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GENERAL INFORMATION

Eligibility

Nationality

The applicant for BEEE 2015 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.

Arts and Science:

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 are eligible for respective courses

M. Com.:

Any Under Graduate with first class or 60% marks or equivalent.

MBA:

Any Under Graduate with first class or 60% marks or equivalent.

MCA:

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 2014 onwards. There are two modes of registration.

- Online with e-payment
use the URL www.bharathuniv.ac.in/admissions, register and pay online.
- 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.
- Direct
 - Candidates can obtain the application form in person from BHARATH UNIVERSITY Campus or Corporate Office on payment of Rs. 900/-.



LIST OF DEPARTMENTS AND CODES

S.no.	Branch / Specialization	Code
B. Tech (duration 4 Years)		
1.	Aeronautical Engineering	01
2.	Automobile Engineering	02
3.	Biomedical Engineering	03
4.	Bioprocess Engineering	04
5.	Bioinformatics	05
6.	Chemical Engineering	06
7.	Civil Engineering	07
8.	Civil Infrastructure Engineering	08
9.	Computer Science & Engineering	09
10.	Computer Software Engineering	10
11.	Electrical & Electronics Engineering	11
12.	Electronics & Communication Engineering	12
13.	Electronics & Control Engineering	13
14.	Electronics & Instrumentation Engineering	14
15.	Electronics & Tele. communication Engineering	15
16.	Food Process Engineering	16
17.	Genetic Engineering	17
18.	Industrial Biotechnology	18
19.	Information Technology	19
20.	Instrumentation & Control Engineering	20
21.	Mechanical Engineering	21
22.	Mechatronics Engineering	22
23.	Nano Technology	23
24.	Production Engineering	24
B. Arch (duration 5 Years)		
B A (duration 3 Years)		
1.	English	25
B B A (duration 3 Years)		
B C A (duration 3 Years)		
B.Com. (duration 3 Years)		
1.	Accounting & Finance	26
2.	Corporate Secretaryship	27
3.	Information & Systems Management	28
B. Sc (duration 3 Years)		
1.	Biotechnology	29
2.	Computer Science	30
3.	Information Technology	31
4.	Physics	32
5.	Chemistry	33
6.	Mathematics	34
7.	Catering Science & Hotel Management	35

S.no.	Branch / Specialization	Code
M. Tech (duration 2 Years)		
1.	Advanced Programming Logic	41
2.	Applied Electronics	42
3.	Artificial Intelligence & Robotics	43
4.	Automobile Engineering	44
5.	Bioinformatics	45
6.	Biomedical Engineering	46
7.	Bioprocess	47
8.	CAD	48
9.	C I M	49
10.	Communication Systems	50
11.	Computer Science & Engineering	51
12.	Construction Management	52
13.	Database Management	53
14.	Digital Communication & Networks	54
15.	Electronics & Instrumentation Engineering	55
16.	Embedded Systems	56
17.	Environmental Engineering	57
18.	Genetic Engineering	58
19.	Geo Spatial Engineering	59
20.	Geo-Technology	60
21.	Hardware Design	61
22.	High Voltage Engineering	62
23.	Hydrology & Water Resources	63
24.	Industrial Biotechnology	64
25.	Industrial Engineering	65
26.	Information Technology	66
27.	Instrumentation & Control Engineering	67
28.	Machine Design	68
29.	Manufacturing System Management	69
30.	Mechatronics	70
31.	Medical Electronics	71
32.	Nano Technology	72
33.	Power Electronics & Drives	73
34.	Power Systems	74
35.	Production Engineering	75
36.	Refrigeration & Airconditioning	76
37.	Sensor Network Programming	77
38.	Software Engineering	78
39.	Structural Engineering	79
40.	System Software Engineering	80
41.	Thermal Engineering	81
42.	Urban Engineering	82
43.	VLSI Design	83



LIST OF DEPARTMENTS AND CODES

S.no.	Branch / Specialization	Code
M.B.A (duration 2 Years)		
M.C.A (duration 3 Years) Lateral Entry (duration 2 Years)		

S.no.	Branch / Specialization	Code
M.Sc. (duration 2 Years)		
1.	Biotechnology	84
2.	Information Technology	85
M.Com. (duration 2 Years)		

STATE CODES

State	Code
Andhra Pradesh	01
Arunachal Pradesh	02
Assam	03
Bihar	04
Chattisgarh	05
Delhi	06
Goa	07
Gujarat	08
Haryana	09
Himachal Pradesh	10
Jammu and Kashmir	11
Jharkhand	12
Karnataka	13
Kerala	14
Madhya Pradesh	15
Maharashtra	16
Manipur	17
Meghalaya	18
Mizoram	19
Nagaland	20
Orissa	21
Punjab	22
Rajasthan	23
Sikkim	24
Tamil Nadu	25
Telangana	26
Tripura	27
Uttar Pradesh	28
Uttaranchal	29
West Bengal	30

State	Code
Andaman and Nicobar Island (UT)	31
Chandigarh(UT)	32
Dadra and Nagar Haveli (UT)	33
Daman and Diu (UT)	34
Lakshadweep (UT)	35
Puducherry (UT)	36

MOTHER TONGUE

Sl.	Mother Tongue	Code
1.	Assamese	01
2.	Bengali	02
3.	Gujarati	03
4.	Hindi	04
5.	Kannada	05
6.	Kashmiri	06
7.	Malayalam	07
8.	Manipuri	08
9.	Marathi	09
10.	Nepali	10
11.	Oriya	11
12.	Punjabi	12
13.	Rajasthani	13
14.	Sindhi	14
15.	Tamil	15
16.	Telugu	16
17.	Urdu	17
18.	Others	18



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	Purnea	225
Chattisgarh	Bilaspur	226
	Raipur	227
Gujarat	Ahmedabad	228
Haryana	Gurgaon	229
Himachal Pradesh	Simla	230
Jharkhand	Bokaro Steel City	231
	Dhanbad	232
	Jamshedpur	233
	Ranchi	234
Karnataka	Bangalore	235
Kerala	Ernakulam	236
	Kannur	237
	Kottayam	238
	Kozhikodu	239
	Thiruvananthapuram	240

State	Centre	Code
Madhya Pradesh	Bhopal	241
Maharashtra	Mumbai	242
Manipur	Imphal	243
Meghalaya	Shilong	244
New Delhi	New Delhi	245
Orissa	Bhubaneswar	246
	Rourkela	247
Puducherry	Puducherry	248
Punjab	Jalandhar	249
Rajasthan	Jaipur	250
	Kota	251
Tamil Nadu	Chennai	252
	Chidambaram	253
	Coimbatore	254
	Cuddalore	255
	Dindugal	256
	Kumbakonam	257
	Madurai	258
	Nagercoil	259
	Namakkal	260
	Neyveli	261
	Ramanathapuram	262
Salem	263	
Theni	264	
Tiruchirapalli	265	
Tiruvannamalai	266	
Telangana	Adilabad	267
	Bodhan	268
	Hyderabad/Secunderabad	269
	Karim Nagar	270
	Khammam	271
	Mahboob Nagar	272
	Medak	273
	Nalgonda	274
	Nizamabad	275
	Ranga Reddy	276
Warangal	277	
Tripura	Agartala	278
Uttar Pradesh	Gorakhpur	279
	Kanpur	280
	Lucknow	281
West Bengal	Durgapur	282
	Kolkatta	283
	Siliguri	284



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
Maharashtra	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
Telangana	Vellore	325
	Hyderabad	326
	Nalgonda	327
Uttar Pradesh	Warangal	328
	Lucknow	329
West Bengal	Kolkatta	330



NAME OF THE EXAMINATION BOARD AND CODES

S.No.	NAME OF THE EXAMINATION BOARD	CODE
1.	Andhra Pradesh Board of Intermediate Education	101
2.	Arunachal State Board of Secondary Schools	102
3.	Assam Higher Secondary Education Council	103
4.	Bihar Intermediate Education Council	104
5.	Central Board of Secondary Education	105
6.	Chattisgarh Madhyamik Shiksha Mandal	106
7.	Council for the Indian School Certificate Examinations	107
8.	Goa Board of Secondary and Higher Secondary Education	108
9.	Gujarat Secondary and Higher Secondary Education	109
10.	Himachal Pradesh Board of School Education	110
11.	Haryana Board of Education	111
12.	Indian Certificate of Secondary Education	112
13.	J & K State Board of School Education	113
14.	Jharkhand Academy Council	114
15.	Karnataka Board of Pre-University Education	115
16.	Kerala Board of Public Examinations	116
17.	Madhya Pradesh Board of Secondary Education	117
18.	Maharashtra State Board of Secondary and Higher Secondary Education	118
19.	Manipur Council of Higher Secondary Education	119
20.	Meghalaya Board of Secondary Education	120
21.	Mizoram Board of School Education	121
22.	Nagaland Board of School Education	122
23.	Orissa council of Higher Secondary Education	123
24.	Punjab School Education Board.	124
25.	Rajasthan Board of Secondary Education	125
26.	Tamil Nadu Board of Higher Secondary Education	126
27.	Tripura Board of Secondary Education	127
28.	Uttra Pradesh Board of High School & Intermediate Education	128
29.	Uttaranchal shuksha Evam Pariksha Parishad	129
30.	West Bengal Council of Higher Secondary Educational	130
31.	Others	131

**BEEE - 2015 - 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 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 C_p and C_v -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

Wavefront – Huygens principle – wave nature of light – interference – young's double slit experiment – 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. Biot 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 capacitor 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 – Einstein's mass 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 waves – 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 carbon 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 gates – De Morgan's theorem.

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, Charles'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 significance.

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 (K_p and K_c) 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 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.

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, NH_3 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 classification 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 systems of 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 coefficients, 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: Applications of Differential Calculus

Rate of change of quantities, monotonic – increasing and decreasing functions, maxima and minima of functions of one variable, tangents and normals, Rolle's theorem and Lagrange's theorem mean value theorem.

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 of first and second order.

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 Hooker'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 modified food - sustained agriculture and medicinal plants including microbes.

ZOOLOGY

Unit 1: 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-corpuses-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-pathogenicity 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

- _____ bravery is a great virtue
a. No article b. the
c. an d. a
- How can you afford to live _____ that meagre a salary.
a. with b. in
c. on d. to
- Either James or his brothers _____ written the mail
a. have b. has
c. is d. are
- He plays cricket _____?
a. didn't he b. don't he
c. isn't he d. doesn't he
- There was _____ food in the fridge. It was nearly empty.
a. a little b. a few
c. little d. few

PART 2 : PHYSICS

- 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
- 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
- The rate of change of angular momentum is equal to
a. Force
b. Angular acceleration
c. Torque
d. Moment of Inertia
- 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

- If the length of the wire and mass suspended are doubled in a Young's modulus experiment, then, Young's modulus of the wire
a. remains unchanged
b. becomes double
c. becomes four times
d. becomes sixteen times

PART 3 : CHEMISTRY

- which of the following has higher electro negativity
a. fluorine
b. chlorine
c. bromine
d. iodine
- Noble gases have the electron affinity of value
a. low b. high
c. zero d. very high
- The electron affinity and atomic size are proportional
a. directly
b. inversely
c. not but independent
d. none of these
- The hybridization in SF_6 is
a. sp^3 b. sp^3d
c. sp^3d^2 d. sp^3d^2
- Para magnetism is common in
a. p-block b. s-block
c. d-block d. f-block

PART 4 : MATHEMATICS

- 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
- 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
 5. If n is a positive integer then the number of terms in the expansion of $(x + a)^n$ is
 - a. n
 - b. n - 1
 - c. n + 1
 - d. n + 2
- 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
 5. Which of the following cell organelles takes part in photorespiration
 - a. Peroxisomes
 - b. Glyoxisomes
 - c. Lysosomes
 - d. Sphaerosomes

SCHOLARSHIPS

BEEE 2015 - SCHOLARSHIP (TUITION FEE WAIVER)

1. 100% of Tuition fees granted as scholarship for Top 50 Rank Holders in BEEE 2015
 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 2015 .
 4. 25% Tuition fees granted as scholarship for Ranks 151 to 250 in entrance conducted by BEEE.2015.
 5. 100% of Tuition fees granted as scholarship for students Participated / Won in National Sports & events.
 6. 50% of Tuition fees granted as scholarship for students Participated / Won in State level Sports & events.
 7. 25% of Tuition fees granted as scholarship for students Won in District level Sports & events.
- (Note: Students eligible for sports scholarship will have to be certified by Dept. of Physical Education from the University. The students sports participation shall be monitored during the academic year)
8. Students Applied for IIT/JEE and STATE ENTRANCE EXAMS will be granted for Scholarship on Rank Basis.
 9. The above listed scholarship are not applicable for admissions into Architecture, Arts & Science and PG Courses.

IMPORTANT DATES TO REMEMBER

1.	Last date for receipt of filled-in application	1 st April 2015
2.	Entrance Examination	25 th April 2015
3.	Publication of rank list & counselling schedule	5 th May 2015
4.	Counselling for admission to B.Tech	1 st to 5 th June 2015
5.	Counselling for admission to M.Tech	25 th June 2015
6.	Counselling for admission to MBA and MCA	25 th June 2015
7.	Last date for receipt of NATA score and HSC marks for B.Arch admission	25 th June 2015
8.	Publication of rank list & counselling schedule for B.Arch	8 th July 2015
9.	Counselling for admission to B.Arch	13 th July 2015
10.	Last date for payment of full tuition fees for B.Tech	20 th July 2015

The application form included with this guide is valid for the academic year 2015 - 2016 only.

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

Subject to conditions



BHARATH INSTITUTE OF SCIENCE & TECHNOLOGY

Chennai - 600 073, Tamilnadu, India. Toll Free No. 1800 419 1441

Side - 1

Application fee
Rs 900/-

BEEE - 2015 : B. Tech / B. Arch / BA / BBA / BCA / B.Com. / B.Sc. / M. Tech / MBA / MCA / M.Sc. / M.Com / Ph.D

Please refer to the Information Brochure for filling each item below.
Write only in CAPITAL LETTERS. Ensure you enter the correct code mentioned against the apt choice and shade the circle accordingly.

APPLICATION NUMBER

100001

SERIAL NUMBER

100001

APPLICATION INCOMPLETE IN ANY RESPECT SHALL NOT BE CONSIDERED

RIGHT METHOD

WRONG METHOD

1. NAME OF THE CANDIDATE (As it appears/would appear in your XII Standard Certificate)

M U K E S H K U M A R G U P T A

2. GENDER M

1. MALE

2. FEMALE

3. RELIGION

HINDU

1. HINDUISM

2. CHRISTIANITY

3. ISLAM

4. OTHERS

4. NATIONALITY

INDIAN

1. INDIAN

2. NRI / PIO / OCI

3. FOREIGN / OTHERS

SAMPLE FOR SHADING

SAMPLE FOR SHADING

5. DATE OF BIRTH

DAY: 10 MONTH: 03 YEAR: 1994

6. COMMUNITY 1

1. GENERAL / OC

2. OBC / BC

3. MBC

4. SC

5. ST

7. BLOOD GROUP

AB +

8. MOTHER TONGUE

08

9. COURSE

B. TECH

B. Tech

B. Arch

BA

BBA

BCA

B.Com.

B.Sc.

M. Tech.

MBA

MCA

M.Com.

M.Sc.

Ph. D

9 (a) Choice of Branch / Specialization Option 1

25

9 (b) Choice of Branch / Specialization Option 2

16

9 (c) Choice of Branch / Specialization Option 3

21

10. MODE OF STUDY

FULL TIME PART TIME LATERAL ENTRY

11 (a) Have Valid Score of GATE TANCET CAT

(b) Appearing for MAT XAT GMAT

12. YOUR COMPLETE POSTAL ADDRESS INCLUDING YOUR FULL NAME

(Write in Block ball point pen only. Use CAPITAL LETTERS. Do not use Pencil)

Name : MUKESH KUMAR GUPTA

CID : NARENDRA GUPTA

Address : NEW NO 34, OLD NO 17. NANA SAHIB NAGAR, SOWCARPET,

City : CHENNAI State : TAMIL NADU

Pin Code : 600079

STD : 044 Phone No : 82222228

Mobile : 06879696999

Email : mukeshgupta@gmail.com

13. PHOTOGRAPH

14. SIGNATURE (Use ball point Pen only)

M. K. Gupta

