VENPER ACADEMY CRASH COURSE SCHEDULE

VENPER ACADEMY

Lecture	Date	Day	Physics	Hrs.	Chemistry	Hrs.	Botany	Hrs.	Zoology	Hrs.
Lecture - 1	8-Apr-18	Sunday	**Units and Measurements** Length, mass & time measurements, Accuracy & Precision, Errors, Significant figures	1	**Some Basic Concepts of Chemisty-I** Laws of chemical combination, Dalton's theory, Mole concept	1	**The Living World** What is living? ; Biodiversity; Need for classification; Three domains of life; Taxonomy & Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature; Tools for study of Taxonomy – Museums, Zoos, Herbaria, Botanical gardens	11/2	**Animal Kingdom-I** Salient features and Classification of animals-Non chordates upto nematodes	1
Lecture - 2	9-Apr-18	Monday	**Motion in a Straight Line I** Uniformly accelerated motion (horizontal & vertical)	2	**Some Basic Concept of Chemistry-II** Emperical and molecular formula, stoichiometry and calculation based on stoichiometry	1	**Biological Classification-I** Kingdom systems of classification, Salient features and classification of Monera and Protista	1	**Animal Kingdom-II** Non chordates-II Annelida to Hemichordata	1
Lecture - 3	10-Apr-17	Tuesday	**Motion in a Straight Line II** Graphs	1	**Structure of Atom** Spectrum, equations of K.E., P.E., T.E. Velocity and radius, Quantum numbers, Aufbau principle, Pauli's exclusion Principle, Hund's rule, Quantum numbers, Electronic configuration	1	**Biological Classification-II** Salient features and classification of Fungi into major groups; Lichens; Viruses and Viroids.	1	**Animal Kingdom-III** Chordates	1
Lecture - 4	11-Apr-18	Wednesday	Motion in a Plane Projectile Motion, Circular Motion, Relative Velocity	4	**Classification of Elements and Periodicity in Properties** Radii, I.E., Electron gain enthalpy, Electronegativity Chemical Bonding and Molecular Structure Ionic bond, covalent bonds, VBT, Bond order, Resonance, Hybridisation and Hbond	2	**Plant Kingdom** Salient features and classification of plants into major groups, Algae–Comparative study of green, brown and red algae; Bryophytes Salient and distinguishing features and examples, Pteridophytes, Gymnosperms and Angiospersms- Salient and distinguishing features and example	2	**Structural Organisation in Animals-I** Morphology, anatomy and functions of digestive, circulatory, respiratory, nervous and reproductive system of cockroach	2
Test-1	**12-Apr-18**	**Thursday**	**3 hours test on the syllbus covered in Lecture - 1 to Lecture - 4 followed by discussion**							

Lecture	Date	Day	Physics	Hrs.	Chemistry	Hrs.	Botany	Hrs.	Zoology	Hrs.
Lecture - 5	13-Apr-18	Friday	**Laws of Motion-I Three laws of** motion, conservation of linear momentum, friction	2	**States of Matter : Gases and Liquids** Ideal gas equation, Deviation from ideal behavior, Critical temperature, Viscosity, Surface tension	1	**Morphology of Flowering Plants** Root, stem, leaf, inflorescence- cymose and recemose, Flower, fruit, seed and families	2	**Structural Organisation in Animals-II** Animal Tissue-Epithelial, Muscular, Connective, Nervous tissues	1
Lecture - 6	14-Apr-18	Saturday	**Laws of Motion-II** Circular motion dynamics, Banking of Roads	2	**Thermodynamics** Ist law and 2nd law of thermodynamics, Extensive and intensive property. Different forms of enthalpy of reaction, Entropy, Free energy, spontaneous and nonspontaneous process, third law of thermodynamics	1	**Anatomy of Flowering Plants** Tissues; Tissue system, Anatomy of different parts of flowering plants, secondary growth in dicot stem & root	2	**Biomolecules** Biomolecules-Structure and function of Protein, Carbohydrates, Lipids, Nucleic acid, Enzymes-types, properties, enzyme action	1
Lecture - 7	15-Apr-18	Sunday	Work, Energy and Power Work-Energy theorem, Vertical circular motion, Collisions	3	**Equilibrium-I** Chemical Equilibrium: Law of mass action and equilibrium constant, Factors affecting KC, degree of dissociation & numericals	1	**Cell: The Unit of Life** Cell Theory-Prokaryotic cell, Eukaryotic cell, Brief account of organelles, Nucleus and chromosomes	2.30	**Digestion and Absorption** Alimentary canal and digestive glands, role of digestive enzymes and gastrointestinal hormones, Peristalsis/digestion, absorption and assimilation of proteins, carbohydrates and fats, Egestion, Calorific value of proteins, carbohydrates and fats. Nutritional and digestive disorders-PEM, indigestion, constipation, vomiting, jaundice, diarrhoea	3
Lecture - 8	16-Apr-18	Monday	**System of Particles and Rotational Motion-I** Centre of mass and conservation of momentum, Moment of inertia	3	**Equilibrium-II** Ionic Equilibrium: pH of weak acids, weak bases, buffer solutions, hydrolysis of salts and mixture of acids & bases, Redox Reactions Oxidation Number and n-factors of oxidizing & reducing agent, Balancing of equations	1	**Cell Cycle & Cell Division** Cell cycle, mitosis, meiosis, and their significance	2	**Breathing & Exchange of Gases** Respiratory system in humans; Mechanism of breathing and its regulation in humans-Exchange of gases, transport of gases and regulation of respiration Respiratory volumes; Disorders related to respiration-Asthma, Emphysema, Occupational respiratory disorders.	2.30

Lecture	Date	Day	Physics	Hrs.	Chemistry	Hrs.	Botany	Hrs.	Zoology	Hrs.
Lecture - 9	17-Apr-18	Tuesday	**System of Particles and Rotational Motion-II** Rigid body rotation & conservation of angular momentum, Rolling kinetic energy	3	**Solid State**-Classification of solids based on binding forces, amorphous and crystalline solids, Different types of unit cells, Number of atoms per unit cell, voids, (Td, Oct & cubic) Defects in solids, Voids, point defects, electrical and magnetic properties, Band theory of metals, conductors, semiconductors & insulator	1	**Transport in Plants** Introduction- Means of transport, Long distance transport of water, Transpiration, Uptake and translocation of mineral nutrients, Transport of food (phloem transport)	2	**Body Fluids & Circulation** Human circulatory system-Structure of human heart and blood vessels; Cardiac cycle, cardiac output, ECG, Double circulation; Regulation of cardiac activity; Disorders of circulatory system-Hypertension, Coronary artery disease, Angina pectoris, Heart failure.	3
	18-Apr-18	Wednesday	**OFF**							
Test-2	**19-Apr-18**	**Thursday**	**3 hours test on the syllbus covered in Lecture - 5 to Lecture - 9 followed by discussion**							
Lecture - 10	20-Apr-18	Friday	**Gravitation** Kepler's law, Newton's law of gravitation, Gravitational potential energy, Escape speed, Satellite motion	3	**Solutions** Solubility of gas in liquid, Raoult's law, Abnormal colligative properties	1	**Minerals Nutrition** Essential minerals and their role, Deficiency symptoms, Mineral toxicity, Hydroponics, Nitrogen metabolism	2	**Excretory Products and their Elimination** Modes of excretion-Ammonotelism, ureotelism, uricotelism; Human excretory system-structure and fuction; Urine formation, Osmoregulation; Regulation of kidney function-eninangiotensin aldosterone system, Atrial Natriuretic Factor, ADH and Diabetes insipidus; Role of other organs in excretion; Disorders; Uremia, Renal failure, Renal calculi, Nephritis; Dialysis and artificial kidney.	2.30
Lecture - 11	21-Apr-18	Saturday	**Mechanical Properties of Solids and Fluids, Thermal Properties of Matter** Elasticity, Flow of non viscous liquid, Viscosity, Surface Tension, Temperature scales, Thermal expansion Calorimetry, Heat Transfer	3	**Electrochemistry** Products of Electrolysis, Laws of electrolysis, Nernst equation, concentration Cell, Kohlrausch's law, specific and molar conductivity	1	**Photosynthesis** Site of Photosynthesis, pigments involved, cyclic and non-cyclic photophosphorylation, comparative study of C3 and C4 pathways, photorespiration	3	**Locomotion & Movement**-Types of movement- ciliary, fiagellar, muscular; Skeletal muscle-contractile proteins and muscle contraction, Skeletal system and its Functions, Joints; Disorders of muscular and skeletal system-Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, Osteoporosis, Gout.	2.30

Lecture	Date	Day	Physics	Hrs.	Chemistry	Hrs.	Botany	Hrs.	Zoology	Hrs.
Lecture - 12	22-Apr-18	Sunday	**Thermodynamics, Kinetic Theory** First law & Second law, Kinetic Theory of Gases	3	**Chemical Kinetics & Surface Chemistry** Factors affecting rate of reaction, Determination of order of reaction, Different graphs for different order of reactions catalyst, Adsorption isotherm, colloidal state, Tyndall effect, Electrophoresis, emulsions	1.30	**Respiration in Plants** Cellular respiration-Glycolysis, Fermentatin, TCA cycle and ETS (aerobic), Energy relations, Amphibolic pathways, Respiratory quotient	3	**Neural Control & Coordination-I** Neuron and nerves; Nervous system in humans central nervous system, peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse; Reflex action	1.30
Lecture - 13	23-Apr-18	Monday	**Oscillation** SHM, Free & forced oscillations	3	**Organic Chemistry-Some Basic Principles and Techniques-I** Methods of purification, qualitative and quantitative analysis, Stability of different reaction intermediates, Electron displacement in covalent bond, IUPAC nomenclature	1	**Plant Growth and Development** Comparitive study of growth regulators, auxins, gibberllin, cytokinin, ethylene & ABA, Seed dormancy, Seed germination, vernalisation, photoperiodism	2	**Neural Control & Coordination-II** Sense organs; Elementary structure and function of eye and ear	2
Lecture - 14	24-Apr-18	Tuesday	**Waves** Speed of sound waves, Progressive wave Equation, Superposition, Standing waves, beats, sonometer, organ pipes, Dopplers Effect	3	**Organic Chemistry-Some Basic Principles and Techniques-II** Substitution, Addition and Elimination reactions, Saytzeff and Hofmann rule, Electrophiles & nucleophiles	1	**Reproduction in Organisms & Sexual Reproduction in Flowering Plants-I** Reproduction, Modes of reproduction Asexual and Sexual, Development of male and female gametophytes, Pollination-types (contd.)	2	**Chemical Coordination and Integration** Endocrine glands and hormones; Human endocrine system Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary Idea); Role of hormones as messengers and regulators, Hypo-and hyperactivity and related disorders (Common disorders e.g. Dwarfism, Acromegaly, Cretinism, goiter, exopthalmic goiter, diabetes, Addison's disease)	2
	25-Apr-18	Wednesday	**OFF**							
Test-3	**26-Apr-18**	**Thursday**	**3 hours test on the syllbus covered in Lecture - 10 to Lecture - 14 followed by discussion**							

Lecture	Date	Day	Physics	Hrs.	Chemistry	Hrs.	Botany	Hrs.	Zoology	Hrs.
Lecture - 15	27-Apr-18	Friday	**Electric Charges and Fields** Coulomb's law, uperposition Principle, Electric field, Dipole, Gauss's Theorem, **Electrostatic Potential and Capacitance** Electric Potential, Capacitors	2	**Hydrocarbons** Isomerism: structural, geometrical conformation, Preparation&chemical properties of alkanes and alkenes, Preparation and properties of alkynes and aromatic hydrocarbons, Environmental Chemistry: acid rain, effect of depletion of ozone layer green chemistry	1.30	**Sexual Reproduction in Flowering Plants-II** Pollination-agencies and examples; Outbreeding devices; Pollen-Pistil interaction; Double fertilization; Post fertilization events; Apomixis	1.30	**Human Reproduction-I** Male and female reproductive systems; Microscopic anatomy of testis and ovary; Gametogenesis-spermatogenesis & oogenesis; Menstrual cycle	1.30
Lecture - 16	28-Apr-18	Saturday	**Current Electricity** Ohm's law, Cell, Kirchhoff's law, Wheatstone bridge, Potentiometer	3	**Haloalkanes and Haloarenes** Haloarenes, Substitution reaction and nature of C-X bond , DDT	1/2	**Principle of inheritane & Variations-I** Mendelian inheritance, Deviation from mendelism; Polygenic inheritance		**Human Reproduction-II** Fertilisation, embryo development upto blastocyst formation, implantation; Pregnancy and placenta formation (Elementary idea); Parturition (Elementary idea); Lactation (Elementary idea), **Reproductive Health** Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control-Need and Methods, Contraception and Medical Termination of Pregnancy (MTP); Amniocentesis; Infertility and assisted reproductive technologies – IVF, ZIFT, GIFT	3
Lecture - 17	29-Apr-18	Sunday	**Moving charges and Magnetism** Biot-Savart's law, Ampere's law, and its applications, Force on moving charge, Force on current carrying conductor, Moving coil Galvanometer (Ammeter and Voltmeter), Magnetism and Matter Bar Magnet, Earth's magnetism Dia, Para & erromagnetism, Electromagnets & Permanent magnets,	3	**Alcohols, Phenols and Ethers** Preparation & Property of alcohol, difference between 1°, 2° & 3° alcohol	1/2	**Principle of inheritane & Variations-II** Chromosome theory of inheritance, Sex determination, Linkage and crossing over, sex-linked intheritance	1.30	**Evolution-I** Origin of life; Biological evolution and evidences for biological evolution from Paleontology, comparative anatomy, embryology and molecular evidence	1.30

Lecture	Date	Day	Physics	Hrs.	Chemistry	Hrs.	Botany	Hrs.	Zoology	Hrs.
Lecture - 18	30-Apr-18	Monday	**Electromagnetic Induction** Faradays law of EMI, Lenz's law, Eddy Currents, Self & Mutual induction, **Alternating Currents** AC series LCR circuits, resonance, power consumption, wattless current, LC oscillations, AC generators, Transformer, **Electromagnetic Waves** Displacement current, EM waves & their characteristics, Electomagnetic spectrum	3	**Aldehydes, Ketones and Carboxylic Acids-I** Relative reactivity of different aldehydes & Ketones for nucleophilic addition reaction, condensation reaction	2	**Principles of Inheritance & Variaitons contd and Molecular basis of Inheritance-I** Pedigree analysis; Mendelian and chromosomal disorders in humans Search for genetic material, structure of DNA and RNA	1.30	**Evolution-II** Darwin's contribution, Modern Synthetic theory of Evolution; Mechanism of evolution-Variation (Mutation and Recombination) and Natural Selection with examples, types of natural selection; Gene flow and genetic drift; Hardy-Weinberg's principle; Adaptive Radiation, Human Evolution	1.30
Lecture - 19	01-May-18	Tuesday	**Ray Optics and Optical Instruments,** Reflection & Refraction, Optical Instruments	3	**Aldehydes, Ketones and Carboxylic Acids-II** Oxidation & Reduction, Relative reactivity order of acid derivatives, HVZ reaction, Beckmann rearrangement, Heating effect on carboxylic acids, methods of preparation and chemical properties of carboxylic acids Organic Compounds containing Nitrogen Preparation and properties of 1°, 2°&3° amines, cyanides isocyanides and diazonium salts	2	**Molecular basis of Inheritance-II** DNA packaging; DNA replication, Central Dogma, Transcription; genetic code, Translation, Gene expression and regulation; Genome and Human genome project; DNA finger printing	2	**Human health & Disease-I** Pathogens; parasites causing human diseases (Malaria, Filariasis, Ascariasis. Typhoid, Pneumonia, common cold, amoebiasis, ring worm)	1
	02-May-18	Wednesday	**OFF**							
Test-4	**03-May-18**	**Thursday**	**3 hours test on the syllbus covered in Lecture - 15 to Lecture - 19 followed by discussion**							

Lecture	Date	Day	Physics	Hrs.	Chemistry	Hrs.	Botany	Hrs.	Zoology	Hrs.
Lecture - 20	04-May-18	Friday	**Wave Optics** Interference, Diffraction, Polarization, Resolving Power	2	**Biomolecules, Polymers, Chemistry in Everyday Life** Reaction of glucose and its structure, Isoelectric points, Mode of polymerization, Monomers of different polymers, Food preservatives and drugs Hydrogen and s-Block & p-block elements (XI Class) Preparation & Properties of H2O2, anomalous properties of first element of each group (I & II) diagonal relationship, Silicates, Silicons, borax, B2H6	1	**Strategies for enhancement in food production** Plant breeding and tissue culture, single cell protein, Biofortification; Microbes in Human Welfare In household food processing, industrial production, sewage treatment, energy generation, biocontrol agents and biofertilizers.	2	**Human health & Disease-II** Basic concepts of immunologyvaccines; Cancer, HIV, AIDS; Adolescence, drug and alcohol abuse Strategies for Enhancement in Food Production Animal husbandry	1
Lecture - 21	05-May-18	Saturday	**Dual Nature of Radiation and Matter** Photoelectric effect, Matter waves, Atoms and Nuclei Bohrs' Model, Radioactivity, Binding Energy	3	**General Principles and Processes of Isolation of Elements, p-Block Elements (XII Class)** Different methods of purification of impure metals, Ellingham diagram, Acidic nature & order, Interhalogen compounds, Psuedohalide ions, Polyhalide ions, Important reactions of HNO_3, H_2SO_4, Cl_2, NH3, SO2, Oxoacids of halogen	1	**Organisms and Population Population** and ecological adaptations, Population attributes, Population interactions, Ecosystem: Productivity and decomposition, energy flow, ecological pyramids	2	**Principles and process of Biotechnology** Genetic engineering (Recombinant DNA technology)	2
Lecture - 21	06-May-18	Sunday	**Semi-conductor Electronics** Energy bands, diodes, transistors, logic gates	3	**d and f-Block Elements, Coordination Chemistry** IUPAC nomenclature, Isomerism, werner's theory, VBT, CFT, Importance of coordination compounds in qualitative analysis & biological system	1	**Ecosystem: Nutrient** cycling ecological succession **Biodiversity & The Environmental Issues** Biodiversity pattern, loss and conservation. Air pollution, Water pollution, Green house effect and global warning, ozone depletion, deforestation	2	**Application of Biotechnology** in health and agriculture: Human insulin and vaccine production, gene therapy; Genetically modified organisms-Bt crops; Transgenic Animals; Biosafety issues-Biopiracy and patents	1.30
Test-5	**07-May-18**	**Monday**	**3 hours test on Complete Syllabus XI & XII on NEET Pattern (8:00 AM to 11:00 AM) Discussion (11:30 AM to 2:30 PM)**							