2	==	50	50

Course Type	Course Code	Name Of Course	T /P	Credit	Contact Hours Per Week	Exam Duration in hrs	Component of Marks		
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<b>Biotechnology</b>	US05CBIT21	Molecular Biology & Genetics	T	4	4	3	30	70	100
	US05CBIT22	Transgenic	T	4	4	3	30	70	100
	US05CBIT23	R-DNA Technology	T	4	4	3	30	70	100
	US05CBIT24	Immunology	T	4	4	3	30	70	100
	US05CBIT25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DBIT26	Molecular Techniques	T	2	2	2	==	50	50
<b>Botany</b>	US05CBOT21	Microbiology and Phycology	T	4	4	3	30	70	100
	US05CBOT22	Genetics and Molecular Biology	T	4	4	3	30	70	100
	US05CBOT23	Plant Ecology and Phytogeography	T	4	4	3	30	70	100
	US05CBOT24	Plant Systematics	T	4	4	3	30	70	100
	US05CBOT25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DBOT26	Taxonomy and Conservation of Angiosperms	T	2	2	2	==	50	50
	US05DBOT27	Bioinstrumentation	T	2	2	2	==	50	50
<b>Environmental Science</b>	US05CENV21	Environmental Biotechnology	T	4	4	3	30	70	100
	US05CENV22	Geological Science & Oceanography	T	4	4	3	30	70	100
	US05CENV23	Environmental Pollution	T	4	4	3	30	70	100
	US05CENV24	Forensic science & Remote Sensing	T	4	4	3	30	70	100
	US05CENV25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DENV26	Env. Health & Stress Physiology	T	2	2	2	==	50	50
	US05DENV27	Disaster Management	T	2	2	2	==	50	50

Course Type	Course Code	Name Of Course	T /P	Credit	Contact Hours Per Week	Exam Duration in hrs	Component of Marks		
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<b>Genetics</b>	US05CGEN21	Molecular Genetics	T	4	4	3	30	70	100
	US05CGEN22	Genetic Engineering-I	T	4	4	3	30	70	100
	US05CGEN23	Immunogenetics	T	4	4	3	30	70	100
	US05CGEN24	Human Genetics and Bioinformatics	T	4	4	3	30	70	100
	US05CGEN25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DGEN26	Biological Chemistry and Metabolism	T	2	2	2	==	50	50
<b>Microbiology</b>	US05CMIC21	Molecular Genetics	T	4	4	3	30	70	100
	US05CMIC22	Microbial Metabolism	T	4	4	3	30	70	100
	US05CMIC23	Virology and Mycology	T	4	4	3	30	70	100
	US05CMIC24	Fermentation Technology-I	T	4	4	3	30	70	100
	US05CMIC25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DMIC26	Bioinstrumentation and Biotechniques	T	2	2	2	==	50	50
	US05DMIC27	Microbial Diversity and Ecology	T	2	2	2	==	50	50
<b>Zoology</b>	US05CZOO21	Invertebrate	T	4	4	3	30	70	100
	US05CZOO22	Physiology	T	4	4	3	30	70	100
	US05CZOO23	Genetics & Biotechnology	T	4	4	3	30	70	100
	US05CZOO24	Ecology & Animal Behaviour	T	4	4	3	30	70	100
	US05CZOO25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DZOO26	Wild Life	T	2	2	2	==	50	50
	US05DZOO27	Animal Rescue & Rehabilitation	T	2	2	2	==	50	50
<b>Industrial Chemistry (Voc.)</b>	US05CICV21	Organic Chemistry	T	4	4	3	30	70	100
	US05CICV22	Technology of Petroleum & Petroleum Products	T	4	4	3	30	70	100
	US05CICV23	Heavy & Fine Chemicals	T	4	4	3	30	70	100
	US05CICV24	Mass Transfer	T	4	4	3	30	70	100
	US05CICV25	Practicals	P	6	12	9	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DICV26	Specialty Chemicals – I	T	2	2	2	==	50	50
	US05DICV27	Occupational Health & Industrial Hygiene-I	T	2	2	2	==	50	50

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<b>Industrial Chemistry</b>	US05CICH21	Advance Organic Chemistry	T	4	4	3	30	70	100
	US05CICH22	Petroleum and Petroleum Products	T	4	4	3	30	70	100
	US05CICH23	Chemical Process Industries	T	4	4	3	30	70	100
	US05CICH24	Fluid Mechanics & Mechanical Operations	T	4	4	3	30	70	100
	US05CICH25	Practicals	P	6	12	9	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DICH26	Specialty Chemical Industries - I	T	2	2	2	==	50	50
	US05DICH27	Industrial Safety & Hygiene - I	T	2	2	2	==	50	50
<b>Computer Science</b>	US05CCSC21	Object Oriented Programming Using C++	T	4	4	3	30	70	100
	US05CCSC22	Visual Programming Through VB .NET	T	4	4	3	30	70	100
	US05CCSC23	Relational Database Management System	T	4	4	3	30	70	100
	US05CCSC24	Computer Networks	T	4	4	3	30	70	100
	US05CCSC25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DCSC26	E-Commerce	T	2	2	2	==	50	50
	US05DCSC27	Multimedia Technology	T	2	2	2	==	50	50
<b>Information Technology</b>	US05CINT21	OOPS Technology-I	T	4	4	3	30	70	100
	US05CINT22	Visual Programming	T	4	4	3	30	70	100
	US05CINT23	Advanced Web Technology	T	4	4	3	30	70	100
	US05CINT24	Software Engineering	T	4	4	3	30	70	100
	US05CINT25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DINT26	Software Testing	T	2	2	2	==	50	50
	US05DINT27	Artificial Intelligence	T	2	2	2	==	50	50

Course Type	Course Code	Name Of Course	T/P	Credit	Contact Hours Per Week	Exam Duration in hrs	Component of Marks		
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<b>Electronics &amp; Communication</b>	US05CELC21	Analog Circuits and Measuring Instruments	T	4	4	3	30	70	100
	US05CELC22	Introduction to 8-bit 8085 Microprocessor	T	4	4	3	30	70	100
	US05CELC23	Digital Communication System and Antenna	T	4	4	3	30	70	100
	US05CELC24	Data Communication and Network	T	4	4	3	30	70	100
	US05CELC25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DELC26	Instrumentation - I	T	2	2	2	==	50	50
<b>Statistics</b>	US05CSTA21		T	4	4	3	30	70	100
	US05CSTA22		T	4	4	3	30	70	100
	US05CSTA23		T	4	4	3	30	70	100
	US05CSTA24		T	4	4	3	30	70	100
	US05CSTA25	Practicals	P	6	12	6	45	105	150
<b>Discipline Specific Elective (Any One)</b>	US05DSTA26		T	2	2	2	==	50	50
	US05DSTA27		T	2	2	2	==	50	50