Bharath UNIVERSITY

பாரத் பல்கலைக்கழகம்

(BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH)

(Declared as Deemed-to-be-University, u/s 3 of the UGC Act, 1956

33 YEARS OF EXCELLENCE

ACCREDITED BY **NAAC** WITH **HIGHEST RATING**

A GRADE

BEEE 2016

INFORMATION BROCHURE

BEST PRIVATE UNIVERSITY OF THE YEAR-2014

BEST MULTI STREAM UNIVERSITY 2014

MOST INNOVATIVE EDUCATION INSTITUTION AWARD 2014

RATING

CAREER 360

Apply online : www.bharathuniv.ac.in

HELP LINE : 1800-419-1441

University Campus : # 173 Agharam Road | Selaiyur | Tambaram | Chennai 600 073 | ☎ 044-22290247

Corp. Office : # 1 First Main Road | Kasthuribai Nagar | Adyar | Chennai - 600 020 | ☎ 044 - 42115251

GENERAL INFORMATION

Eligibility

Nationality

The application for BEEE 2016 should be a resident of Indian national and (i) should have studied in schools located in India in the preceding 10 + 2 years for admission to Undergraduate program.
(ii) should have studied in educational institutions in India and completed their qualifying examination.

Eligibility Criteria in Qualifying Examination

Undergraduate programs
B.Tech. :

- A pass in 10+2 or its equivalent with Minimum 50% aggregate in Physics, Chemistry and Mathematics.
- For Bio Engineering Departments a pass in 10 +2 or its equivalent with Minimum 50% aggregate in Physics,Chemistry and Mathematics / Biology.

B.Arch.:
(a) A pass in 10+2 or its equivalent having a minimum total aggregate of 50% with English and Mathematics as subjects of study or 10+3 Diploma (Any Stream) recognized by Central / State Government with 50% aggregate marks.
(b) A pass in National Aptitude Test in Architecture (NATA) conducted by the Council of Architecture.
However, the candidates have to apply in the prescribed application form for admission to B.Arch. program.

Science and Humanities:
A Pass in 10+2 or its equivalent

B.Tech. Lateral Entry:
A Pass in Diploma Recognized by Central or State Government with 50% aggregate / B.Sc. with Mathematics or its equivalent.

Postgraduate programs
M. Tech. :
Any B.E / B.Tech or its equivalent examination approved by UGC / AICTE in appropriate branch with at least 60% marks in the aggregate or equivalent CGPA or eligible for respective courses

M. Arch. :
Minimum of 50% marks in aggregate in Bachelor of Architecture degree course

M B A:
Any Under Graduate with first class or 60% marks or equivalents.

M. Com.:
Any Under Graduate with first class or 60% marks or equivalents.

M C A:
Any Under Graduate with Business Mathematics or Statistics are eligible for first year MCA

B.Sc. in Computer Science, Information Technology / Electronics are eligible for Lateral Entry Program.

M.Sc.:
Any B.Sc. or its equivalent examination in appropriate branch are eligible for the respective courses.

(Note : Candidates of the qualifying examination can also apply on provisional basis. but at the time of admission such candidates shall have to produce the original certificate of having passed / Mark sheet from the respective examination provided that he/she fulfills the eligibility criteria. failing to do so, the admission will be cancelled.)

Application Forms
Issue : The Application Forms will be issued from December 2015 onwards. There are three modes of registration.

i. Online with e-payment
use the URL www.bharathuniv.ac.in/admissions,
register and pay online.

ii. Online with Demand Draft

- Application to be filled online by visiting

www.bharathuniv.ac.in/admissions and the same can be downloaded and sent to us with the DD for Rs.900/- drawn in favour of Bharath University, payable at Chennai. This has to reach us before the last date specified. Candidates should write their name and address on the reverse of DD. Your application will be processed only upon receipt of the DD.

iii. Direct

- Candidates can obtain the application form in person from BHARATH UNIVERSITY Campus or Corporate Office on payment of Rs.900/-.

TEST CITY CENTRE

Test City Centre (for Written Exam)
If a candidate has opted for Written Exam, refer the following list and write the appropriate code in the space provided. Darken the corresponding numeral under each digit.

State	Centre	Code
Andaman & Nicobar	Port Blair	201
Andhra Pradesh	Anantapur	202
	Chittoor	203
	East Godavari	204
	Guntur	205
	Kadapa	206
	Kurnool	207
	Nellore	208
	Ongole	209
	Rajahmundry	210
	Srikakulam	211
	Tirupathi	212
	Vijayawada	213
	Vijayanagaram	214
	Vishakhapatnam	215
	West Godavari	216
Arunachal Pradesh	Itanagar	217
Assam	Dibrugarh	218
	Guwahati	219
Bihar	Bhagalpur	220
	Darbhanga	221
	Gaya	222
	Mazaffarpur	223
	Patna	224
	Purnea	225
Chattisgarh	Bilaspur	226
	Raipur	227
Gujarat	Ahmedabad	228
Haryana	Gurgaon	229
Himachal Pradesh	Simla	230
Jammu & Kashmir	Jammu	231
	Sri nagar	232
Jharkhand	Bokaro Steel City	233
	Dhanbad	234
	Jamshedpur	235
	Ranchi	236
Karnataka	Bangalore	237
Kerala	Ernakulam	238
	Kannur	239
	Kottayam	240
	Kozhikodu	241
	Thiruvananthapuram	242
Madhya Pradesh	Bhopal	243
Maharastra	Mumbai	244
Manipur	Imphal	245
Meghalaya	Shilong	246
New Delhi	New Delhi	247
Orissa	Bhubaneswar	248
	Rourkela	249
Puducherry	Puducherry	250
Punjab	Jalandhar	251
Rajasthan	Jaipur	252
	Kota	253
Tamil Nadu	Chennai	254
	Chidambaram	255
	Chinasalem	256
	Coimbatore	257
	Cuddalore	258
	Dindugal	259
	Kumbakonam	260
	Madurai	261
	Nagercoil	262
	Namakkal	263
	Neyveli	264
	Ramanathapuram	265
	Salem	266
	Theni	267
	Tiruchirapalli	268
	Tiruvannamalai	269
	Tuticorin	270
	Vellore	271
Telangana	Adilabad	272
	Bodhan	273
	Hyderabad/Secunderabad	274
	Karim Nagar	275
	Khammam	276
	Mahboob Nagar	277
	Medak	278
	Nalgonda	279
	Nizamabad	280
	Ranga Reddy	281
	Warangal	282
Tripura	Agartala	283
Uttar Pradesh	Gorakhpur	284
	Kanpur	285
	Lucknow	286
West Bengal	Durgapur	287
	Kolkatta	288
	Siliguri	289

TEST CITY CENTRE

Test City Centre (for Online Exam)
If a candidate has opted for online entrance examination, refer the following list to choose a test city and write the appropriate code in the space provided. Darken the corresponding numeral under each digit.

State	Centre	Code
Andaman & Nicobar	Port Blair	301
Andhra Pradesh	Kurnool	302
	Nellore	303
	Tirupathi	304
	Vijayawada	305
	Vishakhapatnam	306
Assam	Guwahati	307
Bihar	Patna	308
Chattisgarh	Raipur	309
Jharkhand	Jamshedpur	310
	Ranchi	311
Karnataka	Bangalore	312
Kerala	Ernakulam	313
	Kozhikode	314
Madhya Pradesh	Bhopal	315
Maharastra	Mumbai	316
New Delhi	New Delhi	317
Orissa	Bhuvaneshwar	318
Rajasthan	Jaipur	319
Tamil Nadu	Chennai	320
	Coimbatore	321
	Kanayakumari	322
	Madurai	323
	Tiruchirapalli	324
	Vellore	325
Telangana	Hyderabad	326
	Nalgonda	327
	Warangal	328
Uttar Pradesh	Lucknow	329
West Bengal	Kolkatta	330

BEEE - 2016 - Pattern of Question paper
For B.Tech and Health Sciences Under Graduate Programs

S. No	Details
1.	Part 1: English 10 questions with a total weightage of 10 marks
2.	Part 2: Physics 30 questions with a total weightage of 30 marks
3.	Part 3: Chemistry 30 questions with a total weightage of 30 marks
4.	Part 4: Mathematics 30 questions with a total weightage of 30 marks
5.	Part 4: Biology 30 questions with a total weightage of 30 marks (Only for Biology Students)
6.	No Negative mark for wrong answer
7.	Total weightage 100 marks

SYLLABUS AND MODEL QUESTIONS FOR ENTRANCE EXAMINATION

PART 1 - ENGLISH (10 Questions)

As per the Intermediate Second Year Syllabus

PART 2 - PHYSICS (30 Questions)

UNIT 1: Units and Measurement
Units for measurement, system of units-S.I., fundamental and derived units, measurements-errors in measurement-significant figures, dimensions-dimensional analysis-applications.

UNIT 2: Mechanics
Motion in one dimension-uniform and non-uniform motion-uniformly accelerated motion-scalar and vector quantities-Newton's laws of motion-force and inertia-impulse and momentum-law of conservation of linear momentum-applications-motions in two dimension- projectile motion-uniform circular motion-friction-laws of friction-applications- centripetal force-centre of mass-torque-angular momentum and its conservation - moment of inertia-theorems of moment of inertia-work-energy-potential energy and kinetic energy-power-collision-elastic and inelastic collisions.

UNIT 3: Gravitation, Mechanics of Solids and Fluids
The universal law of gravitation, acceleration due to gravity-variation of 'g' with altitude, latitude and depth-gravitation potential-escape velocity and orbital velocity-geostationary satellites-Kepler's laws of planetary motion. Solids-elastic behaviour, stress-strain-Hooke's law-Modulli of elasticity-relation between them-surface tension-capillarity-applications-viscosity-Poiseuille's formula-Stokes law-applications-streamline and turbulent flow-Reynolds number-Bernoulli's theorem- applications.

UNIT 4: Oscillations and Wave Motion
Periodic motion-simple harmonic motion-equations of motion-oscillations of spring-simple pendulum-free, forced and damped oscillations-resonance-applications-wave motions-longitudinal and transverse waves-velocity of wave motion in different media-Newton's formula-Laplace's correction-super position of waves-progressive and standing waves-sonometer-air columns-Doppler effect and its applications.

UNIT 5: Heat and Thermodynamics
Kinetic theory of gases-postulates-pressure of a gas-specific heat capacity-relation between Cp and Cv-first law of thermodynamics thermodynamical processes-isothermal adiabatic-reversible and irreversible process-second law of thermodynamics-Carnot's engine-Heat transfer-conduction-convection-radiation-thermal conductivity of solids-black body radiations-Kirchoff's law-Wien's displacement law-Stefan's law-Newton's law of cooling.

UNIT 6: Ray and Wave Optics and Magnetism
Wavefront – Huygens principle – wave nature of light – interference – young's double slit expriment – diffraction and polarization – reflection and refraction of light – total internal reflection – velocity of light determination – deviation and dispersion of light by a prism – lens.

UNIT 7: Electricity and Magnetism
Magnetism: Earth's magnetic field and magnetic elements – magnetic field due to a magnetic dipole – torque on a magnetic dipole – magnetic properties of a material – dia, para and ferro magnetic materials – application. Biof savart law – force on a moving charge in an uniform magnetic field. Electrostatic – coulomb's inverse square law – dielectric constant – electric field – electric lines of force – electric dipole – electric potential – potential difference – electric flux – gauss theorem – electrostatic inclusion – capacitor capritor in parallel and series – drift. Velocity of electrons – ohm's law – electrical resistivity and conductivity – super conductivity – kirchoff's law – what's tone's bridge – principle potentiometer – electric power – faraday's law – lenz law at electromagnetic inclusion – self inductances mutual inductance – flemming's right hand rule – methods of inducing emt – eddy current, transformer.

UNIT 8: Atomic Physics and Relativity
Relativity – Einstien's mars energy relation – variation of mass with velocity. Atomic structure-properties of cathode rays and positive rays - specific charge of an electron-atom model – Thomson atom model-Rutherford atom model-Bohr atom model-merits and demerits-quantum numbers-X-rays-production-properties-Bragg's law-Bragg's - X-ray spectrometer-Photoelectric effect-laser-spontaneous and stimulated emission-laser action-characteristics of laser light-ruby laser-applications of laser.

UNIT 9: Dual Nature of Matter and Nuclear Physics
Nuclear properties: radius, mass, binding energy, density, isotopes, mass defect – Bainbridge mass spectrometer – nuclear forces. Newton discovery, matter coaves – wave nature of particles – Debroglie wavelength – electron microscope – radioactivity α, β and γ decay – half life and mean life – artificial radio activity – radio isotopes – radio corbon dating – radiation hazards – nuclear fission – nuclear reactor – nuclear fusion – hydrogen bomb – cosmic rays – elementary particles.

UNIT 10: Electronics and Communication
Communication: Space communication – propagation of electromagnetic waves in atmosphere – sky and space wave propagation.
Electronics: Semiconductor – doping – types – PN junction diode – biasing – amplifier – gain – feedback in amplifier's – logic gates – NOT, OR, AND, NOR, NAND – Universal gaies – De Morgan's theorems.

PART 3 - CHEMISTRY (30 Questions)

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. 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, magnetic and dielectric properties. Liquid State: Properties of liquids – vapour pressure, viscosity and surface tension and effect of temperature on them (qualitative treatment only). 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, Van der Waals equation, liquefaction of gases, critical constants.

UNIT 3: Chemical Families - Periodic Properties
Modern periodic law and present form of the periodic table, s & p block elements, periodic trends in properties of elements, atomic and ionic radii, ionization enthalpy, electron gain enthalpy, valence, oxidation states and chemical reactivity. Transition elements-d-block elements, inner transition elements-f-block elements. Ionization energy, lanthanides and actinides-general characteristics. Coordination Chemistry: Coordination compounds, nomenclature: terminology - Werner's coordination theory. Applications of coordination compounds.

UNIT 4: Atomic Structure
Discovery of sub-atomic particles (electron, proton and neutron); 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, (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 5: Chemical Bonding and Molecular Structure
Covalent bonding: Concept of electronegativity, Fajan's rule, dipole moment; Valence Shell Electron Pair Repulsion (VSEPR) theory and shapes of simple molecules. Valence bond theory - Its important features, concept of hybridization involving s, p and d orbitals; resonance. types of molecular orbitals (bonding, anti-bonding), 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. Extractive metallurgy of sodium, lithium, properties of alkali metals, basic nature of oxides and hydroxides, compounds of alkaline earth metals, compounds of boron. Oxides, carbides, halides and sulphides of carbon group.

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 signi_cance.

UNIT 7: Chemical Equilibrium
Meaning of equilibrium, concept of dynamic equilibrium. Equilibria involving physical processes: Solid-liquid, liquid-gas and solid-gas equilibria, Henry's law, Equilibria involving chemical processes: Law of chemical equilibrium, equilibrium constants (Kp and Kc) and their significance, Le Chatelier's principle. Ionic equilibrium: Weak and strong electrolytes, ionization of electrolytes, various concepts of acids and bases (Arrhenius, Bronsted-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: Electrochemistry
Electrolytic and metallic conduction, conductance in electrolytic solutions, specific and 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; dry cell and lead accumulator; fuel cells; corrosion and its prevention.

UNIT 9: Surface Chemistry, Chemical Kinetics and Catalysis
Adsorption-Physisorption and chemisorption and their characteristics, factors affecting adsorption of gases on solids-Freundlich and Langmuir adsorption isotherms, adsorption from solutions. Catalysis. Tyndall effect, Brownian movement, electrophoresis, dialysis, coagulation and flocculation; emulsions and their characteristics. Factors affecting rates of reactions - factors affecting rate of collisions encountered between the reactant molecules, effect of temperature on the reaction rate, concept of activation energy, catalyst. Rate law expression. Order of a reaction (with suitable examples). Units of rates and specific rate constants. Nuclear Chemistry: radioactivity: isotopes and isobars: Properties of α, β and γ rays; Kinetics of radioactive decay (decay series excluded), carbon dating.

UNIT 10: 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: -C=C-, -C_C- and those containing halogens, oxygen, nitrogen and sulphur; homologous series; isomerism-structural and stereoisomerism. Nomenclature (Trivial and IUPAC) Covalent bond fussion - 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.

UNIT 11: Hydrocarbons
Classification, isomerism, IUPAC nomenclature, general methods of preparation, properties and reactions. Alkenes-Geometrical isomerism; mechanism of electrophilic addition: addition of hydrogen, halogens, water, hydrogen halides (Markownikoff's and peroxide effect); ozonolysis, oxidation, and polymerization. Mechanism of electrophilic

substitution: halogenation, nitration, Friedel-Craft's alkylation and acylation, directive influence of functional group in monosubstituted benzene.

UNIT 12: Organic Compounds Containing Oxygen
General methods of preparation, properties, reactions and uses. Alcohols: Distinction of primary, secondary and tertiary alcohols; mechanism of dehydration. Reactions of hydroxyl derivatives. Phenols: Acidic nature, electrophilic substitution reactions: halogenation, nitration and sulphonation, Reimer-Tiemann reaction. Addition to >C=O group, relative reactivities of aldehydes and ketones. Ethers: Structure. Aldehyde and Ketones: Nature of carbonyl group; Nucleophilic addition reactions (addition of HCN, NH3 and its derivatives), Grignard reagent; oxidation; reduction (Wolff Kishner and Clemmensen); acidity of-hydrogen, aldol condensation, Cannizzaro reaction, Haloform reaction; Chemical tests to distinguish between aldehydes and Ketones. Carboxylic acids: Reactions, Acidic strength and factors affecting it; reactions of acid derivatives.

UNIT 13: 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.

UNIT 14: Polymers
General introduction and classi_cation of polymers, general methods of polymerization–addition and condensation, copolymerization; natural and synthetic rubber and vulcanization; monomers and uses - polythene, nylon, polyester and bakelite.

UNIT 15: Chemistry in Everyday Life
Chemicals in medicines-Analgesics, tranquilizers, antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids. Cleansing agents–Soaps and detergents, cleansing action.

PART 4 - MATHEMATICS (30 Questions)

UNIT 1: Sets, Relations and Functions
Sets and their representations, union, intersection and complements of sets and their algebraic properties.

UNIT 2: Complex Numbers
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. Cube roots of unity, triangle inequality.

UNIT 3: Matrices and Determinants
Determinants and matrices of order two and three, properties of determinants, evaluation of determinants. Addition and multiplication of matrices, adjoint and inverse of matrix.

UNIT 4: Applications of Matrices and Determinants
Computing the rank of a matrix-test of consistency and solution of simultaneous linear equations using determinants and matrices.

UNIT 5: Quadratic Equations
Quadratic equations in real and complex number system and their solutions. Relation between roots and coef_cients, nature of roots, formation of quadratic equations with given roots; symmetric functions of roots, equations reducible to quadratic equations.

UNIT 6: 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 7: Mathematical Induction and its Applications
Stating and interpreting the principle of mathematical induction. Using it to prove formula and facts.

UNIT 8: Trigonometry
Trigonometrical identities and equations. Inverse trigonometric functions and their properties. Properties of triangles, including, incentre, circumcentre and orthocenter, solution of triangles.

UNIT 9: Sequences and Series
Arithmetic, geometric and harmonic progressions. Insertion of arithmetic, geometric and harmonic means between two given numbers. Relation between A.M., G.M. and H.M. arithmetic, geometric series, exponential and logarithmic series.

UNIT 10: Differential Calculus
Polynomials, rational, trigonometric, logarithmic and exponential functions. Inverse functions. Graphs of simple functions. Limits, continuity, 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 up to two.

UNIT 11: Aplications of Differential Calculus
Rate of change of quantities, onotonic – increasing and decreasing functions, maxima and minima of functions of one variable, tangents and normals, Rolle's and Lagrange's mean value theorems.

UNIT 12: Integral Calculus
Fundamental integrals involving algebraic, trigonometric, exponential and logarithmic functions. Integration by substitution, by parts and by partial fractions. Integration using trigonometric identities. Integral as limit of a sum. Properties of definite integrals. Evaluation of definite integrals; Determining areas of the regions bounded by simple curves.

UNIT 13: 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 and those of the type $d^2y / dx^2 = f(x)$.

UNIT 14: Straight Lines in Two Dimensions
Equation of family of lines passing through the point of intersection of two lines, homogeneous equation of second degree in x and y, angle between pair of lines through the origin, combined equation of the bisectors of the angles between a pair of lines, condition for the general second degree equation to represent a pair of lines, point of intersection and angle between two lines.

UNIT 15: Circles in Two Dimensions
Standard form of equation of a circle, general form of the equation of a circle, its radius and centre, equation of a circle in the parametric form, length of the tangent, equation of the tangent, equation of a family of circles through the intersection of two circles, condition for two intersecting circles to be orthogonal.

UNIT 16: Conic Sections in Two Dimensions
Sections of cones, equations of conic sections (parabola, ellipse and hyperbola) in standard form,
condition for $y = mx+c$ to be a tangent and point(s) of tangency.

UNIT 17: 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. Application of vectors to plane geometry.

UNIT 18: Measures of Central Tendency and Dispersion
Calculation of mean, median and mode of grouped and ungrouped data. Calculation of standard deviation, variance and mean deviation for grouped and ungrouped data.

UNIT 19: Probability
Probability of an event, addition and multiplication theorems of probability and their applications; Conditional probability; Baye's theorem, probability distribution of a random variate; binomial and poisson distributions and their properties.

PART 4: BIOLOGY (30 Questions)

BOTANY

Unit 1: Taxonomy of Angiosperm
Types of classifications - Artificial, Natural, Phylogenetic - Biosystematics - Binomial Nomenclature - Herbaria and their uses- Bentham and Hook er's classification of plants - Families Malvaceae, Solanaceae - Euphorbiaceae, Musaceae and Economic Importance.

Unit 2: Plant Anatomy
Tissues and Tissue System - anatomy of monocot and dicot roots - anatomy of Monocot and dicot stem and anatomy of dicot leaf.

Unit 3: Cell Biology and Genetics
Chromosomes - Structure and types - genes recombination of chromosomes mutation - chromosomal aberration - DNA as genetic material- Structure of DNA - replication of DNA - Structure of RNA and its type.

Unit 4: Biotechnology
Recombinant DNA Technology - Transgenic plants with beneficial traits - plant tissue culture and its application - Protoplasmic fusion

Unit 5: Plant Physiology
Photosynthesis - Significance - site of photosynthesis - photochemical and biosynthetic phases - electron transport system - cyclic and non cyclic photophosphorylation - C3 and C4 pathway - photorespiration - factor affecting photosynthesis - fermentation - plant growth - growth regulators - phytohormones - auxin - gibberellins - cytokinins - ethylene.

Unit 6: Biology in Human Welfare
Food production - breeding experiments - improved varieties and role of biofertilizer - crop diseases and their control - biopesticides - genetically modi ed food -sustained agriculture and medicinal plants including microbes.

ZOOLOGY

Unit I: Human Physiology
Nutrition - introduction - carbohydrates - proteins - lipids - vitamins mineral - water - Balanced diet - calorie value - (ICBM standard) obesity - Hyperglycemia - hypoglycemia - malnutrition. Digestion - enzymes and enzyme action - Bones and Joints (Major types) - Arthritis - Rickets and Osteomalacia - Gout.
Muscles - muscle action - muscle tone - Rigor Mortis - aerobic exercises (body building) myasthenia gravis.
Respiration - Process of pulmonary respiration - inspiration Expiration - Exchange of gases at alveolar level - Circulation - Functioning of heart origin and conduction of heart beat - Artificial pacemaker - coronary blood vessels and its significance - myocardial infarction - Angina pectoria - Atherosclerosis - heart attack -Resuscitation in heart attack (First aid) Blood
components-functions-plasma-corpuscles-blood clotting-anticoagulants-Thrombosis-embolism-blood related diseases like polycythemia-Leukemia-Lymph fluid.

Physiological Co ordination System:
Brain-functioning of different regions-memory-sleep-stroke-Alzheimer's disease-meningitis-Thyroid-parathyroid hormones-insulin and glucagon-Hormones of adrenal cortex and medulla-Reproductive hormones-problems related to secretion, non secretion of hormones.

Receptor Organs:
Eye-Focussing mechanism and photo chemistry of retina-short sightedness-Nyctalopia-Eye infection-conjunctivitis-Glaucoma-Ear-Hearing mechanism-Hearing impairments and aids - Noise pollution and its importance-skin-melanin functions - Effect of solar radiation / UV Excretion:

Ureotelism-urea-Biosynthesis(ornithine cycle)
Nephron-ultrafiltration-tubular reabsorption and tubular secretion-Renal failure-Dialysis kidney stone formation kidney transplantation-Diabetes.

Reproductive System:
Brief account of spermatogenesis and oogenesis-menstrual cycle-in vitro fertilization-Birth control

Unit 2: Microbiology
Introduction-History of medical microbiology-The influence of Pasteur, Koch and Lister-Virology-structure Genetics culture and diseases-AIDS and its control-Bacteriology-structure, Genetics and diseases-protozoan microbiology-Diseases oriented-pathogenecity of micro organism-anti microbial resistance chemotherapy. Single cell protein. Microbial culture technique and its applications - Strain Isolation and Improvement - Isolation of microbial products.

Unit 3: Immunology
Innate immunity (Non specic) - anatomical Barriers-Physiological barriers-phagocytic barriers
Lymphoidal organs-Thymus- Bursa of fabricius-Peripheral Lymphoid organs-Lymph nodes-Transplantation immunology-Autoimmune disorders.

Unit 4: Modern Genetics and Animal Biotechnology
Introduction-scope-Human Genetics Karyotyping
Chromosome gene mapping-Recombinant DNA technology and segmenting-genetic diseases-Human genome project-cloning-Transgenic organisms-Genetically modified organism(GMO)-Gene therapy-Animal cell culture and its applications-Stem cell technology-Bioethics of genetic engineering in animals.

Unit 5: Environmental Science
Human population and explosion-issue-Global Warming Crisis-Green house effect-Ozone layer depletion-waste management-Biodiversity conservation (Biosphere reserve)

Unit 6: Applied Biology
Livestock and management-Breeds-Farming method-poultry diseases-Economic value
Pisciculture-sh farming-Edible shes of Tamil Nadu.

Unit 7: Theories of Evolution
Lamarckism-Darwinism-Modern concept of natural selection-species of concept-origin of species and isolating mechanism.

MODEL QUESTIONS - B.Tech and Under graduate programs in Health Sciences

PART 1 : ENGLISH

1. _____ bravery is a great virtue
   a. No article b. the
   c. an d. a
2. How can you afford to live _____ that meagre a salary.
   a. with b. in
   c. on d. to
3. Either James or his brothers _____ written the mail
   a. have b. has
   c. is d. are
4. He plays cricket_____?
   a. didn't he b. don't he
   c. isn't he d. doesn't he

PART 2 : PHYSICS

1. Red light has a wavelength of 7000 Å. In μm it is
   a. 0.7 μm b. 7 μm
   c. 70 μm d. 0.07 μm
2. The distance travelled by a body, falling freely from rest in one, two and three seconds are in the ratio
   a. 1 : 2 : 3 b. 1 : 3 : 5
   c. 1 : 4 : 9 d. 9 : 4 : 1
3. The rate of change of angular momentum is equal to
   a. Force b. Angular acceleration
   c. Torque d. Moment of Inertia
4. If the distance between two masses is doubled, the gravitational attraction between them
   a. is reduced to half
   b. is reduced to a quarter
   c. is doubled
   d. becomes four times

PART 3 : CHEMISTRY

1. which of the following has higher electro negativity
   a. fluorine b. chlorine
   c. bromine d. iodine
2. Noble gases have the electron affinity of value
   a. low b. high
   c. zero d. very high
3. The electron affinity and atomic size are proportional
   a. directly b. inversely
   c. not but independent d. none of these
4. The hybridization in SF_6 is
   a. sp3 b. spd3
   c. sp3d2 d. sp3d2

PART 4 : MATHEMATICS

1. Matrix A is of order 2×3 and B is of order 3×2 then order of matrix BA is
   a. 3×3 b. 2×3
   c. 2×2 d. 3×2
2. In a third order determinant the cofactor of a_{23} is equal to the minor of a_{23} then the value of the minor is
   a. 1 b. Δ
   c. $-\Delta$ d. 0
3. If $ax / ((x + 2)(2x - 3)) = 2 / (x + 2) + 3 / (2x - 3)$ then a =
   a. 4 b. 5
   c. 7 d. 8
4. The number of 4 digit numbers, that can be formed by the digits 3, 4, 5, 6, 7, 8, 0 and no digit is being repeated, is
   a. 720 b. 840
   c. 280 d. 560

PART 4 : BIOLOGY

(Biology Students only)

1. Electron transport system is present in
   a. ribosomes b. mitochondria
   c. golgi bodies d. lysosomes
2. DNA replication takes place in
   a. conservative model
   b. semiconservative model
   c. liberal model
   d. None of the above
3. Recombination percentage in a diploid cannot exceed
   a. 100 b. 50
   c. 25 d. 75
4. One of the following does not have ability to divide
   a. Nerve cells b. Liver cells
   c. Muscle cells d. Bone-Marrow cells

SCHOLARSHIPS

BEEE 2016 - SCHOLARSHIP (TUITION FEE WAIVER)

1. 100% of Tuition fees granted as scholarship for Top 50 Rank Holders in BEEE 2016
2. 100% of Tuition fees granted as scholarship for State Toppers of all Boards. and students securing 95% above marks in the Board examinations,
3. 50% of Tuition fees granted as scholarship for 51 - 150 Rank Holders in BEEE 2016.
4. 25% Tuition fees granted as scholarship for Ranks 151 to 250 in entrance conducted by BEEE.2016.
5. Students having valid score in IIT/JEE and STATE ENTRANCE EXAMS will be granted for Scholarship on Rank Basis.
6. Tuition fees scholarship for deserving candidates under sports quota for national and state level champions
7. 50% of Tuition fees granted as scholarship for Students who have presented a research paper in National and International conference

Note :The above listed scholarship are not applicable for admissions into Architecture, Science & Humanities and PG Course.

IMPORTANT DATES TO REMEMBER

1.	**Last date for receipt of filled-in application**	**1st April 2016**
2.	**Entrance Examination (Paper & Pencil)** **(Hall Ticket can be downloaded from website)**	**23rd April 2016**
3.	**Entrance Examination (Online) (Hall Ticket can be downloaded from website)**	**23rd to 30th April 2016**
4.	**Publication of rank list & counselling schedule** **(Counselling Letter can be downloaded from the website)**	**19th May 2016**
5.	**Counselling for admission to B.Tech**	**1st to 5th June 2016**
6.	**Counselling for admission to M.Tech**	**27th June 2016**
7.	**Counselling for admission to MBA and MCA**	**29th June 2016**
8.	**Last date for receipt of NATA score and HSC marks for B.Arch admission**	**27th June 2016**
9.	**Publication of rank list & counselling schedule for B.Arch** **(Counselling Letter can be downloaded from the website)**	**01st July 2016**
10.	**Counselling for admission to B.Arch / M.Arch**	**14th July 2016**
11.	**Last date for payment of full tuition fees for B.Tech**	**20th July 2016**

Hostel & Mess fee payment shall be made on an annual basis at the beginning of every academic year.

Disclaimer :
Information given in this brochure is subject to conditions, Please refer the website for additional information.