Syllabus for Sandip University Joint Entrance Exam(SU-JEE)

Program Name – SU-JEE D. Pharmacy

Sr. No	Topic/subject/section/Unit Name	Number of Question
1.	**English & GK** Logical Reasoning Environment Reading Comprehension Grammar General Knowledge Language Code Analogies (relationship between words) Rearrange the words and phrases to form meaningful sentences Odd one out Give the meaning of Give one word for Synonym Antonym English Literature Relationship	10
2.	**Chemistry** **Solid State :** Classification of solids based on different binding forces :molecular, ionic covalent and metallic solids,amorphous and crystalline solids(elementary idea),unit cell in two dimensional and three dimensional lattices,calculation of density of unit cell, packing in solids, packing efficiency, voids ,number of atoms per unit cellin a cubic unit cell, point defects, electrical and magnetic properties, Band	30

	theory of metals ,conductors,semiconductors and insulators and n and p type semiconductors **Electrochemistry** Redox reactions; conductance in electrolytic solutions, specific and molar conductivity variations of conductivity with concentration, Kohlrausch's Law, electrolysis and laws of electrolysis (elementary idea), dry cell – electrolytic cells and Galvanic cells; lead accumulator, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells. Relation between Gibbs energy change and EMF of a cell, fuel cells; corrosion **Surface Chemistry** Adsorption– physisorption and chemisorption; factors affecting adsorption of gases on solids;catalysis:homogenous and heterogeneous, activity and selectivity: enzyme catalysis; colloidal state: distinction between true solutions, colloids and suspensions; lyophillic, lyophobic multimolecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian mov**e**ment, electrophoresis, coagulation; emulsions – types of emulsions. **Polymers** Classification– Natural and synthetic, methods of polymerization (addition and	

	condensation),copolymerization. Some important polymers: natural and synthetic like polythene, nylon, polyesters, bakelite,rubber. Biodegradable and nonbiodegradable polymers. **General Principles and Processes of Isolation of Elements** Principles and methods of extraction – concentration, oxidation, reduction electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron	
3.	**<u>Biology</u>** **Chapter 1 - Biochemistry of cell :** Basic chemical constituents of living bodies. Structure and function of carbohydrates, proteins, lipids and nucleic acids in brief. Enzymes - Definition, Types, general properties, Enzyme action and factors affecting enzyme activity in brief. **Chapter 2 - Gene: its nature, expression and regulation:** Modern concept of gene in brief-cistron, muton and recon. DNA as genetic material, structure of DNA as given by Watson and Crick's model, DNA Packaging, semi conservative replication of eukaryotic DNA. RNA: General structure, types and functions. Protein Synthesis; central dogma, Transcription; Translation-Genetic Code, Gene Expression and Gene Regulation (The *Lac* operon as a typical model of gene regulation).	30

	Chapter 3 - Microbes in Human Welfare: Microbes in Household food processing. Microbes in Industrial Production. Microbes in Sewage Treatment. Microbes in Biogas (energy) Production. Microbes as Biocontrol Agents. Microbes as Biofertilizers. **Chapter 4 - Photosynthesis** Autotrophic nutrition Site of Photosynthesis Photosynthetic Pigments and their role. Light Dependent Reactions (Cyclic and non-cyclic photophosphorylation) Light-Independent Reactions (C3 and C4 Pathways) Chemiosmotic hypothesis, Photorespiration, Factors affecting Photosynthesis. Law of limiting factors. **Chapter 5 - Reproduction in Plants** Modes of Reproduction (Asexual and Sexual). Asexual reproduction; uniparental modesvegetative propagation, micropropagation Sexual Reproduction: structure of flower Development of male gametophyte, Structure of anatropous ovule. Development of female Gametophyte. Pollination: Types and Agencies. Outbreeding devices; pollen-pistil interaction. Double Fertilization: Process and Significance. Post-fertilization changes (development of endosperm and embryo, development of seed and formation of fruit. **Chapter 1 - Chromosomal Basis of Inheritance** The Chromosomal Theory. Chromosomes. Linkage and Crossing Over. Sex-linked Inheritance	

	(Haemophilia and colour blindness). Sex Determination in Human being, birds, honey bee.Mendelian disorders in humans-Thalassemia. Chromosomal disorders in human: Down's syndrome, Turner's syndrome and Klinfelter's syndrome. **Chapter 2- Human Health and Diseases** Concepts of Immunology: Immunity Types, Vaccines**,** Structure of Antibody, Antigen-Antibody Complex, Antigens on blood cells. Pathogens and Parasites (Amoebiasis, Malaria, Filariasis, Ascariasis, Typhoid, Pneumonia, Common cold and ring worm). Adolescence, drug and alcohol abuse. Cancer and AIDS. **Chapter 3- Circulation** Blood composition and coagulation, Blood groups. Structure and pumping action of Heart. Blood Vessels. Pulmonary and Systemic Circulation. Heart beat and Pulse. Rhythmicity of Heart beat. Cardiac output, Regulation of cardiac activity. Blood related disorders: Hypertension, coronary artery disease, angina pectoris, and heart failure. ECG, Lymphatic System (Brief idea): Composition of lymph and its functions. **Chapter 4- Human Reproduction** Reproductive system in male and female. Histology of testis and ovary. Reproductive cycle. Production of gametes, fertilization, implantation. Embryo development up to three germinal layers. Pregnancy, placenta, parturition and lactation (Elementary idea). Reproductive health-birth control,	

	Contraception and sexually transmitted diseases.MTP, Amniocentesis; Infertility and assisted reproductive technologies- IVF, ZIFT, GIFT (elementary idea for general awareness). **Chapter 5 - Human skeleton and Locomotion:** Brief account of human skeleton: A] Axial Skeleton B] Appendicular Skeleton **(Details to be dealt with the relevant practical) Types of joints - synarthroses, amphiarthroses, and diarthroses. Types of diarthroses - ball and socket, hinge, condyloid, pivot, saddle and gliding joints. Types of Movement- Ciliary, Flagellar, Muscular Mechanism of muscle movement ;Contractile proteins and Muscle contraction. Skeletal and muscular disorders – Myasthenia gravis,Osteoporosis, arthritis, muscular dystrophytetany and gout.**	
4.	**Physics:-** **Chapter-1 : Circular Motion & Rotational motion** Angular Velocity,Angular Acceleration,Relation between Linear and angular velocity,Uniform circular motion(period,frequency ,acceleration),Relation between Linear & Angular Acceleration, Centripetal & Centrifugal Forces,Equations of motion,Torque,Moment of inertia **Chapter-2 : Elasticity & Surface Tension** Definition of stress and strain (Tensile,Volume and Shearing),Hook's Law,Young's Modulus,Bulk Modulus,Modulus of rigidity, Poisson's Ratio,cohesive force,Adhesive Force, Surface energy,Surface Tension,Angle of contact,Effect of impurities and temperature on surface tension,Rise of liquid in capillary tube.	30

	Chapter-3 : Ray optics and Optical Instruments Reflection & Refraction of light by spherical surfaces & by lenses,Mirror equation,Power of a lens, Total internal reflection,Refraction & Dispersion through a Prism, Study of Optical Instruments like Eye, Microscope, Telescope, **Chapter-4 : Wave theory of light.** Basic Definitions(Amplitude,Period,Wavelength,Frequency,Velocity),Transverse and longitudinal wave nature,Huygens Principle,the Doppler effect, Interference of light and Young's Experiment, Diffraction of light,Single slit diffraction, Resolving power of optical instruments,Polarization of light. **Chapter-5 : Electric Charges & Fields** Basic properties of electric charge, Coulomb's Law, Forces between multiple charges , Electric Field, Electric field lines, Electric Flux, Electric Dipole, Gauss Law and its application. **Chapter-6 : Current electricity** Electric current in conductors, Ohm's Law & It's Limitations, Drift of electrons and origin of resistivity, Temperature dependence of resistivity, Electrical Energy ,Power,Combination of resistors- Series and Parallel,Cells, emf ,Internal Resistance, Kirchhoff's Law,Wheatstone Bridge, Meter Bridge,Potentiometer. **Chapter-7 : Magnetism & Electromagnetic induction** Magnetization and Magnetic Intensity,Earth's Magnetism, Magnetic property of materials,Ferromagnetic, Dia- Magnetic & Para magnetic materials,Permanent and electromagnets, Magnetic Force, Motion in a Magnetic field and combined electric and magnetic field, Magnetic field due to current element,	

	Biot-Savart Law, Magnetic Flux, Faraday's Law, Lenz's law,Eddy currents. **Chapter-8: A.C Currents** Transformer Study, Basics of AC voltage & AC current,AC voltage applied to an inductor and capacitor,AC voltage applied to Series LCR circuit, Power of AC circuits, RMS values, Resonance, LC oscillations. **Chapter-9: Semiconductor physics** Valance Band, Conduction Band,Intrinsic Semiconductors,P-Type and N-Type semiconductors,Doping, P-N Diode under forward and reverse biasing, Zener Diode,PNP & NPN Transistors, Logic gates (AND gate, OR gate, NOT gate, NAND Gate, NOR Gate.) **Chapter-10 : Atoms, Molecules and nuclei** Rutherford Model of atom, Bohr Model of atom, Radius of Bohr's Orbit, Hydrozen Spectrum, composition and size of nucleus, Isotopes, Isotones and Isobars, Mass energy relation, Mass Defect, Nuclear Binding energy, Radioactivity, Properties of alpha & Beta Particles and Gama Rays ,Nuclear Force and Nuclear Energy.	
	Total	**100**