Appendix 1

SYLLABUS FOR JEE (Main) - 2013

MATHEMATICS

UNIT 1 : SETS, RELATIONS AND FUNCTIONS:

Sets and their representation; Union, intersection and complement of sets and their algebraic properties; Power set; Relation, Types of relations, equivalence relations, functions;. one-one, into and onto functions, composition of functions.

UNIT 2 : COMPLEX NUMBERS AND QUADRATIC EQUATIONS:

Complex numbers as ordered pairs of reals, Representation of complex numbers in the form a+ib and their representation in a plane, Argand diagram, algebra of complex numbers, modulus and argument (or amplitude) of a complex number, square root of a complex number, triangle inequality, Quadratic equations in real and complex number system and their solutions. Relation between roots and co-efficients, nature of roots, formation of quadratic equations with given roots.

UNIT 3 : MATRICES AND DETERMINANTS:

Matrices, algebra of matrices, types of matrices, determinants and matrices of order two and three. Properties of determinants, evaluation of determinants, area of triangles using determinants. Adjoint and evaluation of inverse of a square matrix using determinants and elementary transformations, Test of consistency and solution of simultaneous linear equations in two or three variables using determinants and matrices.

UNIT 4 : PERMUTATIONS AND COMBINATIONS:

Fundamental principle of counting, permutation as an arrangement and combination as selection, Meaning of P (n,r) and C (n,r), simple applications.

UNIT 5 : MATHEMATICAL INDUCTION:

Principle of Mathematical Induction and its simple applications.

UNIT 6 : BINOMIAL THEOREM AND ITS SIMPLE APPLICATIONS:

Binomial theorem for a positive integral index, general term and middle term, properties of Binomial coefficients and simple applications.

UNIT 7 : SEQUENCES AND SERIES:

Arithmetic and Geometric progressions, insertion of arithmetic, geometric means between two given numbers. Relation between A.M. and G.M. Sum upto n terms of special series: S n, S n2, Sn3. Arithmetico - Geometric progression.

UNIT 8 : LIMIT, CONTINUITY AND DIFFERENTIABILITY:

Real - valued functions, algebra of functions, polynomials, rational, trigonometric, logarithmic and exponential functions, inverse functions. Graphs of simple functions. Limits, continuity and differentiability. Differentiation of the sum, difference, product and quotient of two functions. Differentiation of trigonometric, inverse trigonometric, logarithmic, exponential, composite and implicit functions; derivatives of order upto two. Rolle's and Lagrange's Mean Value Theorems. Applications of derivatives: Rate of change of quantities, monotonic - increasing and decreasing functions, Maxima and minima of functions of one variable, tangents and normals.

UNIT 9 : INTEGRAL CALCULUS:

Integral as an anti - derivative. Fundamental integrals involving algebraic, trigonometric, exponential and logarithmic functions. Integration by substitution, by parts and by partial fractions. Integration using trigonometric identities.

Evaluation of simple integrals of the type

$$\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{a^2 - x^2}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c},$$

$$\int \frac{dx}{\sqrt{ax^2 + bx + c}}, \int \frac{(px+q)dx}{ax^2 + bx + c}, \int \frac{(px+q)dx}{\sqrt{ax^2 + bx + c}}$$

$$\int \sqrt{a^2 \pm x^2}\, dx \quad \int \sqrt{x^2 - a^2}\, dx$$

Integral as limit of a sum. Fundamental Theorem of Calculus. Properties of definite integrals. Evaluation of definite integrals, determining areas of the regions bounded by simple curves in standard form.

UNIT 10: DIFFERENTIAL EQUATIONS:

Ordinary differential equations, their order and degree. Formation of differential equations. Solution of differential equations by the method of separation of variables, solution of homogeneous and linear differential equations of the type:

$$\frac{dy}{dx} + p(x)\, y = q(x)$$

UNIT 11: CO-ORDINATE GEOMETRY:

Cartesian system of rectangular co-ordinates 10 in a plane, distance formula, section formula, locus and its equation, translation of axes, slope of a line, parallel and perpendicular lines, intercepts of a line on the coordinate axes.

Straight lines

Various forms of equations of a line, intersection of lines, angles between two lines, conditions for concurrence of three lines, distance of a point from a line, equations of internal and external bisectors of angles between two lines, coordinates of centroid, orthocentre and circumcentre of a triangle, equation of family of lines passing through the point of intersection of two lines.

Circles, conic sections

Standard form of equation of a circle, general form of the equation of a circle, its radius and centre, equation of a circle when the end points of a diameter are given, points of intersection of a line and a circle with the centre at the origin and condition for a line to be tangent to a circle, equation of the tangent. Sections of cones, equations of conic sections (parabola, ellipse and hyperbola) in standard forms, condition for $y = mx + c$ to be a tangent and point (s) of tangency.

UNIT 12: THREE DIMENSIONAL GEOMETRY:

Coordinates of a point in space, distance between two points, section formula, direction ratios and direction cosines, angle between two intersecting lines. Skew lines, the shortest distance between them and its equation. Equations of a line and a plane in different forms, intersection of a line and a plane, coplanar lines.

UNIT 13: VECTOR ALGEBRA:

Vectors and scalars, addition of vectors, components of a vector in two dimensions and three dimensional space, scalar and vector products, scalar and vector triple product.

UNIT 14: STATISTICS AND PROBABILITY:

Measures of Dispersion: Calculation of mean, median, mode of grouped and ungrouped data calculation of standard deviation, variance and mean deviation for grouped and ungrouped data.

Probability: Probability of an event, addition and multiplication theorems of probability, Baye's theorem, probability distribution of a random variate, Bernoulli trials and Binomial distribution.

UNIT 15: TRIGONOMETRY:

Trigonometrical identities and equations. Trigonometrical functions. Inverse trigonometrical functions and their properties. Heights and Distances.

UNIT 16: MATHEMATICAL REASONING:

Statements, logical operations and, or, implies, implied by, if and only if. Understanding of tautology, contradiction, converse and contrapositive.

PHYSICS

The syllabus contains two Sections - A and B. Section - A pertains to the Theory Part having 80% weightage, while Section - B contains Practical Component (Experimental Skills) having 20% weightage.

SECTION - A

UNIT 1: PHYSICS AND MEASUREMENT

Physics, technology and society, S I units, Fundamental and derived units. Least count, accuracy and precision of measuring instruments, Errors in measurement, Dimensions of Physical quantities, dimensional analysis and its applications.

UNIT 2: KINEMATICS

Frame of reference. Motion in a straight line: Position-time graph, speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity Uniformly accelerated motion, velocity-time, position-time graphs, relations for uniformly accelerated motion. Scalars and Vectors, Vector addition and Subtraction, Zero Vector, Scalar and Vector products, Unit Vector, Resolution of a Vector. Relative Velocity, Motion in a plane, Projectile Motion, Uniform Circular Motion.

UNIT 3: LAWS OF MOTION

Force and Inertia, Newton's First Law of motion; Momentum, Newton's Second Law of motion; Impulse; Newton's Third Law of motion. Law of conservation of linear momentum and its applications, Equilibrium of concurrent forces.

Static and Kinetic friction, laws of friction, rolling friction.

Dynamics of uniform circular motion: Centripetal force and its applications.

UNIT 4: WORK, ENERGY AND POWER

Work done by a constant force and a variable force; kinetic and potential energies, workenergy theorem, power.

Potential energy of a spring, conservation of mechanical energy, conservative and nonconservative forces; Elastic and inelastic collisions in one and two dimensions.

UNIT 5: ROTATIONAL MOTION

Centre of mass of a two-particle system, Centre of mass of a rigid body; Basic concepts of rotational motion; moment of a force, torque, angular momentum, conservation of angular momentum and its applications; moment of inertia, radius of gyration. Values of moments of inertia for simple geometrical

objects, parallel and perpendicular axes theorems and their applications. Rigid body rotation, equations of rotational motion.

UNIT 6: GRAVITATION

The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. Kepler's laws of planetary motion. Gravitational potential energy; gravitational potential. Escape velocity. Orbital velocity of a satellite. Geo-stationary satellites.

UNIT 7: PROPERTIES OF SOLIDS AND LIQUIDS

Elastic behaviour, Stress-strain relationship, Hooke's Law, Young's modulus, bulk modulus, modulus of rigidity. Pressure due to a fluid column; Pascal's law and its applications. Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, Reynolds number. Bernoulli's principle and its applications. Surface energy and surface tension, angle of contact, application of surface tension - drops, bubbles and capillary rise. Heat, temperature, thermal expansion; specific heat capacity, calorimetry; change of state, latent heat. Heat transfer-conduction, convection and radiation, Newton's law of cooling.

UNIT 8: THERMODYNAMICS

Thermal equilibrium, zeroth law of thermodynamics, concept of temperature. Heat, work and internal energy. First law of thermodynamics. Second law of thermodynamics: reversible and irreversible processes. Carnot engine and its efficiency.

UNIT 9: KINETIC THEORY OF GASES

Equation of state of a perfect gas, work doneon compressing a gas.Kinetic theory of gases - assumptions, concept of pressure. Kinetic energy and temperature; rms speed of gas molecules; Degrees of freedom, Law of equipartition of energy,applications to specific heat capacities of gases; Mean free path, Avogadro's number.

UNIT 10: OSCILLATIONS AND WAVES

Periodic motion - period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion (S.H.M.) and its equation; phase; oscillations of a spring -restoring force and force constant; energy in S.H.M. - kinetic and potential energies; Simple pendulum - derivation of expression for its time period; Free, forced and damped oscillations, resonance.

Wave motion. Longitudinal and transverse waves, speed of a wave. Displacement relation for a progressive wave. Principle of superposition of waves, reflection of waves, Standing waves in strings and organ pipes, fundamental mode and harmonics, Beats, Doppler effect in sound

UNIT 11: ELECTROSTATICS

Electric charges: Conservation of charge, Coulomb's law-forces between two point charges, forces between multiple charges; superposition principle and continuous charge distribution.

Electric field: Electric field due to a point charge, Electric field lines, Electric dipole, Electric field due to a dipole, Torque on a dipole in a uniform electric field.

Electric flux, Gauss's law and its applications to find field due to infinitely long uniformly charged straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell. Electric potential and its calculation for a point charge, electric dipole and system of charges; Equipotential surfaces, Electrical potential energy of a system of two point charges in an electrostatic field.

Conductors and insulators, Dielectrics and electric polarization, capacitor, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, Energy stored in a capacitor.

UNIT 12: CURRRENT ELECTRICITY

Electric current, Drift velocity, Ohm's law, Electrical resistance, Resistances of different materials, V-I characteristics of Ohmic and nonohmic conductors, Electrical energy and power, Electrical resistivity, Colour code for resistors; Series and parallel combinations of resistors; Temperature dependence of resistance.

Electric Cell and its Internal resistance, potential difference and emf of a cell, combination of cells in series and in parallel. Kirchhoff's laws and their applications. Wheatstone bridge, Metre bridge. Potentiometer - principle and its applications.

UNIT 13: MAGNETIC EFFECTS OF CURRENT AND MAGNETISM

Biot - Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long current carrying straight wire and solenoid. Force on a moving charge in uniform magnetic and electric fields. Cyclotron.

Force on a current-carrying conductor in a uniform magnetic field. Force between two parallel current-carrying conductors-definition of ampere. Torque experienced by a current loop in uniform magnetic field; Moving coil galvanometer, its current sensitivity and conversion to ammeter and voltmeter.

Current loop as a magnetic dipole and its magnetic dipole moment. Bar magnet as an equivalent solenoid, magnetic field lines; Earth's magnetic field and magnetic elements. Para-, dia- and ferro- magnetic substances.

Magnetic susceptibility and permeability, Hysteresis, Electromagnets and permanent magnets.

UNIT 14: ELECTROMAGNETIC INDUCTION AND ALTERNATING CURRENTS

Electromagnetic induction; Faraday's law, induced emf and current; Lenz's Law, Eddy currents. Self and mutual inductance. Alternating currents, peak and rms value of alternating current/ voltage; reactance and impedance; LCR series circuit, resonance; Quality factor, power in AC circuits, wattless current. AC generator and transformer.

UNIT 15: ELECTROMAGNETIC WAVES

Electromagnetic waves and their characteristics. Transverse nature of electromagnetic waves.

Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, Xrays, gamma rays). Applications of e.m. waves.

UNIT 16: OPTICS

Reflection and refraction of light at plane and spherical surfaces, mirror formula, Total internal reflection and its applications, Deviation and Dispersion of light by a prism, Lens Formula, Magnification, Power of a Lens, Combination of thin lenses in contact, Microscope and Astronomical Telescope (reflecting and refracting) and their magnifyingpowers.

Wave optics: wavefront and Huygens' principle, Laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light. Diffraction due to a single slit, width of central maximum. Resolving power of microscopes and astronomical telescopes, Polarisation, plane polarized light; Brewster's law, uses of plane polarized light and Polaroids.

UNIT 17: DUAL NATURE OF MATTER AND RADIATION

Dual nature of radiation. Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation; particle nature of light. Matter waves-wave nature of particle, de Broglie relation. Davisson-Germer experiment.

UNIT 18: ATOMS AND NUCLEI

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum. Composition and size of nucleus, atomic masses, isotopes, isobars; isotones. Radioactivity-alpha, beta and gamma particles/rays and their properties; radioactive decay law. Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number, nuclear fission and fusion.

UNIT 19: ELECTRONIC DEVICES

Semiconductors; semiconductor diode: I-V characteristics in forward and reverse bias; diode as a rectifier; I-V characteristics of LED, photodiode, solar cell and Zener diode; Zener diode as a voltage regulator. Junction transistor, transistor action, characteristics of a transistor; transistor as an amplifier (common emitter configuration) and oscillator. Logic gates (OR, AND, NOT, NAND and NOR). Transistor as a switch.

UNIT 20: COMMUNICATION SYSTEMS

Propagation of electromagnetic waves in the atmosphere; Sky and space wave propagation, Need for modulation, Amplitude and Frequency Modulation, Bandwidth of signals, Bandwidth of Transmission medium, Basic Elements of a Communication System (Block Diagram only).

SECTION-B

UNIT 21: EXPERIMENTAL SKILLS

Familiarity with the basic approach and observations of the experiments and activities:

1. Vernier callipers-its use to measure internal and external diameter and depth of a vessel.
2. Screw gauge-its use to determine thickness/ diameter of thin sheet/wire.
3. Simple Pendulum-dissipation of energy by plotting a graph between square of amplitude and time.
4. Metre Scale - mass of a given object by principle of moments.
5. Young's modulus of elasticity of the material of a metallic wire.
6. Surface tension of water by capillary rise and effect of detergents.
7. Co-efficient of Viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body.
8. Plotting a cooling curve for the relationship between the temperature of a hot body and time.
9. Speed of sound in air at room temperature using a resonance tube.
10. Specific heat capacity of a given (i) solid and (ii) liquid by method of mixtures.
11. Resistivity of the material of a given wire using metre bridge.
12. Resistance of a given wire using Ohm's law.
13. Potentiometer -
    (i) Comparison of emf of two primary cells.
    (ii) Determination of internal resistance of a cell.

14. Resistance and figure of merit of a galvanometer by half deflection method.
15. Focal length of:
    (i) Convex mirror
    (ii) Concave mirror, and
    (iii) Convex lens
    using parallax method.
16. Plot of angle of deviation vs angle of incidence for a triangular prism.
17. Refractive index of a glass slab using a travelling microscope.
18. Characteristic curves of a p-n junction diode in forward and reverse bias.
19. Characteristic curves of a Zener diode and finding reverse break down voltage.
20. Characteristic curves of a transistor and finding current gain and voltage gain.
21. Identification of Diode, LED, Transistor, IC, Resistor, Capacitor from mixed collection of such items.
22. Using multimeter to:
    (i) Identify base of a transistor
    (ii) Distinguish between npn and pnp type transistor
    (iii) See the unidirectional flow of current in case of a diode and an LED.
    (iv) Check the correctness or otherwise of a given electronic component (diode, transistor or IC).

CHEMISTRY
SECTION: A
PHYSICAL CHEMISTRY

UNIT 1: SOME BASIC CONCEPTS IN CHEMISTRY

Matter and its nature, Dalton's atomic theory; Concept of atom, molecule, element and compound; Physical quantities and their measurements in Chemistry, precision and accuracy, significant figures, S.I. Units, dimensional analysis; Laws of chemical combination; Atomic and molecular masses, mole concept, molar mass, percentage composition, empirical and molecular formulae; Chemical equations and stoichiometry.

UNIT 2: STATES OF MATTER

Classification of matter into solid, liquid and gaseous states.

Gaseous State:

Measurable properties of gases; Gas laws - Boyle's law, Charle's law, Graham's law of diffusion, Avogadro's law, Dalton's law of partial pressure; Concept of Absolute scale of temperature; Ideal gas equation; Kinetic theory of gases (only postulates); Concept of average, root mean square and most probable velocities; Real gases, deviation from Ideal behaviour, compressibility factor and van der Waals equation.

Liquid State:

Properties of liquids - vapour pressure, viscosity and surface tension and effect of temperature on them (qualitative treatment only).

Solid State:

Classification of solids: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea); Bragg's Law and its applications; Unit cell and lattices, packing in solids (fcc, bcc and hcp lattices), voids, calculations involving unit cell parameters, imperfection in solids; Electrical and magnetic properties.

UNIT 3: ATOMIC STRUCTURE

Thomson and Rutherford atomic models and their limitations; Nature of electromagnetic radiation, photoelectric effect; Spectrum of hydrogen atom, Bohr model of hydrogen atom - its postulates, derivation of the relations for energy of the electron and radii of the different orbits, limitations of Bohr's model; Dual nature of matter, de-Broglie's relationship, Heisenberg uncertainty principle. Elementary ideas of quantum mechanics, quantum mechanical model of atom, its important features. Concept of atomic orbitals as one electron wave functions; Variation of ψ and ψ^2 with r for 1s and 2s orbitals; various quantum numbers (principal, angular momentum and magnetic quantum numbers) and their significance; shapes of s, p and d - orbitals, electron spin and spin quantum number; Rules for filling electrons in orbitals - aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of elements, extra stability of half-filled and completely filled orbitals.

UNIT 4: CHEMICAL BONDING AND MOLECULAR STRUCURE

Kossel - Lewis approach to chemical bond formation, concept of ionic and covalent bonds.

Ionic Bonding: Formation of ionic bonds, factors affecting the formation of ionic bonds; calculation of lattice enthalpy.

Covalent Bonding: Concept of electronegativity, Fajan's rule, dipole moment; Valence Shell Electron Pair Repulsion (VSEPR) theory and shapes of simple molecules.

Quantum mechanical approach to covalent bonding: Valence bond theory - Its important features, concept

of hybridization involving s, p and d orbitals; Resonance.

Molecular Orbital Theory - Its important features, LCAOs, types of molecular orbitals (bonding, antibonding), sigma and pi-bonds, molecular orbital electronic configurations of homonuclear diatomic molecules, concept of bond order, bond length and bond energy.

Elementary idea of metallic bonding. Hydrogen bonding and its applications.

UNIT 5: CHEMICAL THERMODYNAMICS

Fundamentals of thermodynamics: System and surroundings, extensive and intensive properties, state functions, types of processes.

First law of thermodynamics - Concept of work, heat internal energy and enthalpy, heat capacity, molar heat capacity; Hess's law of constant heat summation; Enthalpies of bond dissociation, combustion, formation, atomization, sublimation, phase transition, hydration, ionization and solution.

Second law of thermodynamics; Spontaneity of processes; ΔS of the universe and ΔG of the system as criteria for spontaneity, ΔG° (Standard Gibbs energy change) and equilibrium constant.

UNIT 6: SOLUTIONS

Different methods for expressing concentration of solution - molality, molarity, mole fraction, percentage (by volume and mass both), vapour pressure of solutions and Raoult's Law - Ideal and non-ideal solutions, vapour pressure - composition, plots for ideal and non-ideal solutions; Colligative properties of dilute solutions - relative lowering of vapour pressure, depression of freezing point, elevation of boiling point and osmotic pressure; Determination of molecular mass using colligative properties; Abnormal value of molar mass, van't Hoff factor and its significance.

UNIT 7: EQUILIBRIUM

Meaning of equilibrium, concept of dynamic equilibrium.

Equilibria involving physical processes: Solid -liquid, liquid - gas and solid - gas equilibria, Henry's law, general characterics of equilibrium involving physical processes.

Equilibria involving chemical processes: Law of chemical equilibrium, equilibrium constants (Kp and Kc) and their significance, significance of ΔG and ΔG° in chemical equilibria, factors affecting equilibrium concentration, pressure, temperature, effect of catalyst; Le Chatelier's principle.

Ionic equilibrium: Weak and strong electrolytes, ionization of electrolytes, various concepts of acids and bases (Arrhenius, Brönsted - Lowry and Lewis) and their ionization, acid - base equilibria (including multistage ionization) and ionization constants, ionization of water, pH scale, common ion effect, hydrolysis of salts and pH of their solutions, solubility of sparingly soluble salts and solubility products, buffer solutions.

UNIT 8: REDOX REACTIONS AND ELECTROCHEMISTRY

Electronic concepts of oxidation and reduction, redox reactions, oxidation number, rules for assigning oxidation number, balancing of redox reactions.

Ecctrolytic and metallic conduction, conductance in electrolytic solutions, molar conductivities and their variation with concentration: Kohlrausch's law and its applications.

Electrochemical cells - Electrolytic and Galvanic cells, different types of electrodes, electrode potentials including standard electrode potential, half - cell and cell reactions, emf of a Galvanic cell and its measurement; Nernst equation and its applications; Relationship between cell potential and Gibbs' energy change; Dry cell and lead accumulator; Fuel cells.

UNIT 9 : CHEMICAL KINETICS

Rate of a chemical reaction, factors affecting the rate of reactions: concentration, temperature, pressure and catalyst; elementary and complex reactions, order and molecularity of reactions, rate law, rate constant and its units, differential and integral forms of zero and first order reactions, their characteristics and half - lives, effect of temperature on rate of reactions - Arrhenius theory, activation energy and its calculation, collision theory of bimolecular gaseous reactions (no derivation).

UNIT-10 : SURFACE CHEMISTRY

Adsorption- Physisorption and chemisorption and their characteristics, factors affecting adsorption of gases on solids - Freundlich and Langmuir adsorption isotherms, adsorption from solutions.

Catalysis - Homogeneous and heterogeneous, activity and selectivity of solid catalysts, enzyme catalysis and its mechanism.

Colloidal state- distinction among true solutions, colloids and suspensions, classification of colloids - lyophilic, lyophobic; multimolecular, macromolecular and associated colloids (micelles), preparation and properties of colloids - Tyndall effect, Brownian movement, electrophoresis, dialysis, coagulation and flocculation; Emulsions and their characteristics.

SECTION - B

INORGANIC CHEMISTRY

UNIT 11: CLASSIFICATON OF ELEMENTS AND PERIODICITY IN PROPERTIES

Modern periodic law and present form of the periodic table, s, p, d and f block elements, periodic trends in properties of elements atomic and ionic radii, ionization enthalpy, electron gain enthalpy, valence, oxidation states and chemical reactivity.

UNIT 12: GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF METALS

Modes of occurrence of elements in nature, minerals, ores; Steps involved in the extraction of metals - concentration, reduction (chemical and electrolytic methods) and refining with special reference to the extraction of Al, Cu, Zn and Fe; Thermodynamic and electrochemical principles involved in the extraction of metals.

UNIT 13: HYDROGEN

Position of hydrogen in periodic table, isotopes, preparation, properties and uses of hydrogen; Physical and chemical properties of water and heavy water; Structure, preparation, reactions and uses of hydrogen peroxide; Classification of hydrides - ionic, covalent and interstitial; Hydrogen as a fuel.

UNIT 14: S - BLOCK ELEMENTS (ALKALI AND ALKALINE EARTH METALS)

Group - 1 and 2 Elements

General introduction, electronic configuration and general trends in physical and chemical properties of elements, anomalous properties of the first element of each group, diagonal relationships.

Preparation and properties of some important compounds - sodium carbonate and sodium hydroxide and sodium hydrogen carbonate; Industrial uses of lime, limestone, Plaster of Paris and cement; Biological significance of Na, K, Mg and Ca.

UNIT 15: P - BLOCK ELEMENTS

Group - 13 to Group 18 Elements

General Introduction: Electronic configuration and general trends in physical and chemical properties of elements across the periods and down the groups; unique behaviour of the first element in each group.

Groupwise study of the p - block elements
Group - 13

Preparation, properties and uses of boron and aluminium; Structure, properties and uses of borax, boric acid, diborane, boron trifluoride, aluminium chloride and alums.

Group - 14

Tendency for catenation; Structure, properties and uses of Allotropes and oxides of carbon, silicon tetrachloride, silicates, zeolites and silicones.

Group - 15

Properties and uses of nitrogen and phosphorus; Allotrophic forms of phosphorus; Preparation, properties, structure and uses of ammonia, nitric acid, phosphine and phosphorus halides, (PCl_3, PCl_5); Structures of oxides and oxoacids of nitrogen and phosphorus.

Group - 16

Preparation, properties, structures and uses of ozone; Allotropic forms of sulphur; Preparation, properties, structures and uses of sulphuric acid (including its industrial preparation); Structures of oxoacids of sulphur.

Group - 17

Preparation, properties and uses of hydrochloric acid; Trends in the acidic nature of hydrogen halides; Structures of Interhalogen compounds and oxides and oxoacids of halogens.

Group -18

Occurrence and uses of noble gases; Structures of fluorides and oxides of xenon.

UNIT 16: d - and f - BLOCK ELEMENTS

Transition Elements

General introduction, electronic configuration, occurrence and characteristics, general trends in properties of the first row transition elements - physical properties, ionization enthalpy, oxidation states, atomic radii, colour, catalytic behaviour, magnetic properties, complex formation, interstitial compounds, alloy formation; Preparation, properties and uses of $K_2Cr_2O_7$ and $KMnO_4$.

Inner Transition Elements

Lanthanoids - Electronic configuration, oxidation states and lanthanoid contraction.

Actinoids - Electronic configuration and oxidation states.

UNIT 17: CO-ORDINATION COMPOUNDS

Introduction to co-ordination compounds, Werner's theory; ligands, co-ordination number, denticity, chelation; IUPAC nomenclature of mononuclear co-ordination compounds, isomerism; Bonding-Valence bond approach and basic ideas of Crystal field theory, colour and magnetic properties; Importance of co-ordination compounds (in qualitative analysis, extraction of metals and in biological systems).

UNIT 18: ENVIRONMENTAL CHEMISTRY

Environmental pollution - Atmospheric, water and soil.

Atmospheric pollution - Tropospheric and Stratospheric

Tropospheric pollutants - Gaseous pollutants: Oxides of carbon, nitrogen and sulphur, hydrocarbons; their sources, harmful effects and prevention; Green house effect and Global warming; Acid rain;

Particulate pollutants: Smoke, dust, smog, fumes, mist; their sources, harmful effects and prevention.

Stratospheric pollution- Formation and breakdown of ozone, depletion of ozone layer - its mechanism and effects.

Water Pollution - Major pollutants such as, pathogens, organic wastes and chemical pollutants; their harmful effects and prevention.

Soil pollution - Major pollutants such as: Pesticides (insecticides,. herbicides and fungicides), their harmful effects and prevention.

Strategies to control environmental pollution.

SECTION-C

ORGANIC CHEMISTRY

UNIT 19: PURIFICATION AND CHARACTERISATION OF ORGANIC COMPOUNDS

Purification - Crystallization, sublimation, distillation, differential extraction and chromatography - principles and their applications.

Qualitative analysis - Detection of nitrogen, sulphur, phosphorus and halogens.

Quantitative analysis (basic principles only) - Estimation of carbon, hydrogen, nitrogen, halogens, sulphur, phosphorus.

Calculations of empirical formulae and molecular formulae; Numerical problems in organic quantitative analysis.

UNIT 20: SOME BASIC PRINCIPLES OF ORGANIC CHEMISTRY

Tetravalency of carbon; Shapes of simple molecules - hybridization (s and p); Classification of organic compounds based on functional groups: and those containing halogens, oxygen, nitrogen and sulphur; Homologous series; Isomerism - structural and stereoisomerism.

Nomenclature (Trivial and IUPAC)

Covalent bond fission - Homolytic and heterolytic: free radicals, carbocations and carbanions; stability of carbocations and free radicals, electrophiles and nucleophiles.

Electronic displacement in a covalent bond

- Inductive effect, electromeric effect, resonance and hyperconjugation.

Common types of organic reactions- Substitution, addition, elimination and rearrangement.

UNIT 21: HYDROCARBONS

Classification, isomerism, IUPAC nomenclature, general methods of preparation, properties and reactions.

Alkanes - Conformations: Sawhorse and Newman projections (of ethane); Mechanism of halogenation of alkanes.

Alkenes - Geometrical isomerism; Mechanism of electrophilic addition: addition of hydrogen, halogens, water, hydrogen halides (Markownikoff's and peroxide effect); Ozonolysis and polymerization.

Alkynes - Acidic character; Addition of hydrogen, halogens, water and hydrogen halides; Polymerization.

Aromatic hydrocarbons - Nomenclature, benzene - structure and aromaticity; Mechanism of electrophilic substitution: halogenation, nitration, Friedel - Craft's alkylation and acylation, directive influence of functional group in mono-substituted benzene.

UNIT 22: ORGANIC COMPOUNDS CONTAINING HALOGENS

General methods of preparation, properties and reactions; Nature of C-X bond; Mechanisms of substitution reactions.

Uses; Environmental effects of chloroform, iodoform freons and DDT.

UNIT 23: ORGANIC COMPOUNDS CONTAINING OXYGEN

General methods of preparation, properties, reactions and uses.

ALCOHOLS, PHENOLS AND ETHERS

Alcohols: Identification of primary, secondary and tertiary alcohols; mechanism of dehydration.

Phenols: Acidic nature, electrophilic substitution reactions: halogenation, nitration and sulphonation, Reimer - Tiemann reaction.

Ethers: Structure.

Aldehyde and Ketones: Nature of carbonyl group; Nucleophilic addition to >C=O group, relative reactivities of aldehydes and ketones; Important reactions such as - Nucleophilic addition reactions (addition of HCN, NH_3 and its derivatives), Grignard reagent; oxidation; reduction (Wolff Kishner and Clemmensen); acidity of α-hydrogen, aldol condensation, Cannizzaro reaction, Haloform reaction;

Chemical tests to distinguish between aldehydes and Ketones.

CARBOXYLIC ACIDS

Acidic strength and factors affecting it.

UNIT 24: ORGANIC COMPOUNDS CONTAINING NITROGEN

General methods of preparation, properties, reactions and uses.

Amines: Nomenclature, classification, structure, basic character and identification of primary, secondary and tertiary amines and their basic character.

Diazonium Salts: Importance in synthetic organic chemistry.

UNIT 25: POLYMERS

General introduction and classification of polymers, general methods of polymerization-addition and condensation, copolymerization;

Natural and synthetic rubber and vulcanization; some important polymers with emphasis on their monomers and uses - polythene, nylon, polyester and bakelite.

UNIT 26: BIOMOLECULES

General introduction and importance of biomolecules.

CARBOHYDRATES - Classification: aldoses and ketoses; monosaccharides (glucose and fructose) and constituent monosaccharides of oligosaccharides (sucrose, lactose and maltose).

PROTEINS - Elementary Idea of α-amino acids, peptide bond, polypeptides; Proteins: primary, secondary, tertiary and quaternary structure (qualitative idea only), denaturation of proteins, enzymes.

VITAMINS - Classification and functions.

NUCLEIC ACIDS - Chemical constitution of DNA and RNA.

Biological functions of nucleic acids.

UNIT 27: CHEMISTRY IN EVERYDAY LIFE

Chemicals in medicines - Analgesics, tranquilizers, antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamins - their meaning and common examples.

Chemicals in food - Preservatives, artificial sweetening agents - common examples.

Cleansing agents - Soaps and detergents, cleansing action.

UNIT 28: PRINCIPLES RELATED TO PRACTICAL CHEMISTRY

- Detection of extra elements (N,S, halogens) in organic compounds; Detection of the following functional groups: hydroxyl (alcoholic and phenolic), carbonyl (aldehyde and ketone), carboxyl and amino groups in organic compounds.
- Chemistry involved in the preparation of the following:

Inorganic compounds: Mohr's salt, potash alum.

Organic compounds: Acetanilide, pnitroacetanilide, aniline yellow, iodoform.

- Chemistry involved in the titrimetric excercises - Acids bases and the use of indicators, oxalic-acid vs $KMnO_4$, Mohr's salt vs $KMnO_4$.
- Chemical principles involved in the qualitative salt analysis:

Cations - Pb^{2+}, Cu^{2+}, $A\ell^{3+}$, Fe^{3+}, Zn^{2-}, Ni^{2+}, Ca^{2-}, Ba^{2+}, Mg^{2+}, NH_4^+.

Anions- CO_3^{2-}, S^{2-}, SO_4^{2-}, NO_3^-, NO_2^-, $C\ell^-$, Br^-, I^-.

(Insoluble salts excluded).

- Chemical principles involved in the following experiments:

1. Enthalpy of solution of $CuSO_4$
2. Enthalpy of neutralization of strong acid and strong base.
3. Preparation of lyophilic and lyophobic sols.
4. Kinetic study of reaction of iodide ion with hydrogen peroxide at room temperature.

SYLLABUS FOR APTITUDE TEST B. ARCH./B. PLANNING

Part - I Awareness of persons, places, Buildings, Materials.) Objects, Texture related to Architecture and build-environment. Visualising three dimensional objects from two dimensional drawings. Visualising. different sides of three dimensional objects. Analytical Reasoning Mental Ability (Visual, Numerical and Verbal).

Part - II Three dimensional - perception: Understanding and appreciation of scale and proportion of objects, building forms and elements, colour texture, harmony and contrast. Design and drawing of geometrical or abstract shapes and patterns in pencil. Transformation of forms both 2 D and 3 D union, substraction, rotation, development of surfaces and volumes, Generation of Plan, elevations and 3 D views of objects. Creating two dimensional and three dimensional compositions using given shapes and forms.

Sketching of scenes and activities from memory of urbanscape (public space, market, festivals, street scenes, monuments, recreational spaces etc.), landscape (river fronts, jungles, gardens, tre es, plants etc.) and rural life.

Note: Candidates are advised to bring pencils, own geometry box set, erasers and colour pencils and crayons for the Aptitude Test.

Appendix 2

LIST OF EXAMINATION CITIES FOR JEE (Main) – 2013

a) Pen and Paper Based Examination

Joint Entrance Examination (Main) – 2013 will be conducted in Pen and Paper based examination mode for the B.E./B.Tech. and B.Arch/B.Planning courses on 07.04.2013 in the following cities.

CITY	CODE
ANDAMAN & NICOBAR	
PORT BLAIR	801
ANDHRA PRADESH	
GUNTUR	802
KHAMMAM	803
TIRUPATI	804
WARRANGAL	805
ARUNACHAL PRADESH	
ITANAGAR	806
ASSAM	
GUWAHATI	807
SILCHAR	808
BIHAR	
GAYA	809
MUZZAFARPUR	810
PATNA	811
CHHATTISGARH	
RAIPUR	812
DADAR & NAGAR HAVELI	
DADAR & NAGAR HAVELI	813
DAMAN & DIU	
DAMAN & DIU	814
GOA	
PANAJI	815
GUJARAT	
ANAND	816
BHUJ	817
GANDHI NAGAR	818
GODHRA	819
HIMMAT NAGAR	820
JAM NAGAR	821
NAVSARI	822
VALSAD	823
VEJALPUR *(AHMEDABAD-RURAL)*	824
HARYANA	
FARIDABAD	825
GURGAON	826
HISSAR	827
KARNAL	828
KURUKSHETRA	829
HIMACHAL PRADESH	
HAMIRPUR	830
SHIMLA	831
JAMMU & KASHMIR	
JAMMU	832
SRINAGAR	833
JHARKHAND	
BOKARO	834
DHANBAD	835
JAMSHEDPUR	836
RANCHI	837
KARNATAKA	
HUBLI	838
MANGALORE	839
KERALA	
KOZHIKODE	840
THIRUVANANTHAPURAM	841
LAKSHYADEEP	
KAVARATI	842
MADHYA PRADESH	
GWALIOR	843
JABALPUR	844
INDORE	845
MAHARASHTRA	
AMRAVATI	846
AURANGABAD	847
NASHIK	848
PUNE	849
THANE	850
MANIPUR	
IMPHAL	851
MEGHALAYA	
SHILLONG	852
MIZORAM	
AIZWAL	853
NAGALAND	
KOHIMA	854
ODISHA	
ROURKELA	855
PUDUCHERRY	
PUDUCHERRY	856
PUNJAB	
AMRITSAR	857
BHATINDA	858
RAJASTHAN	
AJMER	859
BIKANER	860
JODHPUR	861
UDAIPUR	862
SIKKIM	
GANGTOK	863
TAMILNADU	
COIMBATORE	864
MADURAI	865
TRIPURA	
AGARTALA	866
UTTARAKHAND	
HALDWANI	867
HARIDWAR	868
PANTNAGAR	869
ROORKEE	870
UTTAR PRADESH	
AGRA	871
BAREILLY	872
GORAKHPUR	873
KANPUR	874
VARANASI	875
WEST BENGAL	
DURGAPUR	876
SILIGURI	877
HOWRAH	878
CITIES OUTSIDE INDIA	
BEHRAIN	879
DUBAI	880
RIYAD	881
MUSCAT	882

b) Computer Based Examination

Joint Entrance Examination (Main) – 2013 will be conducted in Computer based examination mode during 8th April 2013 to 25th April 2013 in the following cities.

CITY	CITY CODE	CITY	CITY CODE
HYDERABAD	901	MUMBAI	915
VIJAYAWADA	902	NAGPUR	916
VISAKHAPATNAM	903	BHUBANESWAR	917
CHANDIGARH	904	JALANDHAR	918
DELHI-NCR *(EXCEPT FARIDABAD & GURGAON)*	905	JAIPUR	919
		KOTA	920
AHMEDABAD	906	CHENNAI	921
BHAVNAGAR	907	DEHRADUN	922
JUNAGARH	908	ALLAHABAD	923
RAJKOT	909	LUCKNOW	924
SURAT	910	KOLKATA	925
VADODARA	911	**CITIES OUTSIDE INDIA**	
BENGALURU	912	COLOMBO	926
ERNAKULAM	913	KATHMANDU	927
BHOPAL	914	SINGAPORE	928

REMARKS:

Candidates who wish to appear in Paper-1 and Paper-2 both may kindly note that Paper-2 will be conducted only in Pen and Paper based examination mode. If they opt for Paper-1 in computer based examination mode, the Paper-1 will be held between 08-04-2013 and 25-04-2013 while the Paper-2 will be held on 07.04.2012 in the cities mentioned in this table during 02:00-05:00 PM.

Appendix 3

EXAMINATION CITIES FOR JEE (Advanced) – 2013

State/City/Town	Code
IIT BOMBAY ZONE	
GOA	
Panaji	101
GUJARAT	
Ahmedabad	102
Surat	103
Vadodara	104
MAHARASHTRA	
Mumbai	105
Nagpur	106
Navi Mumbai	107
Pune	108
RAJASTHAN	
Ajmer	109
Jaipur	110
Jodhpur	111
IIT DELHI ZONE	
DELHI	
Delhi (East)	201
Delhi (West)	202
Delhi (North)	203
Delhi (South)	204
Delhi (Central)	205
HARYANA	
Faridabad	206
Gurgaon	207
JAMMU & KASHMIR	
Jammu	208
MADHYA PRADESH	
Indore	209
RAJASTHAN	
Sikar	210
Udaipur	211
UTTAR PRADESH	
Aligarh	212
Mathura	213
UAE	
Dubai	214
IIT GUWAHATI ZONE	
ARUNACHAL PRADESH	
Itanagar	301
ASSAM	
Guwahati	302
Jorhat	303
Silchar	304
BIHAR	
Gaya	305
Katihar	306
Muzaffarpur	307
Patna	308
MANIPUR	
Imphal	309
MEGHALAYA	
Shillong	310
WEST BENGAL	
Siliguri	311
IIT KANPUR ZONE	
MADHYA PRADESH	
Bhopal	401
Gwalior	402
Jabalpur	403
UTTARAKHAND	
Pantnagar	404
UTTAR PRADESH	
Agra	405
Allahabad	406
Gorakhpur	407
Jhansi	408
Kanpur	409
Lucknow	410
IIT KHARAGPUR ZONE	
ANDAMAN AND NICOBAR ISLANDS	
Port Blair	501
ANDHRA PRADESH	
Visakhapatnam	502
CHATTISGARH	
Bhilai	503
Bilaspur	504
Raipur	505
JHARKHAND	
Bokaro	506
Dhanbad	507
Jamshedpur	508
Ranchi	509
ODISHA	
Bhubaneswar	510
Rourkela	511
SIKKIM	
Gangtok	512
TRIPURA	
Agartala	513
WEST BENGAL	
Durgapur	514
Kharagpur	515
Kolkata (North)	516
Kolkata (Salt Lake)	517
Kolkata (South)	518
Malda	519
IIT MADRAS ZONE	
ANDHRA PRADESH	
Hyderabad	601
Nellore	602
Vijayawada	603
Warangal	604
KARNATAKA	
Bengaluru	605
Mangalore	606
KERALA	
Kochi	607
Kozhikode	608
Thiruvananthapuram	609
PUDUCHERRY	
Puducherry	610
TAMIL NADU	
Chennai	611
Madurai	612
IIT ROORKEE ZONE	
CHANDIGARH	
Chandigarh	701
HARYANA	
Kurukshetra	702
Panipat	703
Rohtak	704
HIMACHAL PRADESH	
Palampur	705
Shimla	706
PUNJAB	
Amritsar	707
Bathinda	708
Jalandhar	709
Ludhiana	710
Patiala	711
UTTARAKHAND	
Dehradun	712
Roorkee	713
UTTAR PRADESH	
Bareilly	714
Gautam Budh Nagar *(Noida)*	715
Ghaziabad	716
Meerut	717
Moradabad	718
Varanasi	719

Appendix 4

LIST OF QUALIFYING EXAMINATIONS

I. The final examination of the 10+2 system, conducted by any recognized central/ state Board, such as Central Board of Secondary Education, New Delhi; Council for the Indian School Certificate Examinations, New Delhi; etc.

II. Intermediate or two-year Pre-University examination conducted by a recognized Board/ University.

III. Final examination of the two-year course of the Joint Services Wing of the National Defence Academy.

IV. H.S.C. vocational examination.

V. Senior Secondary School Examination conducted by the National Institute of Open Schooling with a minimum of five subjects.

VI. A Diploma recognized by AICTE or a state board of technical education of at least 3 year duration.

VII. Any Public School/ Board/ University examination in India or in any foreign country recognized as equivalent to the 10+2 system by the Association of Indian Universities (AIU).

VIII. General Certificate Education (GCE) examination (London / Cambridge / Sri Lanka) at the Advanced (A) level. **[Only for Admission to IITs]**

IX. High School Certificate Examination of the Cambridge University or International Baccalaureate Diploma of the International Baccalaureate Office, Geneva. **[Only for Admission to IITs]**

In case the relevant QE is not a public examination, the candidate must have passed at least one public (Board or Pre-University) examination at an earlier level. **[Only for Admission to IITs]**

Appendix 5

STATE CODE OF ELIGIBILITY

State Code of eligibility means the Code of the State from where the candidate has passed Class 12th / Other qualifying examination by virtue of which he/she becomes eligible to appear in the JEE (Main) for admission to B.E/B.Tech and B.Arch/B. Planning Courses of the institutions/ Colleges of the States/UT.

Note- If a candidate has passed Class 12th/ Other qualifying examination from one state but appeared for improvement from another state, his/her state code of eligibility will be from where he/she has originally passed Class 12th/ Other qualifying examination and not the state from where he/she has appeared for improvement.

Indian nationals passing the equivalent qualifying examination from an institution abroad, the State of Eligibility will be determined on the basis of permanent address in India as given in the Passport of the candidate.

The following table lists all State codes of Eligibility.

NAME OF THE STATE /UT	CODE
Andaman & Nicobar Islands (UT)	01
Andhra Pradesh	02
Arunachal Pradesh	03
Assam	04
Bihar	05
Chandigarh (UT)	06
Chhattisgarh	07
Dadra & Nagar Haveli (UT)	08
Daman & Diu (UT)	09
Delhi (NCT)	10
Goa	11
Gujarat	12
Haryana	13
Himachal Pradesh	14
Jammu & Kashmir	15
Jharkhand	16
Karnataka	17
Kerala	18

Lakshadweep (UT)	19
Madhya Pradesh	20
Maharashtra	21
Manipur	22
Meghalaya	23
Mizoram	24
Nagaland	25
Odisha	26
Puducherry (UT)	27
Punjab	28
Rajasthan	29
Sikkim	30
Tamil Nadu	31
Tripura	32
Uttar Pradesh	33
Uttarakhand	34
West Bengal	35

Appendix 6

TENTATIVE LIST OF PARTICIPATING INSTITUTIONS IN CCB COUNSELLING

National Institutes of Technology (NITs)

1. National Institute of Technology , Agartala (Tripura)
2. Motilal Nehru National Institute of Technology, Allahabad (U.P.)
3. National Institute of Technology, Arunachal Pradesh.
4. Maulana Azad National Institute of Technology, Bhopal (MP)
5. National Institute of Technology, Calicut (Kerela)
6. National Institute of Technology, Delhi
7. National Institute of Technology, Durgapur (West Bengal)
8. National Institute of Technology, Goa
9. National Institute of Technology, Hamirpur (Himachal Pradesh)
10. Malviya National Institute of Technology, Jaipur (Rajasthan)
11. Dr. B R Ambedkar National Institute of Technology, Jalandhar (Punjab)
12. National Institute of Technology, Jamshedpur (Jharkhand)
13. National Institute of Technology, Kurukshetra (Haryana)
14. National Institute of Technology, Manipur
15. National Institute of Technology, Meghalaya
16. National Institute of Technology, Mizoram
17. National Institute of Technology, Nagaland
18. Visvesvaraya National Institute of Technology, Nagpur (Maharashtra)
19. National Institute of Technology, Patna (Bihar)
20. National Institute of Technology, Puducherry
21. National Institute of Technology, Raipur (Chhattisgarh)
22. National Institute of Technology, Rourkela (Odisha)
23. National Institute of Technology, Sikkim
24. National Institute of Technology, Silchar (Assam)
25. National Institute of Technology, Hazartbal, Srinagar (J & K)
26. Sardar Vallabhbhai National Institute of Technology, Surat (Gujarat)
27. National Institute of Technology, Surathkal, Mangalore (Karnataka)
28. National Institute of Technology, Tiruchirapalli (Tamil Nadu)
29. National Institute of Technology, Uttrakhand

30. National Institute of Technology, Warangal (Andhra Pradesh)

Indian Institutes of Information Technology (IIITs, IIITM & IIITDM)

1. Atal Bihari Vajpayee Indian Institute of Information Technology & Management, Gwalior (M.P.)
2. Indian Institute of Information Technology, Design & Manufacturing, Kanchipuram, Chennai (Tamil Nadu)
3. Indian Institute of Information Technology, Amethi, Allahabad (U.P.)
4. Indian Institute of Information Technology, Jhalwa, Allahabad (UP)
5. Pandit Dwarka Prasad Mishra Indian Institute of Information Technology, Design & Manufacturing, Jabalpur (M.P.)

Other Central Government/State Government Funded Institutions

1. Assam University, Silchar (Assam)
2. Birla Institute of Technology, Mesra, Ranchi (Jharkhand)
3. Gurukul Kangri Vishwavidyalaya, Haridwar (Uttarakhand)
4. Indian Institute of Carpet Technology, Bhadohi (U.P.)
5. Institute of Technology, Guru Ghasidas Vishawavidyalaya, Bilaspur (C.G.)
6. J.K. Institute of Applied Physics & Technology, University of Allahabad, Allahabad- 211002 (U.P.)
7. Mizoram University, Aizwal-796009
8. National Insitute of Foundary & Forge Technology, P.O. Hatia, Ranchi (Jharkhand).
9. School of Planning and Architecture, Bhopal (Madhya Pradesh)
10. School of Planning and Architecture, I.P. Estate, New Delhi (SPA, Delhi).
11. School of Planning and Architecture, Vijaywada (Andhra Pradesh)
12. Shri Mata Vaishno Devi University, Katra-182320 (J & K)
13. Tezpur University, NAPAAM, Tezpur (Assam)

Following Self Financed Deemed Universities/Universities/Other Institutions also participated in CCB Counselling through AIEEE 2012

1. ACME college of Engineering, Ghaziabad (UP)
2. Amity School of Engineering, Amity University, Gwalior (MP)
3. Amity School of Engineering, Amity University, Lucknow (UP)
4. Amity School of Engineering, Amity University, Jaipur Rajasthan
5. Amity School of Engineering, Amity University, Gurgaon, Haryana
6. Amity School of Engineering, Amity University, Noida, UP

7. Bhagwant University, Ajmer (Rajasthan)
8. Dr. KN Modi University, Newai, Rajasthan
9. IAMR College of Engineering, Meerut (Uttar Pradesh)
10. Institute of Technology, Management, Meerut, UP
11. Inverties University, Bareilly, UP
12. ITM University, Gwalior, MP
13. Jagannath University, Jaipur (Rajasthan)
14. Jayoti Vidyapeeth Women's University, Jaipur (Rajasthan)
15. Jodhpur National University, Jodhpur (Rajasthan)
16. Lovely Professional University, Phagwara, Distt. Kapurthala (Punjab)
17. M M Engineering College, Ambala, Haryana
18. M M Group of Institute, Sodopur, Haryana
19. Maharishi Markendeshwar University, Solan, HP
20. Mahatma Jyoti Rao Phule University, Jaipur, Rajasthan
21. Mewar University, Chittorgarh-312901 (Rajasthan)
22. Shobhit University, Meerut (U.P.)
23. Swami Vivekanand Subharti University, Meerut, UP

Many States/Institutes used AIEEE-2012 ranks to fill seats through their own counselling, some of them are listed here.

1. Haryana
2. Himachal Pradesh
3. Punjab
4. Uttarakhand
5. Army Institute of Technology, Pune, Maharashtra
6. Delhi Technological University, Delhi.
7. Netaji Subhash Institute of Technology under Delhi University.

Final List of Institutions admitting students (with intake in each discipline and category as per reservation) through JEE (Main)-2013 shall be available on the CCB website (www.ccb.nic.in) in the month of May/June 2013.

Appendix 7

BOARDS OF SCHOOL EDUCATION

1. ANDHRA PRADESH BOARD OF INTERMEDIATE EDUCATION
2. ASSAM HIGHER SECONDARY EDUCATION COUNCIL
3. BIHAR INTERMEDIATE EDUCATION COUNCIL
4. CENTRAL BOARD OF SECONDARY EDUCATION
5. CHATTISGARH MADHYAMIK SHIKSHA MANDAL
6. COUNCIL FOR THE INDIAN SCHOOL CERTIFICATE EXAMINATIONS
7. GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
8. GUJARAT SECONDARY EDUCATION BOARD
9. HARYANA BOARD OF EDUCATION
10. H P BOARD OF SCHOOL EDUCATION
11. J AND K STATE BOARD OF SCHOOL EDUCATION
12. JHARKHAND ACADEMIC COUNCIL
13. KARNATAKA BOARD OF PRE UNIVERSITY EDUCATION
14. KERALA BOARD OF PUBLIC EXAMINATIONS
15. MADHYA PRADESH BOARD OF SECONDARY EDUCATION
16. MAHARASTRA STATE BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
17. MANIPUR COUNCIL OF HIGHER SECONDARY EDUCATION
18. MEGHALAYA BOARD OF SECONDARY EDUCATION
19. MIZORAM BOARD OF SCHOOL EDUCATION
20. NAGALAND BOARD OF SCHOOL EDUCATION
21. ODISHA COUNCIL OF HIGHER SECONDARY EDUCATION
22. PUNJAB SCHOOL EDUCATION BOARD
23. RAJASTHAN BOARD OF SECONDARY EDUCATION
24. TAMIL NADU BOARD OF HIGHER SECONDARY EDUCATION
25. TRIPURA BOARD OF SECONDARY EDUCATION
26. U P BOARD OF HIGH SCHOOL AND INTERMEDIATE EDUCATION
27. UTTARANCHAL SHIKSHA EVAM PARIKSHA PARISHAD
28. WEST BENGAL COUNCIL OF HIGHER SECONDARY EDUCATION
29. NATIONAL INSTITUTE OF OPEN SCHOOLING
30. OTHERS