

क्रमांक	विषय	पूर्णांक
(1) रसायन		
1	Spectroscopy:- Introduction, characterization of electromagnetic radiation. regions of the spectrum, representation of spectra width and intensity of spectral transition. rotational spectra of calculated diatomic molecules, energy level of rigid rotator. selection rule, determination of bond length qualitative description of non-rigid rotator isotopic effect.	कुल अंक-30
2	Vibrational spectra:- Fundamental vibrational and their symmetry. vibrating diatomic molecules, energy levels of simple harmonic oscillator. Selection Rule, Pure vibrational Spectrum, determination of force constant, diatomic vibrating operator, Anharmonic Oscillator.	
3	Raman Spectra:- Concept of polarizability, quantum theory of Raman spectra stokes and anti stokes lines pure rotational and vibrational Raman spectra. Application of Raman spectra stokes and anti stokes lines, pure rotational and vibrational Raman spectra, Applications of Raman spectroscopy in forensic science.	
4	InfraRed Spectroscopy:- IR absorption Band their position and intensity. Identification of IR spectra.	
5	Carbohydrates:- Configuration of monosaccharides, threo and erythro diastereomers. Formation of glycosides ethers and esters Determination of ring size of monosaccharides. Cyclic structure of D (+) glucose. Structure of ribose and deoxyribose. An introduction to disaccharides (maltose sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.	
6	HARD AND SOFT ACIDS AND BASES (HSAB):- Classification of acids and bases as hard and soft. Pearson's HSAB concept, acid base strength and hardness and softness. Symbiosis.	
7	Silicones and Phosphazenes:- Silicones and phosphazenes as examples of inorganic polymers, nature of bonding in triphosphazenes.	
(2) फॉरेंसिक साइंस		
8	Mass spectroscopy:- mass spectrum fragmentation of functional groups.	कुल अंक-15
9	Injuries:- Nature and Types. Anti-mortem and post-mortem burn, Medico-legal aspect of death. Description of different types of deaths, Asphyxia, Violent Asphyxial deaths. Hanging Ligature Strangulation, Throttling, Suffocation Drowning: Immersion, Death from Starvation. Cold and Heat, Anaphylactic Deaths. Post Mortem examination in burning, firearms, hanging, strangulation, throttling, poisoning, Railway cutting, stabbing, explosion sexual cases and natural death, cause of deaths.	
10	Diatoms and their importance in medico-legal cases. Post Mortem examination in drowning.	
11	Basics of DNA and Finger printing in paternity disputes. Forensic DNA Fingerprinting: Structure of DNA. Techniques of (A) Polymerase Chain Reactan (PCR), (B) Restriction Fragment Length Polymorphism (RFLP). (C) Short Tandem Repeats (STR) and (D) DNA Assay & Variable Number Tandem Repeats (VNTR).	
(3) भौतिकी		
12	Optical instruments:- View angle, simple microscope, compound microscope and its magnification power, electron microscope (simple introduction), telescope, resolving power and limits of resolution of microscope and telescope.	कुल अंक-25
13	Wave Optics:- Newton's particle theory, Hygen's wave theory, wave-front and types of wave-front, superimposition of waves. interference of waves and their types. coherent sources, Young's double slit experiment, diffraction of light, difference between diffraction and interference, simple grating, polarization of light, polarized and unpolarized light, vibrational and polarization planes. Brewster's law.	

14	Current electricity:- Electric current, difference between electromotive force (emf and potential difference, Ohm's law. ohmic and nonohmic resistance, colour codes of carbon resistance, specific resistance, superconductivity, effect of temperature on resistance. series and parallel combination of resistance. Kirchoff's law, principle of Wheatstone bridge, calculation of unknown resistance using meter bridge, internal resistance, potentiometer and its principle, comparison of emf of two cells using potentiometer, estimation of internal resistance of cell using potentiometer combination of cells (Parallel, series and mixed).
15	Effect of electric current - Orsted's experiment, Ampere's law. Maxwell's law, right hand rule, Bio-savart's law. magnetic field due to long straight current conductor. intensity at axis and center of circular wire loop. Ampere's law and its applications. force on current carrying conductor in uniform magnetic field. Lorentz's force Fleming's left hand rule, force between two parallel current carrying conductors. definition of ampere, motion of charged particle in magnetic field, construction, theory and working of cyclotron, tangent galvanometer, construction and theory of moving coil galvanometer, principle of shunt. conversion of galvanometer into ammeter and voltmeter.
16	Thermal effect of electric current, Joule's law of heat production, electric energy and electric power, practical unit of electric power, fuse wires, thermoelectric effect. Seebak effect, Seebak series, change in emf with temperature, inversion and neutral temperature, Peltier effect, difference between Peltier effect and Joule effect. Thompson effect, thermoelectric beam. Electrolysis. Faraday's law of electrolysis, copper and silver voltmeter. primary and secondary cells, solid state cells.
17	Electromagnetic induction and alternating current- magnetic flux. Faraday's experiment, Lenz's law, Flemings right hand rule, self induction, coefficient of self inductance, mutual induction, coefficient of mutual inductance, self inductance of plane circular coil, self inductance of solenoid, combination of induction coils (Parallel and series), mutual inductance of two plane circular coils, mutual inductance between two co-axial long solenoid, eddy currents, losses due to eddy currents and prevention, uses of eddy currents.
18	Direct and alternating current (AC and DC), alternating emf and its root mean square value, average value, impedance and resistance, leading and lagging in AC circuit. various types of AC circuits (R.L.C) and its various combinations. Frezer's figure, calculation of phase difference and impedance. (Q) quality factor and average power dissipation of series resonance circuit, dynamo, AC dynamo, DC dynamo. DC motor. capacity of AC circuit, wattles current, opposing emf, motor starter.
19	Solids and semiconductor devices:- Types of solids and their examples, energy level of solids, classification of conductors, insulator sand semiconductors, concept of Fermi energy level, different types of semiconductors and their difference, resistance of semiconductors, P-N junction diode. forward and reverse bias, diode as rectifier LED zener diode, solar cell. PNP and NPN transistors: their characteristics and working, use of transistor as amplifier (common emitte configuration), oscillator, logic gates (OR, AND NOT, NOR, NAND), Boolean algebra, elementary idea of IC.
20	Communication theory:- Preliminary idea of analog and digital communicating system, modulation and its need, types of modulation, index of modulation. FAX and MODEM, preliminary idea of internet and cellular phone, line communication, double line wire communication, cables, telephone links, optical communication. optical fiber.
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22	Computers:- Computer: their classification and working, input-output devices. operating systems, computer software and programming languages.

23	Plant-water relations:- Importance of water to plant life: physical properties of water diffusion and osmosis; absorption, transport of water and transpiration.
24	Plants and environment:- Atmosphere (gaseous composition), water (properties of water cycle), light (Global radiation, photosynthetically active radiation), temperature, soil (development, soil profiles, physico-chemical properties), and biota Morphological, anatomical and physiological responses of plants to water (hydrophytes and xerophytes). temperature (thermoperiodicity), light (photoperiodism, heliophytes and sciophytes) and salinity.
25	<p>(ECOLOGY)</p> <ol style="list-style-type: none"> 1. Aims and scopes of Ecology. 2. Major ecosystems of the world-Brief introduction 3. Population-Characteristics and regulation of densities. 4. Communities and Ecosystems. 5. Biogeochemical cycles 6. Air and water pollution 7. Ecological succession <p>(ENVIRONMENTAL BIOLOGY)</p> <ol style="list-style-type: none"> 1. Laws of limiting factors 2. Food chain in a freshwater ecosystem. 3. Energy flow in ecosystem-Trophic levels 4. Conservation of Natural resources 5. Environmental impact Assessment <p>Aerobiology; definition, droplet nuclei, aerosol assessment of air quality, some important air borne diseases caused by bacteria (Diphtheria, Pneumonia, Meningitis), virus (Influenza, Chicken pox, Measels) preventive measures.</p>
26	<p>Soil microbiology:- Physical and chemical characteristics and micro flora of various soil types.</p> <p>Aquatic/microbiology; ecosystem, fresh water (ponds, lakes, stream) and marine Water zonation: upwelling, eutrophication.</p> <p>Potability of water - microbial assessment of water quality.</p> <p>Brief account of water borne diseases (Typhoid, Dysentery, Cholera, Hepatitis) and preventive measures.</p>
27	Genetic engineering: Tools and techniques of recombinant DNA technology; cloning; vectors; genomic and DNA library; transposable elements; techniques gene mapping and chromosome walking.
28	<p>Biotechnology:- Functional definition; basic aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of Agrobacterium, vectors for gene delivery and marker genes; salient achievements in crop biotechnology.</p> <p>General introduction and scope of environmental biotechnology. Environmental pollution and its type.</p> <p>Control of pollution through biotechnology. Food technology - introduction canning, packing and food preservation. Bioreactors and its type. Fermentation (Lactic acid, alcohol).</p> <p>Antigen - antibody interaction. Principles and types.</p> <p>Immunohaematology - General concept. Blood group system. Rh factor, medical Application of blood groups. Immunology General Concept, history and Development.</p> <p>Immune system and immunity. Organization of Immune system.</p> <p>Antigen-Antibody and its type.</p>