Bitsat syllabus

This test is designed to assess the test takers' general proficiency in the use of English language as a means of self-expression in real life situations and specifically to test the test takers' knowledge of basic grammar, their vocabulary, their ability to read fast and comprehend, and also their ability to apply the elements of effective writing. 1. Grammar 1. Agreement, Time and Tense, Parallel construction, Relative pronouns 2. Determiners, Prepositions, Modals, Adjectives .

Voice, Transformation 4. Question tags, Phrasal verbs 2. Vocabulary 1. Synonyms, Antonyms, Odd Word, One Word, Jumbled letters, Homophones, Spelling 2. Contextual meaning. 3. Analogy 3.

Reading Comprehension 1. Content/ideas 2. Vocabulary 3. Referents 4. Idioms/Phrases 5. Reconstruction(rewording) 4. Composition 1.

Rearrangement 2. Paragraph Unity 3. Linkers/Connectives Logical Reasoning The test is given to the candidates to judge their power of reasoning spread in verbal and nonverbal areas. The candidates should be able to think logically so that they perceive the data accurately, understand the relationships correctly, figure out the missing numbers or words, and to apply rules to new and different contexts. These indicators are measured through performance on such tasks as detecting missing links, following directions, classifying words, establishing sequences, and completing analogies. Verbal Reasoning 1. Analogy Analogy means correspondence.

In the questions based on analogy, a particular relationship is given and another similar relationship has to be identified from the alternatives provided. . Classification Classification means to assort the items of a given

group on the basis of certain common quality they possess and then spot the odd option out. 3. Series Completion Here series of numbers or letters are given and one is asked to either complete the series or find out the wrong part in the series. 4. Logical Deduction – Reading Passage Here a brief passage is given and based on the passage the candidate is required to identify the correct or incorrect logical conclusions.

5. Chart LogicHere a chart or a table is given that is partially filled in and asks to complete it in accordance with the information given either in the chart / table or in the question. 6. Nonverbal Reasoning a. Pattern Perception Here a certain pattern is given and generally a quarter is left blank. The candidate is required to identify the correct quarter from the given four alternatives. b.

Figure Formation and Analysis The candidate is required to analyze and form a figure from various given parts. c. Paper CuttingIt involves the analysis of a pattern that is formed when a folded piece of paper is cut into a definite design. d. Figure Matrix In this more than one set of figures is given in the form of a matrix, all of them following the same rule. The candidate is required to follow the rule and identify the missing figure. e.

Rule Detection Here a particular rule is given and it is required to select from the given sets of figures, a set of figures, which obeys the rule and forms the correct series. BITSAT 2010 Chemistry Syllabus 1. States of Matter 1. Measurement: Physical quantities and SI units, Dimensional analysis, Precision, Significant figures. 2. Chemical reactions: Laws of chemical combination, Dalton's atomic theory; Mole concept; Atomic,

molecular and molar masses; Percentage composition ;
amp; molecular formula; Balanced chemicalequations ; amp; stoichiometry 3. Gaseous state: Kinetic theory - Maxwell distribution of velocities, Average, root mean square and most probable velocities and relation to temperature, Diffusion; Deviation from ideal behaviour - Critical temperature, Liquefaction of gases, van der Waals equation.

. Liquid state: Vapour pressure, surface tension, viscosity. 5. Solid state: Classification; Space lattices ; amp; crystal systems; Unit cell - Cubic ; amp; hexagonal systems; Close packing; Crystal structures: Simple AB and AB2 type ionic crystals, covalent crystals - diamond ; amp; graphite, metals. Imperfections- Point defects, non-stoichiometric crystals; Electrical, magnetic and dielectric properties; Amorphous solids - qualitative description. 2. Atomic Structure 1.

Introduction: Subatomic particles; Rutherford's picture of atom; Hydrogen atom spectrum and Bohr model. 2. Quantum mechanics: Wave-particle duality - de Broglie relation, Uncertainty principle; Hydrogen atom: Quantum numbers and wavefunctions, atomic orbitals and their shapes (s, p, and d), Spin quantum number. 3. Many electron atoms: Pauli exclusion principle; Aufbau principle and the electronic configuration of atoms, Hund's rule. 4. Periodicity: Periodic law and the modern periodic table; Types of elements: s, p, d, and f blocks; Periodic trends: ionization energy, atomic and ionic radii, electron affinity, and valency.

5. Nucleus: Natural and artificial radioactivity; Nuclear reactions, Artificial transmutation ofelements. . Chemical Bonding ; amp; Molecular Structure1.

Ionic Bond: Lattice Energy and Born-Haber cycle 2. Molecular Structure: Lewis picture ; amp; resonance structures, VSEPR model ; amp; molecular shapes 3. Covalent Bond: Valence Bond Theory- Orbital overlap, Directionality of bonds ; amp; hybridistaion (s ; amp; p orbitals only), Resonance; Molecular orbital theory- Methodology, Orbital energy level diagram, Bond order, Magnetic properties for homonuclear diatomic species.

4. Metallic Bond: Qualitative description. 5. Intermolecular Forces: Polarity; Dipole moments; Hydrogen Bond. 4. Thermodynamics 1. Basic Concepts: Systems and surroundings; State functions; Intensive ; amp; Extensive Properties; Zeroth Law and Temperature 2.

First Law of Thermodynamics: Work, internal energy, heat, enthalpy, heat capacities; Enthalpies of formation, phase transformation, ionization, electron gain; Thermochemistry; Hess's Law. 3. Second and Third Laws: Spontaneous and reversible processes; entropy; Gibbs free energy related to spontaneity and non-mechanical work; Standard free energies of formation, free energy change and chemical equilibrium; Third Law and Absolute Entropies. . Physical and Chemical Equilibria 1. Concentration Units: Mole Fraction, Molarity, and Molality 2. Solutions: Solubility of solids and gases in liquids, Vapour Pressure, Raoult's law, Relative lowering of vapour pressure, depressionin freezing point; elevation in boiling point; osmotic pressure, determination of molecular mass.

3. Physical Equilibrium: Equilibria involving physical changes (solid-liquid, liquid-gas, solid-gas), Adsorption, Physical and Chemical adsorption, Langmuir Isotherm. 4. Chemical Equilibria: Equilibrium constants (KP, KC),

Le-Chatelier's principle. 5. Ionic Equilibria: Strong and Weak electrolytes, Acids and Bases (Arrhenius, Lewis, Lowry and Bronsted) and their dissociation; Ionization of Water; pH; Buffer solutions; Acid-base titrations; Hydrolysis; Solubility Product of Sparingly Soluble Salts; Common Ion Effect. 6.

Factors Affecting Equilibria: Concentration, Temperature, Pressure, Catalysts, Significance of DG and DG0 in Chemical Equilibria. 6. Electrochemistry 1. Redox Reactions: Oxidation-reduction reactions (electron transfer concept); Oxidation number; Balancing of redox reactions; Electrochemical cells and cell reactions; Electrode potentials; EMF of Galvanic cells; Nernst equation; Gibbs energy change and cell potential; Concentration cells; Secondary cells; Fuel cells; Corrosion and its prevention. 2. Electrolytic Conduction: Electrolytic Conductance; Specific, equivalent and molar conductivities; Kolhrausch's Law and its application, Faraday's laws of electrolysis; Electrode potential and electrolysis, Commercial production of the chemicals, NaOH, Na, Al, C12, & F2 7. Chemical Kinetics 1.

Aspects of Kinetics: Rate and Rate expression of a reaction; Rate constant; Order of reaction; Integrated rate expressions for zero and first order reactions; Half-life; Determination of rate constant and order of reaction 2. Factor Affecting the Rate of the Reactions: Temperature dependence of rate constant; Activation energy; Catalysis, Surface catalysis, enzymes, zeolites; Factors affecting rate of collisions between molecules; Effect of light. 3. Mechanism of Reaction: Elementary reactions; Complex reactions; Reactions involving two/three

steps only; Photochemical reactions; Concept of fast reactions. . Radioactive isotopes: Half-life period; Radiochemical dating. 8.

Hydrogen and s-block elements 1. Hydrogen: Element: unique position in periodic table, occurrence, isotopes; Dihydrogen: preparation, properties, reactions, and uses; Molecular, saline, interstitial hydrides; Water: Properties; Structure and aggregation of water molecules; Hard and soft water; Heavy water; Hydrogen peroxide. 2. s-block elements: Abundance and occurrence; Anomalous properties of the first elements in each group; diagonal relationships. 3. Alkali metals: Lithium, sodium and potassium: occurrence, extraction, reactivity, and electrode potentials; Reactions with oxygen, hydrogen, halogens and liquid ammonia; Basic nature of oxides and hydroxides; Halides; Properties and uses of compounds such as NaCl, Na2CO3, NaHCO3, NaOH, KCl, and KOH. 4.

Alkaline earth metals: Magnesium and calcium: Occurrence, extraction, reactivity and electrode potentials; Reactions with non-metals; Solubility and thermal stability of oxo salts; Properties and uses of important compounds such as CaO, Ca(OH)2, plaster of Paris, MgSO4, MgCl2, CaCO3, and CaSO4; Lime and limestone, cement. . p- d- and f-block elements 1. General: Abundance, distribution, physical and chemical properties, isolation and uses of elements; Trends in chemical reactivity of elements of a group; Extraction and refining of metals. 2. Group 13 elements: Boron; Properties and uses of borax, boric acid, boron hydrides & halides. Reaction of aluminum with acids and alkalis; 3.

Group 14 elements: Carbon: Uses, Allotropes (graphite, diamond, fullerenes), oxides, halides and sulphides, carbides; Silicon: Silica, silicates, silicones; Tin and lead: Extraction, halides and oxides. . Group 15 elements: Dinitrogen; Reactivity and uses of nitrogen and its compounds; Industrial and biological nitrogen fixation; Ammonia: Haber's process, properties and reactions; Oxides of nitrogen and their structures; Ostwald's process of nitric acid production; Fertilizers - NPK type; Production of phosphorus; Allotropes of phosphorus; Preparation, structure and properties of hydrides, oxides, oxoacids and halides of phosphorus. 5. Group 16 elements: Isolation and chemical reactivity of dioxygen; Acidic, basic and amphoteric oxides; Preparation, structure and properties of ozone; Allotropes of sulphur; Production of sulphur and sulphuric acid; Structure and properties of oxides, oxoacids, hydrides and halides of sulphur. 6. Group 17 and group 18 elements: Structure and properties of hydrides, oxides, oxoacids of chlorine; Inter halogen compounds; Bleaching Powder; Preparation, structure and reactions of xenon fluorides, oxides, and oxoacids.

7. -block elements: General trends in the chemistry of first row transition elements; Metallic character; Oxidation state; Ionic radii; Catalytic properties; Magnetic properties; Interstitial compounds; Occurrence and extraction of iron, copper, silver, zinc, and mercury; Alloy formation; Steel and some important alloys; preparation and properties of CuSO4, K2Cr2O7, KMnO4, Mercury halides; Silver nitrate and silver halides; Photography. 8. f-block elements: Lanthanides and actinides; Oxidation states and chemical reactivity of lanthanide compounds; Lanthanide contraction; Comparison of actinides and lanthanides. . Coordination Compounds: Coordination number;

Ligands; Werner's coordination theory; IUPAC nomenclature; Application and importance of coordination compounds (in qualitative analysis, extraction of metals and biological systems e. g.

chlorophyll, vitamin B12, and hemoglobin); Bonding: Valence-bond approach, Crystal field theory (qualitative); Stability constants; Shapes, color and magnetic properties; Isomerism including stereoisomerisms; Organometallic compounds. 10. Principles of Organic Chemistry and Hydrocarbons 1. Classification: Based on functional groups, trivial and IUPAC nomenclature. 2. Electronic displacement in a covalent bond: Inductive, resonance effects, and hyperconjugation; free radicals; carbocations, carbanion, nucleophile and electrophile; types of reactions. 3.

Alkanes and cycloalkanes: Structural isomerism and general properties. 4. Alkenes and alkynes: General methods of preparation and reactions, physical properties, electrophilic and free radical additions, acidic character of alkynes and (1, 2 and 1, 4) addition to dienes. 5. Aromatic hydrocarbons: Sources; Properties; Isomerism; Resonance delocalization; polynuclear hydrocarbons; mechanism of electrophilic substitution reaction, directive influence and effect of substituents on reactivity. 6. Haloalkanes and haloarenes: Physical properties, chemical reactions.

7. Petroleum: Composition and refining, uses of petrochemicals. 11. Stereochemistry 1. Introduction: Chiral molecules; Optical activity; Polarimetry; R, S and D, L configurations; Fischer projections; Enantiomerism; Racemates; Diastereomerism and meso structures. .

Conformations: Ethane, propane, n-butane and cyclohexane conformations; Newman and sawhorse projections.

3. Geometrical isomerism in alkenes 12. Organic Compounds with Functional Groups Containing Oxygen and Nitrogen 1. General: Electronic structure, important methods of preparation, important reactions and physical properties of alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, nitro compounds, amines, diazonium salts, cyanides and isocyanides. 2. Specific: Effect of substituents on alpha-carbon on acid strength, comparative reactivity of acid derivatives, basic character of amines and their separation, importance of diazonium salts in synthetic organic chemistry 13. Biological, Industrial and Environmental chemistry 1.

The Cell: Concept of cell and energy cycle. 2. Carbohydrates: Classification; Monosaccharides; Structures of pentoses and hexoses; Anomeric carbon; Mutarotation; Simple chemical reactions of glucose, Disaccharides: reducing and non-reducing sugars – sucrose, maltose and lactose; Polysaccharides: elementary idea of structures of starch and cellulose. . Proteins: Amino acids; Peptide bond; Polypeptides; Primary structure of proteins; Simple idea of secondary , tertiary and quarternary structures of proteins; Denaturation of proteins and enzymes. 4. Nucleic Acids: Types of nucleic acids; Primary building blocks of nucleic acids (chemical composition of DNA ; amp; RNA); Primary structure of DNA and its double helix; Replication; Transcription and protein synthesis; Genetic code.

5. Lipids, Hormones, Vitamins: Classification, structure, functions in biosystems. 6. Polymers: Classification of polymers; General methods of

polymerization; Molecular mass of polymers; Biopolymers and biodegradable polymers; Free radical, cationic and anionic addition polymerizations; Copolymerization: Natural rubber; Vulcanization of rubber; Synthetic rubbers. Condensation polymers. 7. Pollution: Environmental pollutants; soil, water andair pollution; Chemical reactions in atmosphere; Smog; Major atmospheric pollutants; Acid rain; Ozone and its reactions; Depletion of ozone layer and its effects; Industrial air pollution; Green house effect andglobal warming; Green Chemistry.

. Chemicals in medicine, health-care andfood: Analgesics, Tranquilizers, antiseptics, disinfectants, anti-microbials, anti-fertility drugs, antihistamines, antibiotics, antacids; Cosmetics: Creams, perfumes, talcum powder, deodorants; Preservatives, artificial sweetening agents, antioxidants, and edible colours. 9. Other Industrial Chemicals: Dyes: Classification with examples – Indigo, methyl orange, aniline yellow, alizarin, malachite green; Advanced materials: Carbon fibers, ceramics, micro alloys; Detergents; Insect repellents, pheromones, sex attractants; Rocket Propellants. 4. Theoretical Principles of Experimental Chemistry 1. Volumetric Analysis: Principles; Standard solutions of sodium carbonate and oxalic acid; Acid-base titrations; Redox reactions involving KI, H2SO4, Na2SO3, Na2S2O3and H2S; Potassium permanganate in acidic, basic and neutral media; Titrations of oxalic acid, ferrous ammonium sulphate with KMnO4, K2 Cr2O7/Na2S2O3, Cu(II)/Na2S2O3 2.

Qualitative analysis of Inorganic Salts: Principles in the determination of the cations Pb2+, Cu2+, As3+, Mn2+, Zn2+, Co2+, Ca2+, Sr2+, Ba2+, Mg2+, NH4+, Fe3+, Ni2+ and the anions CO32-, S2-, SO42-, SO32-, NO2-, NO3-, Cl-,

Br-, I-, PO43-, CH3COO-, C2O42-. 3. Physical Chemistry Experiments: crystallization of alum, copper sulphate, ferrous sulphate, double salt of alum and ferrous sulphate, potassium ferric sulphate; Temperature vs. solubility; pH measurements; Lyophilic and lyophobic sols; Dialysis; Role of emulsifying agents in emulsification. Equilibrium studies involving (i) ferric and thiocyanate ions (ii) [Co(H2O)6]2+ and chloride ions; Enthalpy determination for (i) strong acid vs. trong base neutralization reaction (ii) hydrogen bonding interaction between acetone and chloroform; Rates of the reaction between (i) sodium thiosulphate and hydrochloric acid, (ii) potassium iodate and sodium sulphite (iii) iodide vs. hydrogen peroxide, concentration and temperature effects in these reactions; 4.

Purification Methods: Filtration, crystallization, sublimation, distillation, differential extraction, and chromatography. Principles of melting point and boiling point determination; principles of paper chromatographic separation – Rf values. 5. Qualitative Analysis of Organic Compounds: Detection of nitrogen, sulphur, phosphorous and halogens; Detection of carbohydrates, fats and proteins in foodstuff; Detection of alcoholic, phenolic, aldehydic, ketonic, carboxylic, amino groups and unsaturation. 6. Quantitative Analysis of Organic Compounds: Basic principles for the quantitative estimation of carbon, hydrogen, nitrogen, halogen, sulphur and phosphorous; Molecular mass determination by silver salt and chloroplatinate salt methods; Elementary idea of mass spectrometer for accurate molecular mass determination; Calculations of empirical and molecular formulae. .

Principles of Organic Chemistry Experiments: Preparation of iodoform, acetanilide, p-nitro acetanilide, di-benzyl acetone, aniline yellow, beta-

naphthol; Preparation of acetylene and study of its acidic character. BITSAT 2010 Physics Syllabus 1. Units ; amp; Measurement 1. Units (Different systems of units, SI units, fundamental and derived units) 2. Dimensional Analysis 3. Precision and significant figures 4. Fundamental measurements in Physics (Vernier calipers, screw gauge, Physical balance etc) 2.

Kinematics 1. Properties of vectors 2. Position, velocity and acceleration vectors . Motion with constant acceleration 4. Projectile motion 5. Uniform circular motion 6. Relative motion 3.

Newton's Laws of Motion 1. Newton's laws (free body diagram, resolution of forces) 2. Motion on an inclined plane 3. Motion of blocks with pulley systems 4. Circular motion - centripetal force 5. Inertial and non-inertial frames 4. Impulse and Momentum 1.

Definition of impulse and momentum 2. Conservation of momentum 3. Collisions 4. Momentum of a system of particles 5. Center of mass 5. Work and Energy 1. Work done by a force 2.

Kinetic energy and work-energy theorem 3. Power 4. Conservative forces and potential energy 5. Conservation of mechanical energy 6. Rotational Motion 1. Description of rotation (angular displacement, angular velocity and angular acceleration) 2. Rotational motion with constant angular acceleration 3.

Moment of inertia, Parallel and perpendicular axes theorems, rotational kinetic energy6. 4 Torque and angular momentum 4. Conservation of angular

momentum 5. Rolling motion 7. Gravitation 1. Newton's law of gravitation 2. Gravitational potential energy, Escape velocity 3.

Motion of planets - Kepler's laws, satellite motion . Mechanics of Solids and Fluids 1. Elasticity 2. Pressure, density and Archimedes' principle 3. Viscosity and Surface Tension 4. Bernoulli's theorem 9. Oscillations 1.

Kinematics of simple harmonic motion 2. Spring mass system, simple and compound pendulum 3. Forced ; amp; damped oscillations, resonance 10. Waves 1. Progressive sinusoidal waves 2. Standing waves in strings and pipes 3. Superposition of waves beats 11.

Heat and Thermodynamics 1. Kinetic theory of gases 2. Thermal equilibrium and temperature 3. Specific heat 4. Work, heat and first law of thermodynamics 5. nd law of thermodynamics, Carnot engine - Efficiency and Coefficient of performance 12. Electrostatics 1.

Coulomb's law 2. Electric field (discrete and continuous charge distributions) 3. Electrostatic potential and Electrostatic potential energy 4. Gauss' law and its applications 5. Electric dipole 6. Capacitance and dielectrics (parallel plate capacitor, capacitors in series and parallel) 13. Current Electricity 1.

Ohm's law, Joule heating 2. D. C circuits - Resistors and cells in series and parallel, Kirchoff's laws, potentiometer and Wheatstone bridge, 3. Electrical Resistance (Resistivity, origin and temperature dependence of resistivity). 14. Magnetic Effect of Current 1. Biot-Savart's law and its applications 2.

Ampere's law and its applications 3. Lorentz force, force on current carrying conductors in a magnetic field 4. Magnetic moment of a current loop, torque

on a current loop, Galvanometer and its conversion to voltmeter and ammeter 15. Electromagnetic Induction 1. Faraday's law, Lenz's law, eddy currents 2. Self and mutual inductance 3. Transformers and generators 4.

Alternating current (peak and rms value) . AC circuits, LCR circuits 16. Optics 1. Laws of reflection and refraction 2. Lenses and mirrors 3. Optical instruments - telescope and microscope 4. Interference - Huygen's principle, Young's double slit experiment 5.

Interference in thin films 6. Diffraction due to a single slit 7. Electromagnetic waves and their characteristics (only qualitative ideas), Electromagnetic spectrum 8. Polarization - states of polarization, Malus' law, Brewster's law 17. Modern Physics 1. Dual nature of light and matter - Photoelectric effect. De Broglie wavelength 2.

Atomic models - Rutherford's experiment, Bohr's atomic model 3. Hydrogen atom spectrum 4. Radioactivity 5. Nuclear reactions: Fission and fusion, binding energy BITSAT 2010MathematicsSyllabus 1. Algebra 1. Complex numbers, addition, multiplication, conjugation, polar representation, properties of modulus and principal argument, triangle inequality, roots of complex numbers, geometric interpretations. 2.

Theory of Quadratic equations, quadratic equations in real and complex number system and their solutions, relation between roots and coefficients, nature of roots, equations reducible toquadratic equations. . Logarithms and their properties. 4. Arithmetic, geometric and harmonic progressions, arithmetic, geometric and harmonic means, arithmetico-geometric series, sums of finite arithmetic and geometric progressions,

infinitegeometric series, sums of squares and cubes of the first n natural numbers. 5. Exponential series.

6. Permutations and combinations, Permutations as an arrangement and combination as selection, simple applications. 7. Binomial theorem for a positive integral index, properties of binomial coefficients. 8. Matrices and determinants of order two or three, properties and evaluation of determinants, addition and multiplication of matrices, adjoint and inverse of matrices, Solutions of simultaneous linear equations in two or three variables. 9.

Sets, Relations and Functions, algebra of sets applications, equivalence relations, mappings, one-one, into and onto mappings, composition of mappings. 10. Mathematical Induction 11. Linear Inequalities, solution of linear inequalities in one and two variables. 2. Trigonometry 1. Trigonometric ratios, functions and identities.

. Solution of trigonometric equations. 3. Properties of triangles and solutions of triangles 4. Inverse trigonometric functions 5. Heights and distances 3. Two-dimensional Coordinate Geometry 1.

Cartesian coordinates, distance between two points, section formulae, shift of origin. 2. Straight lines and pair of straight lines: Equation of straight lines in various forms, angle between two lines, distance of a point from a line, lines through the point of intersection of two given lines, equation of the bisector of the angle between two lines, concurrent lines. . Circles andfamilyof circles : Equation of circle in various form, equation of tangent, normal ; amp; chords, parametric equations of a circle , intersection of a

circle with a straight line or a circle, equation of circle through point of intersection of two circles, conditions for two intersecting circles to be orthogonal. 4. Conic sections: parabola, ellipse and hyperbola their eccentricity, directrices ; amp; foci, parametric forms, equations of tangent ; amp; normal, conditions for y= mx+c to be a tangent and point of tangency.

. Three dimensional Coordinate Geometry 1. Direction cosines and direction ratios, equation of a straight line in space and skew lines. 2. Angle between two lines whose direction ratios are given 3. Equation of a plane, distance of a point from a plane, condition for coplanarity of three lines. 5.

Differential calculus 1. Domain and range of a real valued function, Limits and Continuity of the sum, difference, product and quotient of two functions, Differentiability. 2. Derivative of different types of functions (polynomial, rational, trigonometric, inverse trigonometric, exponential, logarithmic, implicit functions), derivative of the sum, difference, product and quotient of two functions, chain rule. 3. Geometric interpretation of derivative, Tangents and Normals. 4.

Increasing and decreasing functions, Maxima and minima of a function. 5. Rolle's Theorem, Mean Value Theorem and Intermediate Value Theorem. 6. Integral calculus 1. Integration as the inverse process of differentiation, indefinite integrals of standard functions. .

Methods of integration: Integration by substitution, Integration by parts, integration by partial fractions, and integration by trigonometric identities. 3. Definite integrals and their properties, Fundamental Theorem of Integral Calculus and its applications. 4. Application of definite integrals to the

determination of areas of regions bounded by simple curves. 7. Ordinary Differential Equations 1.

Variables separable method. 2. Solution of homogeneous differential equations. 3. Linear first order differential equations 8. Probability 1. Addition and multiplication rules of probability.

2. Conditional probability 3. Independent events 4. Discrete random variables and distributions 9. Vectors 1. Addition of vectors, scalar multiplication. 2.

Dot and cross products of two vectors. 3. Scalar triple products and their geometrical interpretations. 10. Statistics 1. Measures of dispersion 2. Measures of skewness and Central Tendency 11.

Linear Programming 1. Formulation of linear Programming 2. Solution of linear Programming, using graphical method.