



# Bharath

**INSTITUTE OF HIGHER EDUCATION AND RESEARCH**  
[Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956]

**NIRF-MHRD**  
GOVT. OF INDIA  
RANKING 2018\*  
**NO.2**  
**IN INDIA**  
FOR OUTREACH & INCLUSIVITY

BE PART OF A 36 YEARS LEGACY OF WORLD-CLASS EDUCATION



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APPLICATION FORM  
INFORMATION GUIDE BOOK

TOLL FREE 1800-419-1441  
[www.bharathuniv.ac.in](http://www.bharathuniv.ac.in)

Bharath Institute of Science & Technology Chennai 600 073 | Tamil Nadu | India





NAAC  
GRADE  
**A**



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AICTE



36

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Accreditation with Grade **'A'**

RECOGNITION OF PROVIDING QUALITY HIGHER EDUCATION  
IN THE FIELD OF EDUCATION & RESEARCH

## GENERAL INFORMATION

BEEE 2019 is an All India Engineering Entrance Examination Conducted by Bharath University for admission of B.Tech degree Programme through single window counseling

### Nationality

The application for admission should be a resident Indian national and should have studied in schools Located in India in the preceding two 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

In addition to the Government norms, candidates who seek admission to B.Tech Degree Programme should have either completed or Appearing for, any one of the following Examinations; 10+2 system of Higher Secondary Examination conducted by any State Board, Central Board of higher Secondary Education (CBSE, New Delhi); the Council for Indian School Certificate Examination (CISCE, New Delhi); National Institute of Open School; Intermediate Or two-year Pre-University Examination Conducted by a recognized Board/University; High School Certificate Examination of the Cambridge University or equivalent.

### Engineering and Technology

Undergraduate programs B.Tech : A pass in 10+2 or its equivalent with Minimum 50% aggregate in Physics, Chemistry and Mathematics

For Industrial Biotechnology, Biomedical Engineering, Bioinformatics, Bio processing and Genetic Engineering: With Minimum 50% aggregate in Physics, Chemistry And 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. No separate entrance examination will be conducted by Bharath University. However, the candidates have to apply in the prescribed application form for admission to B.Arch. program.

### Age Limit and Age Relaxation

Candidates who have not completed 25 year of age as on 1st July of the year in which Admission is sought are eligible.

### BEEE Application Forms

The Application Forms will be issued from November onwards. There are two modes of registration.

i. Online with e-payment use the URL [www.bharathuniv.ac.in/admissions](http://www.bharathuniv.ac.in/admissions), register and pay online. 1 Application to be filled online by visiting [www.bharathuniv.ac.in/admissions](http://www.bharathuniv.ac.in/admissions) and the same can be downloaded and sent to us with the DD for Rs.750/- drawn in favour of Bharath Institute of Higher Education and Reserach, 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.

ii. Direct Candidates can obtain the application form from any of the sources upon payment of 750/-

**Scheme of Examination** - BEEE 2019  
(i) PAPER AND PENCIL TEST (PPT)  
(ii) COMPUTER BASED TEST (CBT)

Note Four sets of Question papers (A,B,C,D) will be given each Exam center. Any one set will be given to Exam appearing students it is purely exam center invigilators choice.



### BEEE - 2019 - Pattern of Question paper (Multiple Choice Questions)

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

#### Evaluation and Declaration of Results

(i) Merit List A merit list will be prepared based on the total marks secured in the BEEE 2019.

(ii) Announcement of Result The examination results will be available at website: [www.bharathuniv.ac.in](http://www.bharathuniv.ac.in) 6th May 2019

(iii) There is no provision to send the marks of the candidates (selected or unselected) by post. At the time of publication of the results, the rank will be intimated through email if the email of the applicant is provided. There is no provision for re-grading or re-totalling. No photocopies of the answer sheets will be made available.

#### RULES FOR RESERVATION

Reservation for SC / ST / OBC and Physically Challenged candidates will be applicable as per the rules of Government of India for the time being.

For details counselling dates & programme commencement date please visit our website

[www.bharathuniv.ac.in](http://www.bharathuniv.ac.in)

#### Schedule of Examination: BEEE 2019

##### PHASE – 1 (BEEE 2019)

Last Date for Receipt of Applications 15th April 2019
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BEEE 2019 PPT Date of Examination  19th April 2019
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BEEE 2019 CBT Date of Examination 20th -24th April 2019
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##### Sessions – Morning & Afternoon

Timing: 10.00 a.m to 12.30 p.m & 2.00 p.m to 4.30 p.m
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##### Results

May 6th 2019
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## LIST OF DEPARTMENTS

S.no	Branch / Specialization
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### B.Tech. (Bachelor of Technology)

Duration 4 Years

1	Aeronautical Engineering
2	Aero Space Engineering
3	Automobile Engineering
4	Agriculture Bio Technology
5	Biomedical Engineering
6	Bio-Technology specialization with Bio Informatics
7	Civil Engineering
8	Civil Engineering Specialization with Infrastructure
9	Computer Science & Engineering
10	CSE with special information security
11	CSE with Big data Analytics
12	Electrical & Electronics Engineering
13	Electronics & Communication Engineering
14	Bio-Technology specialization with Genetic Engineering
15	Industrial Biotechnology
16	Information Technology
17	Mechanical Engineering
18	Mechatronics Engineering
19	Nano Technology

## Application Form: Centre Selection For BEEE 2019

### BEEE 2019 - Paper & Pencil Test (PPT) Computer Based Test (CBT)

#### Centres

STATE	Test City Centers & Code
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Andhra Pradesh	Anantapur 001
Andhra Pradesh	Chittoor 002
Andhra Pradesh	Eluru 003
Andhra Pradesh	Guntur 004
Andhra Pradesh	Kadappa 005
Andhra Pradesh	Kakinada 006
Andhra Pradesh	Kurnool 007
Andhra Pradesh	Machilipatnam 008
Andhra Pradesh	Narosorpeta 009
Andhra Pradesh	Nellore 010
Andhra Pradesh	Ongole 011
Andhra Pradesh	Rajahmundry 012
Andhra Pradesh	Srikakulam 013
Andhra Pradesh	Tenali 014
Andhra Pradesh	Tirupathi 015
Andhra Pradesh	Vijayawada 016
Andhra Pradesh	Visakhapatnam 017
Andhra Pradesh	Vizianagram 018

Arunachal Pradesh	Itanagar 019
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Assam	Guwahati 020
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Bihar	Bhagalpur 021
Bihar	Muzzaffarpur 022
Bihar	Patna 023

Chattisgarh	Bhilai 024
Chattisgarh	Raipur 025

Daman & Diu	Daman 026
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Goa	Goa 027
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Gujarat	Ahmedabad 028
Gujarat	Surat 029

STATE	Test City Centers & Code	
Haryana	Gurgaon	030
Haryana	Hissar	031
Himachal Pradesh	Simla	032
Jammu & Kashmir	Sri nagar	033
Jharkhand	Bokaro	034
Jharkhand	Dhanbad	035
Jharkhand	Jamshedpur	036
Jharkhand	Ranchi	037
Karnataka	Bangalore	038
Kerala	Trivandrum	039
Lakshadweep	Kavaratti	040
Madhya Pradesh	Bhopal	041
Madhya Pradesh	Gwalior	042
Madhya Pradesh	Indore	043
Madhya Pradesh	Jabalpur	044
Maharashtra	Aurangabad	045
Maharashtra	Mumbai	046
Maharashtra	Nagpur	047
Maharashtra	Pune	048
Manipur	Imphal	049
Meghalaya	Shilong	050
Mizoram	Aizawl	051
Nagaland	Kohima	052
NewDelhi	NewDelhi	053
Orissa	Bhubaneswar	054
Puducherry	Puducherry	055
Punjab	Jalandhar	056
Punjab	Ludhiyana	057
Rajasthan	Jaipur	058
Rajasthan	Jodhpur	059

STATE	Test City Centers & Code	
Rajasthan	Kota	059
Rajasthan	Udaipur	060
Sikkim	Gangtok	061
Tamil Nadu	Chennai	062
Tamil Nadu	Coimbatore	063
Tamil Nadu	Erode	064
Tamil Nadu	Karur	065
Tamil Nadu	Madurai	066
Tamil Nadu	Namakkal	067
Tamil Nadu	Salem	068
Tamil Nadu	Vellore	069
Tamil Nadu	Villupuram	070
Tamil Nadu	Tiruchirappalli	071
Telangana	Hyderabad	072
Telangana	KarimNagar	073
Telangana	Khammam	074
Telangana	Warangal	075
Telangana	Nizamabad	076
Telangana	Nalgonda	077
Tripura	Agartala	078
Uttar Pradesh	Agra	079
Uttar Pradesh	Allahabad	080
Uttar Pradesh	Bareilly	081
Uttar Pradesh	Bhagalpur	082
Uttar Pradesh	Faizabad	083
Uttar Pradesh	Gorakhpur	084
Uttar Pradesh	Jhansi	085
Uttar Pradesh	Kanpur	086
Uttar Pradesh	Lucknow	087
Uttar Pradesh	Noida	088
Uttar Pradesh	Raebareli	089
Uttar Pradesh	Varanasi	090
Uttarakhand	Dehradun	091
West Bengal	Kolkata	092

## SYLLABUS 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-Moduli 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 and Magnetism

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 a 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 induction – capacitor capacitor in parallel and series – drift. Velocity of electrons – ohm's law – electrical resistivity and conductivity – super conductivity – kirchoff's law – wheatstone's bridge – principle potentiometer – electric power – faraday's law – lenz law at electromagnetic induction – self inductances mutual inductance – Fleming's right hand rule – methods of inducing emf – 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  $\alpha$ ,  $\beta$  and  $\gamma$  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 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, 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, antibonding), sigma and pi-bonds, molecular orbital electronic configurations of homonuclear diatomic molecules, concept of bond order, bond length and bond energy. Elementary idea of metallic bonding. Hydrogen bonding and its applications. 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

### 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  $\alpha$ ,  $\beta$  and  $\gamma$  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

#### UNIT 2: Complex Numbers

#### UNIT 3: Matrices and Determinants

#### UNIT 4: Applications of Matrices and Determinants

#### UNIT 5: Quadratic Equations

#### UNIT 6: Permutations and Combinations

#### UNIT 7: Mathematical Induction and its Applications

#### UNIT 8: Trigonometry

#### UNIT 9: Sequences and Series

#### UNIT 10: Differential Calculus

#### UNIT 11: Applications of Differential Calculus

#### UNIT 12: Integral Calculus

#### UNIT 13: Differential Equations

#### UNIT 14: Straight Lines in Two Dimensions

#### UNIT 15: Circles in Two Dimensions

#### UNIT 16: Conic Sections in Two Dimensions

#### UNIT 17: Vector Algebra

#### UNIT 18: Measures of Central Tendency and Dispersion

#### UNIT 19: Probability

### 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 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) - 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-sleepstroke- Alzheimer's disease-meningitis-Thyroidparathyroid hormones-insulin and glucagon-Hormones of adrenal cortex and medulla-Reproductive hormonesproblems 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 oogenesismenstrual 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

## **Unit 7: Theories of Evolution**

Lamarckism-Darwinism-Modern concept of natural selection-species of concept-origin of species and isolating mechanism.



## SCHOLARSHIP in Tuition Fees FOR BEEE - 2019 RANK HOLDERS

Rank Holders in BEEE 2019

Top 25 Rankers – 100% Scholarship
Top 26-250 Rankers – 50% Scholarship
Top 251-500 Rankers – 25% Scholarship

## Sports Scholarship

International winning Players – 100% Scholarship
National winning Players – 50 % Scholarship
District Winning Players -25% Scholarship

## Special Scholarship:

Students from Army, Navy, First Graduate or Economic back ground, physically challenged. Students Are Eligible Special Scholarship.

### Candidates who appear for PHASE-I BEEE-2019 Conducted on 19th - 24th APRIL 2019 Fee structure for B.Tech Programmes

MERIT SCHOLARSHIP With BEEE Intermediate +2 Marks Percentage in PCM/BPC	Phase - I Tuition Fees Per Annum
Above 95%	50,000 ( Yearly Fees)
90% - 94.9%	60,000 ( Yearly Fees)
70% - 89.9%	80,000 ( Yearly Fees)
60% - 69.9%	100,000 ( Yearly Fees)
Below 60%	120,000 ( Yearly Fees)

Academic & Career development Fees -Rs 15,000

### BHARATH Dr. APJ Abdul Kalam Merit - Scholarship in Tuition Fee for B.Tech Programmes

MERIT SCHOLARSHIP Intermediate +2 Marks Percentage in PCM/BPC	Phase - II Tuition Fees Per Annum
Above 95%	60,000 ( Yearly Fees)
90% - 94.9%	70,000 ( Yearly Fees)
70% - 89.9%	90,000 ( Yearly Fees)
60% - 69.9%	110,000 ( Yearly Fees)
Below 60%	130,000 ( Yearly Fees)

Academic & Career development Fees -Rs 15,000

Candidates can avail scholarship calculated based on MPC Aggregated or BEEE 2019 Rankings whichever is higher.

**NOTE :** All Scholarships are Applicable to Four Years

**YEARLY HOSTEL FEES:** Hostel Boarding & Lodging - Rs. 80,000 / Hostel Admission Fee - Rs. 2000



## DOCUMENTS TO BE PRODUCED AT THE TIME OF COUNSELLING

BEEE-2019 Hall Ticket / BEEE-2019 Score Card / Call Letter

Demand Draft (Non-refundable) for 20,000/- drawn in favour of “Bharath Institute of Higher Educaiton and Research”, payable at Chennai.

Candidates without the DD for 20,000/- will not be permitted to attend the counseling.

## DOCUMENTS TO BE SUBMITTED AT THE TIME OF ADMISSION

Marks statement(s) of qualifying examination (XII Standard or recognized as equivalent and of all attempts)

Marks statement(s) of X Standard

Transfer Certificate / Migration Certificate

Community Certificate (For all categories except General)

Xerox copy of Adhar Card / Ration Card

Nativity Certificate (For candidates hailing from Jammu and Kashmir and the North Eastern States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura).

Six copies of recent Passport size (3.5 x 4.5 cm) color photos of the candidate with white background dressed in formal wear with name and date printed.

Undertaking for good conduct and behavior in the prescribed form (will be issued at the time of admission).

Anti-Ragging Joint Undertaking by parent/guardian and the student Two Sets of photocopies of all original documents.

Four copies of Passport size (3.5 x 4.5 cm) Photographs of Parent / Guardian Any other declaration or undertaking that may be required at the time of counselling / admission

### **Bharath Institute of Higher Educaiton and Research**

# 173 Agharam Road Selaiyur, Chennai - 600 073

**Tamil Nadu, India**

**University Phone:** + 91 - 44 - 2229 0742, 2229 0125

**Fax:** + 91 - 44 - 2229 3886

**Email:** vc@bharathuniv.ac.in / admission@bharathuniv.ac.in

### **Corporate Office**

# 1, First Main Road

Kasturibai Nagar,

Adyar, Chennai - 600 020

**Tamil Nadu, India**

**Phone:** + 91 - 44 - 4211 5251

## LEGAL JURISDICTION

All disputes pertaining to the conduct of BEEE 2019 shall fall within the jurisdiction of Chennai only.

**Important : For updated information, please visit our website : [www.bharathuniv.ac.in](http://www.bharathuniv.ac.in)**







**Bharath**  
INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
[Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956]

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