SATHYABAMA UNIVERSITY

(Established under Section 3 of UGC Act, 1956)
(A Christian Minority Institution)
Declared as category 'A' University by MHRD, Government of India
Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119.
www.sathyabamauniversity.ac.in

B.E./B.Tech./B.Arch./B.D.S. Entrance Examination - 2015

INFORMATION BROCHURE




CHANCELLOR's MESSAGE

Research and Innovation are the backbones of any University system. These researches and innovations should be coupled with the publication, patents and thereafter commercialization for societal development. After becoming a University, the progress towards the research and publications of the faculty, scientists and research scholars is a noteworthy one. Involvement of student fraternity in the research areas and thereby making the students to be part of the innovative development are the fundamental principles of Sathyabama University.

The University has fourteen Research Centres that undertake research in the emerging areas. I take immense pleasure and pride in informing you about the world class Nano Technology Research Centre and Animal Research laboratory being set up in our University campus. Apart from this, all the Departments of our University are also involved in undertaking sponsored research projects from various Governmental and Non Governmental agencies.

The University is located on Rajiv Gandhi Salai in a sprawling campus of 250 acres. We have well equipped Laboratories, Class rooms, Central Library and Department Libraries. Our University is accredited with "B++" grade by the National Assessment & Accreditation Council (NAAC) and Institution of Engineers. We have ISO 9001:2000 certification from DET NORSKE VERITAS.

At this juncture, I am very happy to inform you that the University is conducting All India Entrance Examination for admitting students to various Under Graduate courses of Engineering / Technology, Architecture and Bachelor of Dental Surgery. I wish all the budding higher secondary students to undertake this examination in order to have a research oriented curriculum with disciplined approach and moral values.

Colonel. Dr. JEPPIAAR, M.A., B.L., Ph.D.,

DIRECTORS' MESSAGE

"Learn today, Lead Tomorrow" is the basic concept in overall development of Sathyabama University student. Personality Development, Certificate courses, community development, Leadership building without compromising the basic disciplinary and ethical values are the foundations of Sathyabama University. Hence, "We believe, you career begins with us".

Having attained the Status of Category "A" by the Task force appointed by the Ministry of Human Resource Development, Government of India, it is our duty to mould our students to the industrial requirement. With the increasing percentage of placement every year, it is our continuous endeavor and practice to inculcate more industry fit students every year. This is well supported by continuous syllabus updates with Industry, Academia interaction, involvement of students sponsored research activities.

We welcome all the budding technocrats into our fold and We wish them success in Sathyabama University Entrance Examination 2015.

Dr. MARIE JOHNSON, B.E., M.B.A., M.Phil. Ph.D.,
Dr. MARIAZEENA JOHNSON, B.E., M.B.A., M.Phil., Ph.D.,

SATHYABAMA UNIVERSITY

(Established under Section 3 of UGC Act, 1956)
(A Christian Minority Institution)
Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119.
www.sathyabamauniversity.ac.in

ISO 9001 REGISTERED
DNV Certificate B.V., The Netherlands

UNDER GRADUATE COURSES

B.E.	Aeronautical Engineering
	Automobile Engineering
	Civil Engineering
	Computer Science and Engineering
	Electrical and Electronics Engineering
	Electronics and Telecommunication Engineering
	Electronics and Communication Engineering
	Electronics and Control Engineering
	Electronics and Instrumentation Engineering
	Mechanical Engineering
	Mechanical and Production Engineering
B. Tech	Bioinformaitcs
	Biomedical
	Biotechnology
	Chemical Engineering
	Information Technology
B .Sc.	Visual Communication
	Computer Science
B.Com.	Bachelor of Commerce
B.Arch	Bachelor of Architecture
BDS	Bachelor of Dental Surgery
B.Ed.	Bachelor of Education

POST GRADUATE COURSES

MBA	Master of Business Administration
MCA	Master of Computer Applications
M.Ed.	Master of Education
M.Sc.	Mathematics
	Physics
	Chemistry
	Computer Science
	Energy Science
	Biotechnology
	Visual Communication
M.Plan.	Planning
M.E.	Applied Electronics
	Aeronautical Engineering
	Communication Systems
	Computer Aided Design
	Computer Science and Engineering
	Electronics and Control
	Embedded Systems
	Environmental Engineering
	Power Electronics and Industrial Drives
	Structural Engineering
	Thermal Engineering
	Engineering Design
	Manufacturing Engineering
	Cloud Computing
	Power Systems
M.Tech.	Bioinformatics
	Biotechnology
	Green Engineering & Technology
	Information Technology
	Marine Biotechnology
	Medical Instrumentation
	Nano Technology
	Material Science
	Chemical Engineering
	Systems Biology
	Data Engineering
	VLSI
	Wind Energy Technology
	Energy Engineering
M.Arch.	Building Management
	Sustainable Architecture

RESEARCH PROGRAMMES

M. Phil	Biotechnology
Ph.D.	In all the disciplines of Engineering/Technology, Management and Science
M. Tech **(By Research)**	

VICE CHANCELLOR'S MESSAGE

Sathyabama University emerged as leading university, achieves excellence in higher education to the international standards through postgraduate studies, research, technology incubation, product innovation and extension work in Science, Technology and Management Education with its distinguished faculty. It has seen a considerable growth in the past few years with the introduction of new courses of study, new disciplines and new initiatives. University has a pivotal role in shaping the students into leaders of tomorrow and is trained to lead not only by deed and skill, but also by character and values. University provides a congenial environment for the holistic growth and all round development of the student through suitably designed teaching learning process.

Here, the future is full of opportunities and encourages every young mind to realize their dreams. I welcome all the science, engineering and dental aspirants towards a bright future by achieving success in the Sathyabama University's All India Entrance Examination.

Dr. B. SHEELA RANI, M.S.(BY RESEARCH), Ph.D.,

CONTENTS

I. INTRODUCTION

Sathyabama University was started with the objectives - To provide higher education, to provide high quality teaching and research. The University has attained greater heights under the able guidance and leadership of Col. Dr. JEPPIAAR, M.A., B.L., Ph.D., Chancellor and well supported by Dr. Marie Johnson and Dr. Mariazeena Johnson, Directors. At present, the University offers 22 Under Graduate courses, 46 Post Graduate Courses and Ph.D., Programme in Engineering, Technology, Science, Education, Management and Bachelor of Dental Surgery. The University admits students into Under Graduate Engineering, Technology, Architecture and Bachelor of Dental Surgery courses based on the All India Entrance Examination conducted by the University every year.

II. ELIGIBILITY CRITERIA FOR UG PROGRAMMES

Candidates can choose any of the following courses depending on the eligibility criteria. Candidates should have passed the qualifying examination with first class / grade either in March/April 2014 or should be appearing for final year examinations in March / April 2015.

In addition to this, candidates should have passed the 10th class or Equivalent Examination in March /April 2012 or after with a minimum of 60% marks. STUDENTS PASSED IN COMPARTMENTAL CLASS / GRADE (OR) PASSED WITH ARREAR/S ARE NOT ELIGIBLE FOR ADMISSION.

ELIGIBILITY CRITERIA FOR UG COURSES

	Course	Duration	Eligibility Criteria
❊	B.E. – Aeronautical Engineering	4 years	A pass in the 10+2 / HSC / ICSE or equivalent examination with Mathematics, Physics and Chemistry with a minimum average of 60% marks (in Mathematics, Physics and Chemistry).
❊	B.E. – Automobile Engineering		
❊	B.E. – Civil Engineering		
❊	B.E. – Computer Science and Engineering		
❊	B.E. – Electrical and Electronics Engineering		
❊	B.E. – Electronics and Communication Engg		
❊	B.E. – Electronics and Control Engineering		
❊	B.E. – Electronics and Instrumentation Engg		
❊	B.E. – Electronics and Telecommunication Engg		
❊	B.E. – Mechanical and Production Engg		
❊	B.E. – Mechanical Engineering		
❊	B.Tech – Chemical Engineering		
❊	B.Tech – Information Technology		
❊	B.Tech – Bioinformatics	4 years	A pass in the 10+2 / HSC / ICSE or equivalent examination with Biology / Mathematics, Physics and Chemistry with a minimum average of 60% marks (in Biology/Mathematics, Physics and Chemistry).
❊	B.Tech – Biomedical		
❊	B.Tech – Biotechnology		
❊	B.D.S. – Bachelor of Dental Surgery	5 years	A pass in the 10+2 / HSC / ICSE or equivalent examination with Biology, Physics and Chemistry with a minimum average of 60% marks (in Biology, Physics and Chemistry).
❊	B.Arch – Bachelor of Architecture	5 years	A pass in the 10+2 / HSC / ICSE or equivalent examination with Mathematics, Physics and Chemistry with a minimum average of 60% marks (in Mathematics, Physics and Chemistry) and a pass in NATA (National Aptitude Test in Architecture) examination with a minimum of 80 marks out of 200.

III ENTRANCE EXAMINATION AND ADMISSION PROCEDURE

1 PRIMARY INFORMATION TO ALL CANDIDATES APPLYING FOR ENTRANCE EXAM 2015

- The candidates are required to assure themselves that they possess the requisite qualification for admission to the course they are applying for.
- Permitting a candidate to appear for the Entrance Exam 2015 or counseling does not necessarily mean the candidate is eligible for admission.
- The candidate who has been offered Provisional Admission after counseling should submit the relevant original documents for admission, such as HSC Mark sheet, Transfer Certificate, etc. to the University on the date of submission of original documents. If not, the admission will stand cancelled .
- If after Verification of Documents submitted, any discrepancy is noticed at a later point of time after admission, candidate's admission will be cancelled by the University .

2. APPLICATION PROCEDURE FOR B.E / B.Tech. / B.Arch. / BDS Entrance Examination

To apply for Entrance Examination, the eligible candidate may choose any one of the following options:

a. APPLICATION FORM (PHYSICAL MODE):

Eligible candidates can buy the application form on payment of Rs. 750 at major Indian Bank Branches throughout India. (The list of various Indian Bank Branches are available in the University Website).

Filled in OMR Data Sheet can be sent to "The Director, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai 600119" on or before 28th March, 2015.

"APPLICATIONS RECEIVED AFTER THE DUE DATE WILL BE SUMMARILY REJECTED"

b. APPLICATION FORM (ONLINE MODE):

Students can also use online application available at www.sathyabamauniversity.ac.in Students opting for online application should fill the application and verify all the details entered. After the verification of the details, Online payment of Rs.750 should be made either by using Net Banking Facility/Credit Card/Debit Card or by Challan payment at any one of the INDIAN BANK branches.

Applications without the fee payment will not be considered.

3. ADMISSION PROCEDURE:

- The admission to Sathyabama University B.E., / B.Tech., / B.Arch., / B.D.S., courses is done solely on the basis of the performance in the Engineering Entrance Examination 2015 conducted by Sathyabama University.
- The candidates will be shortlisted for Counseling, based on their performance in the entrance examination 2015, which will be held at the Sathyabama University campus , Chennai.

4. ENTRANCE EXAMINATION 2015 INSTRUCTIONS :

Entrance Examination 2015 is to be conducted in 2 modes viz.
PAPER - PENCIL mode and ONLINE (COMPUTER BASED) MODE.

Note : A candidate can appear only in one mode of exam either PAPER - PENCIL mode or ONLINE (COMPUTER BASED) MODE.

PAPER - PENCIL MODE Exam is to be conducted only in the states of Tamilnadu, Puducherry, Andhra Pradesh & Telangana. Exam centre allotment will be done by Sathyabama University.

ONLINE (COMPUTER BASED) MODE Exam is to be conducted on a minimum of 3 days in a centre, which will be allotted by Sathyabama University. This Online Sathyabama University Entrance Examination 2015 will be conducted only in the remaining states of India other than Tamilnadu, Puducherry, Andhra Pradesh and Telangana.

(a) For Paper - Pencil Examination (Date of Exam: 19th April 2015, Sunday - 2.00 pm to 4.30 pm)

- This Paper Pencil Sathyabama University Entrance Examination 2015 will be conducted only in the states of Tamilnadu, Puducherry, Andhra Pradesh and Telangana.
- Candidates should be present in the Examination Centre atleast 1 hour before the commencement of Examination.
- Candidates will not be allowed to enter the Examination Hall 30 minutes after the commencement of the Examination.
- Candidates should compulsorily bring the Exam Hall Ticket issued by Sathyabama University for Verification. Also Candidates are advised to bring any Original Photo Identity Proof of the Candidate such as Aadhar Card, Voter Identity Card, Driving License .
- Candidates are directed to bring sharp HB pencil(s), eraser, and Black ballpoint pen to the Examination Hall.
- Candidates are not permitted to carry any material in printed or written form, log tables, formula book, mobile phone, programmable calculators into the Examination Hall.
- Use Black Ball Point Pen for shading inside the oval in the OMR data sheet.
- Answers should be given only in the answer sheet. No spare answer sheet will be given.
- Altering the answer choice is not possible if shaded with ballpoint pen. Hence, Shade the answers with Pencil and if confirmed, shade it with Black Ball Point Pen.
- If there are multiple shadings for a question, the corresponding question will be treated as unanswered.
- Handle the OMR sheet with care.
- No candidate will be allowed to leave the examination hall till the end of the examination.

(b) For Online (Computer Based) Examination (Dates of Exam: April 22nd, 23rd & 24th - 2015).

- This Online (Computer Based) Sathyabama University Entrance Examination 2015 will be conducted only in the remaining states of India other than Tamilnadu, Puducherry, Andhra Pradesh and Telangana.
- Candidates opting to write Online (Computer Based) examination should get all the details at www.sathyabamauniversity.ac.in during a period which will be intimated to the candidates and choose the Exam Centre and examination slot.
- The candidate has the option of choosing the exam centre, which will be entered by the candidate in OMR Data sheet, choosing date and timings of exam from amongst the choice of

data available to the candidate at that moment. The above choice of candidate can be given by the candidate ONLINE using www.sathyabamauniversity.ac.in

- The Examination Centre and the session, once allotted to the candidate, shall not be changed under any circumstances. Every effort shall be made to allot a centre to a candidate in the Exam Centre opted by the candidate. Moreover, the university also reserves its right to allot a centre other than that of the candidate's choice, if it is not possible due to administrative reasons.
- The Online (Computer Based) Examination administered will be a computer based online Exam at a workstation.
- The Candidate should be present in the Online (Computer Based) Exam Centre atleast 30 minutes before the starting time of the Test as specified in the Hall Ticket.
- The candidate is not allowed to possess or carry anything inside the Exam Centre such as mobile phone, blue tooth device, or any electronic device .
- The Candidate is allowed to carry only pen / pencil , Eraser inside the Exam centre.
- Candidates should compulsorily bring the Exam Hall Ticket issued by Sathyabama University for Verification.
- Also Candidates are advised to bring any original Photo Identity Proof of the Candidate such as Aadhar Card, Voter Identity Card, Driving License .
- After your identity is verified, Hall Ticket scanned, photograph captured, the candidate will be assigned to a computer.
- For making rough calculations, a Blank paper sheet will be provided at the workstation. Writing or copying of questions on to the Plain paper is considered a Malpractice. The Rough sheet should be returned back to the Exam Administrator after the Completion of the Exam.
- The Exam administrator is empowered to send the candidate out of the Exam Centre or take any punitive action against the candidate if the candidate is found to do any of the following :
  - creating disturbance, impersonation of the candidate , talking to other candidates, attempting to tamper with the computer hardware or software, Possession of any electronic items or Text Material which is not supposed to be present which may help in answering questions.

5. RECEIPT OF ENTRANCE EXAM APPLICATIONS IN THE UNIVERSITY

- Last date for receipt of filled-in OMR Data Sheet at the university office: 28th March 2015.
- Applications received after the due date will not be processed.
- Candidates are requested to retain a photo copy of the filled in OMR Data Sheet for future reference.
- The university will not be responsible for any postal delay, loss in postal transit or any irregularity of the OMR data Sheet, until it reaches the University.

6. FASTER INFORMATION TO CANDIDATES BY MOBILE AND EMAIL AT DIFFERENT STAGES OF ADMISSION PROCESS

- Through Mobile : All Candidates will be updated with all information regarding Entrance Exam 2015, Hall ticket print details, Counseling Dates etc. to your Mobile Number (Given in the OMR Data Sheet) through SMS messages. Please ensure that the Correct Mobile number has been provided in the OMR Data Sheet.

- Through University Website : Candidates can also get all the above information by using the login details in the URL www.sathyabamauniversity.ac.in
- Login ID: email address of the candidate.
- Password: to be generated by the candidate.
- Using the University website link, you can also get the following status:
  1. Pay the application fee online by credit card / debit card / net banking
  2. View your Entrance Exam application details
  3. Download and print your Hall Ticket
  4. View your results and counseling details.
  5. Download and take printout of counseling call letter.

7. Hall Ticket

- The Hall Ticket will be issued only to those eligible candidates who have submitted their application forms complete in all aspects, on or before the last date.
- Sathyabama University will not take any responsibility, to inform candidates who have sent incomplete application. Candidates are advised to ensure that the Entrance Exam OMR Data Sheet submitted is complete in all aspects.
- The Hall Ticket will contain Name of the Candidate, photograph and address of the candidate, address of the Test Centre allotted and Exam Timings.
- Hall ticket should be downloaded from our website and printout taken on a white paper.
- The Hall Ticket should be examined by the candidate for any discrepancy. If noticed, it should be immediately brought to the notice of Registrar, Sathyabama University by mail or by Post.
- No candidate will be permitted to write the test without a valid Hall Ticket.
- Candidate must not tamper with the Hall Ticket or alter any entry made therein after it has been authenticated.
- Impersonation of the candidate is a legally punishable offence.
- The Hall Ticket is an important document. It should be preserved and produced at the time of counseling and admission.

8. RESULTS OF THE ENTRANCE EXAM 2015

- The entrance examination results will be available on www.sathyabamauniversity.ac.in and will also be intimated through SMS (only to the mobile number given in the OMR Data sheet).
- Since the Paper – Pencil Entrance Exam Answer sheet is Machine Readable, and evaluated with care, there is no provision for Revaluation or Retotalling . No photocopy of answer sheet will be made available. No correspondence in this regard will be entertained.

9. ADMISSION COUNSELING PROCEDURE

- The date/time for counseling will be published in our university website: www.sathyabamauniversity.ac.in. Candidates can download and take a printout of their counseling letter from our website and appear for the counseling as per the counseling schedule.
- Change of date / time of counseling is generally not permissible. If a candidate does not personally appear for counseling on the date and time specified, his / her seat shall be offered to the next candidate in order of merit.

- The selected candidates will have to pay the prescribed fees by way of Demand Draft drawn in favour of "Registrar, Sathyabama University", payable at Chennai, on confirmation of the seat and acceptance of the branch allotted.

10. REQUIRED DOCUMENTS IN ORIGINAL TO BE SUBMITTED DURING COUNSELING & ADMISSION FOR UG PROGRAMS.

- The candidates should produce the following documents in original along with one set of photocopies while reporting for counseling. Candidates will not be allowed to participate in the counseling process without these documents.
- Counseling call letter / Provisional allotment letter.
- Sathyabama University Entrance Exam 2015 Hall Ticket and Result Copy.
- NATA score card for B.Arch only.
- Secondary School (Class X) mark sheet.
- HSC Mark sheet (Class XII)
- Authentic records pertaining to identification, age, marks sheet of qualifying examination, community certificate (if applicable) and other eligibility criteria, will be checked.
- If a candidate fails to produce any of these documents, he / she will not be considered for counseling.
- A candidate should make a decision before the payment of the fee, on whether he / she should join the program based on the branch allotted to him / her at the time of counseling.
- Allotment of branch once made is final and cannot be changed under any circumstances. Upon allotment, the candidate has to submit all the original documents and also pay the full tuition fee for first year.

IV. SCHOLARSHIPS

University offers Scholarships to students who secure the top three positions in the University Semester Examinations. If a student continuously maintains top rank in eight consecutive semesters of University semester examination, the student will be eligible for a maximum Scholarship.

For More Details regarding Scholarships offered for Meritorious students, please visit our University Website: files.sathyabamauniversity.ac.in/news/scholarship.pdf

V. IMPORTANT DATES TO REMEMBER

Last date for receipt of filled-in application	28th March 2015
Entrance Examination (a) Paper-pencil examination	19th April 2015 (Sunday - 2.00 pm to 4.30 pm)
(b) Online examination	22nd - 24th April 2015 (Wed, Thu & Fri)
Publication of Results & counseling schedule	May 2015
Counseling for admission	

HALL TICKETS CAN ALSO BE DOWNLOADED FROM UNIVERSITY WEBSITE LINK (www.sathyabamauniversity.ac.in). HALL TICKETS WILL NOT BE DISPATCHED TO THE CANDIDATES BY POST UNDER ANY CIRCUMSTANCES.

VI. QUESTION PAPER PATTERN AND MAXIMUM MARKS

The Question paper is divided into three parts.

PART – A Comprises of 60 questions from Physics and Chemistry (30 questions each) of multiple choice type.

PART– B Comprises of 60 questions from Mathematics of multiple choice type.

PART – C Comprises of 60 questions from Biology of multiple choice type.

- PART – A – Compulsory for all the students.
- Candidates can choose either PART – B (Mathematics) or PART – C (Biology).
- Students who answer PART – C are eligible for B. Tech – Biotechnology; B.Tech – Biomedical; B.Tech – Bioinformatics and BDS courses only.
- Each question in the question paper carries ONE MARK and No negative marks for wrong answers

VII. SYLLABUS

PHYSICS

UNIT 1: PHYSICS AND MEASUREMENT

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

UNIT 2: KINEMATICS

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

UNIT 3: LAWS OF MOTION

Force and Inertia, Newton's First Law of motion; Momentum, Newton's Second Law of motion; Impulse; Newton's Third Law of motion. Law of conservation of linear omentum and its applications, Equilibrium of concurrent forces. Static and Kinetic friction, laws of friction, rolling friction. Dynamics of uniform circular motion: Centripetal force and its applications.

UNIT 4: WORK, ENERGY AND POWER

Work done by a constant force and a variable force; kinetic and potential energies, workenergy theorem, power. Potential energy of a spring, conservation of mechanical energy, conservative and nonconservative forces; Elastic and inelastic collisions in one and two dimensions.

UNIT 5: ROTATIONAL MOTION

Centre of mass of a two-particle system, Centre of mass of a rigid body; Basic concepts of rotational motion; Moment of a force, torque, angular momentum, conservation of angular momentum and its applications; moment of inertia, radius of gyration. Values of moments of inertia for simple geometrical objects, parallel and perpendicular axes theorems and their applications. Rigid body rotation, equations of rotational motion.

UNIT 6: GRAVITATION

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

UNIT 7: PROPERTIES OF SOLIDS AND LIQUIDS

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

UNIT 8: THERMODYNAMICS

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

UNIT 9: KINETIC THEORY OF GASES

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

UNIT 10 : OSCILLATIONS AND WAVES

Periodic motion – period, frequency, displacement as a function of time. Periodic functions. Simple Harmonic Motion (S.H.M.) and its equation; phase; oscillations of a spring –restoring force and force constant; energy in S.H.M. – kinetic and potential energies; Simple pendulum – derivation of expression for its time period; Free, forced and damped oscillations, resonance. Wave motion. Longitudinal and transverse waves, speed of a wave. Displacement relation for a progressive wave. Principle of superposition of waves, reflection of waves, Standing waves in strings and organ pipes, fundamental mode and harmonics, Beats, Doppler effect in sound

UNIT 11 : ELECTROSTATICS

Electric charges: Conservation of charge, Coulomb's law-forces between two point charges, forces between multiple charges; superposition principle and continuous charge distribution. Electric field: Electric field due to a point charge, Electric field lines, Electric dipole, Electric field due to a dipole, Torque on a dipole in a uniform electric field. Electric flux, Gauss's law and its applications to find field due to infinitely long uniformly charged straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell. Electric potential and its calculation for a point charge, electric dipole and system of charges; Equipotential surfaces, Electrical potential energy of a system of two point charges in an electrostatic field. Conductors and insulators, Dielectrics and electric polarization, capacitor, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, Energy stored in a capacitor.

UNIT 12 : CURRRENT ELECTRICITY

Electric current, Drift velocity, Ohm's law, Electrical resistance, Resistances of different materials, V-I characteristics of Ohmic and nonohmic conductors, Electrical energy and power, Electrical resistivity, Colour code for resistors; Series and parallel combinations of resistors; Temperature dependence of resistance. Electric Cell and its Internal resistance, potential difference and emf of a cell, combination of cells in series and in parallel. Kirchhoff's laws and their applications. Wheatstone bridge, Metre bridge. Potentiometer – principle and its applications.

UNIT 13: MAGNETIC EFFECTS OF CURRENT AND MAGNETISM

Biot – Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long current carrying straight wire and solenoid. Force on a moving charge in uniform magnetic and electric fields. Cyclotron. Force on a current-carrying conductor in a uniform magnetic field. Force between two parallel urrentcarrying conductors-definition of ampere. Torque experienced by a current loop in uniform magnetic field; Moving coil galvanometer, its current sensitivity and conversion to ammeter and voltmeter. Current loop as a magnetic dipole and its magnetic dipole moment. Bar magnet as an equivalent solenoid, magnetic field lines; Earth's magnetic field and magnetic elements. Para-, dia- and ferro- magnetic substances. Magnetic susceptibility and permeability, Hysteresis, Electromagnets and permanent magnets.

UNIT 14 : ELECTROMAGNETIC INDUCTION AND ALTERNATING CURRENTS

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

UNIT 15 : ELECTROMAGNETIC WAVES

Electromagnetic waves and their characteristics. Transverse nature of electromagnetic waves. Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, Xrays, gamma rays). Applications of e.m. waves.

UNIT 16 : OPTICS

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

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

UNIT 17 : DUAL NATURE OF MATTER ANDRADIATION

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

UNIT 18 : ATOMS AND NUCLEI

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

UNIT 19 : ELECTRONIC DEVICES

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

UNIT 20 : COMMUNICATION SYSTEMS

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

CHEMISTRY

PHYSICAL CHEMISTRY

UNIT 1: SOME BASIC CONCEPTS IN CHEMISTRY

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

UNIT 2: STATES OF MATTER

Classification of matter into solid, liquid and gaseous states.

Gaseous State:

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

Liquid State:

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

Solid State:

Classification of solids: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea); Bragg's Law and its applications; Unit cell and lattices, packing in solids (fcc, bcc and hcp

lattices), voids, calculations involving unit cell parameters, imperfection in solids; Electrical, magnetic and dielectric properties.

UNIT 3 :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, Heisenberg uncertainty principle. Elementary ideas of quantum mechanics, quantum mechanical model of atom, its important features, and concept of atomic orbitals as one electron wave functions; Variation of and with r for 1s and 2s orbitals; various quantum numbers (principal, angular momentum and magnetic quantum numbers) and their significance; shapes of s, p and d – orbitals, electron spin and spin quantum number; Rules for filling electrons in orbitals aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of elements, extra stability of half-filled and completely filled orbitals.

UNIT 4: CHEMICAL BONDING AND MOLECULAR STRUCURE

Kossel – Lewis approach to chemical bond formation, concept of ionic and covalent onds.

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

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

Quantum mechanical approach to covalent bonding:

Valence bond theory – Its important features, concept of hybridization involving s, p and d orbitals; Resonance.

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

UNIT 5 : CHEMICAL THERMODYNAMICS

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

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

Second law of thermodynamics - Spontaneity of processes; ? S of the universe and G of the system as criteria for spontaneity, ? Go (Standard Gibbs energy change) and quilibrium constant.

UNIT 6 : SOLUTIONS

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

UNIT 7: EQUILIBRIUM

Meaning of equilibrium, concept of dynamic equilibrium.

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

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

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

UNIT 8 : REDOX REACTIONS AND ELECTROCHEMISTRY

Electronic concepts of oxidation and reduction, redox reactions, oxidation number, rules for assigning oxidation number, balancing of redox reactions. Eectrolytic 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; Relationship between cell potential and Gibbs' energy change; Corrosion and its prevention.

UNIT 9 : CHEMICAL KINETICS

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

UNIT-10 : SURFACE CHEMISTRY

Adsorption: Physisorption and Chemisorption and their characteristics, factors affecting adsorption of gases on solids –, adsorption from solutions.

Catalysis : Homogeneous and heterogeneous, activity and selectivity of solid catalysts, enzyme catalysis.

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

INORGANIC CHEMISTRY

UNIT 11 : CLASSIFICATON OF ELEMENTS AND PERIODICITY IN PROPERTIES

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

UNIT 12 : GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF METALS

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

UNIT 13 : HYDROGEN

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

UNIT 14 : S – BLOCK ELEMENTS (ALKALI ANDALKALINE EARTH METALS)

Group – 1 and 2 Elements General introduction, electronic configuration and general trends in physical and chemical properties of elements, anomalous properties of the first element of each group, diagonal

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

UNIT 15 : P – BLOCK ELEMENTS

Group – 13 to Group 18 Elements

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

Groupwise study of the p block elements Group 13

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

Group 14

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

Group 15

Properties and uses of nitrogen and phosphorus; Allotrophic forms of phosphorus; Preparation, properties, structure and uses of ammonia, nitric acid, phosphine and phosphorus halides, (PCl3, PCl5); Structures of oxides and oxoacids of nitrogen and phosphorus.

Group 16

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

Group 17

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

Group 18

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

UNIT 16 : d– and f –BLOCK ELEMENTS

Transition Elements

General introduction, electronic configuration, occurrence and characteristics, general trends in properties of the first row transition elements – physical properties, ionization enthalpy, oxidation states, atomic radii, colour, catalytic , magnetic properties, complex formation, interstitial compounds, alloy formation; Preparation, properties and uses of K2 Cr2 O7 and KmnO4.

UNIT 17 : CO-ORDINATION COMPOUNDS

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

ORGANIC CHEMISTRY

UNIT 18 : PURIFICATION AND CHARACTERISATION OF ORGANIC COMPOUNDS

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

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

Quantitative analysis (basic principles only) – Estimation of carbon, hydrogen, nitrogen, halogens, sulphur, phosphorus. Calculations of empirical formulae and molecular formulae; Numerical problems in organic quantitative analysis.

UNIT 19 : 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 h 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.

Common types of organic reactions – Substitution, addition, elimination and earrangement.

UNIT 20 : HYDROCARBONS

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

Alkanes – Conformations: Sawhorse and Newman projections (of ethane); Mechanism of halogenations of alkanes.

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

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

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

UNIT 21 : ORGANIC COMPOUNDS CONTAINING HALOGENS

General methods of preparation, properties and reactions; Nature of C-X bond; Mechanisms of substitution reactions. Uses; Environmental effects of chloroform, iodoform, freons and DDT.

UNIT 22 : ORGANIC COMPOUNDS CONTAINING OXYGEN

General methods of preparation, properties, reactions and uses.

ALCOHOLS, PHENOLS AND ETHERS

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

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

Ethers: Structure.

Aldehyde and Ketones: Nature of carbonyl group;Nucleophilic addition to >C=O group, relative reactivities of aldehydes and ketones; Important reactions such as Nucleophilic addition reactions (addition of HCN, 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

Acidic strength and factors affecting it.

UNIT 23 : ORGANIC COMPOUNDS CONTAINING NITROGEN

General methods of preparation, properties, reactions and uses.

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

Diazonium Salts: Importance in synthetic organic chemistry.

UNIT 24 : POLYMERS

General introduction and classification of polymers, general methods of polymerization-addition and condensation, copolymerization; Natural and synthetic rubber and vulcanization; some important polymers with emphasis on their monomers and uses – polythene, nylon, polyester and ibberel.

UNIT 25 : BIOMOLECULES

General introduction and importance of biomolecules.

CARBOHYDRATES – Classification: aldoses and ketoses; monosaccharides (glucose and fructose), constituent monosaccharides of oligosaccharides (sucrose, lactose, maltose) and polysaccharides (starch, cellulose, glycogen).

PROTEINS – Elementary Idea of _ - amino acids, peptide bond, polypeptides; Proteins: primary structure (qualitative idea only), denaturation of proteins, enzymes.

UNIT 26 : PRINCIPLES RELATED TO PRACTICAL CHEMISTRY

- Detection of extra elements (N,S, halogens) in organic compounds; Detection of the following functional groups: hydroxyl (alcoholic and phenolic), carbonyl (aldehyde and ketone), carboxyl and amino groups in organic compounds.
- Chemistry involved in the preparation of the following: Inorganic compounds: Mohr's salt, potash alum. Organic compounds: Acetanilide, pnitroacetanilide, aniline yellow, iodoform.
- Chemistry involved in the titrimetric excercises – Acids bases and the use of indicators, oxalic-acid vs KmnO4, Mohr's salt vs KmnO4.
- Chemical principles involved in the qualitative salt analysis:

Cations – Pb2+ , Cu2+, AI3+, Fe3+, Zn2+, Ni2+, Ca2+, Ba2+, Mg2+, NH4+.

Anions- CO3 2-, S2-, SO4 2-, NO2-, NO3-, CI -, Br, I.

(Insoluble salts excluded).

MATHEMATICS

UNIT 1 : SETS, RELATIONS AND FUNCTIONS

Sets and their representation; Union, Intersection and Complement of sets and their algebraic properties; Power set; Relation, Types of relations, Equivalence relations, functions; one-one, into and onto functions, composition of functions.

UNIT 2 :COMPLEX NUMBERS AND QUADRATIC EQUATIONS

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

UNIT 3 :MATRICES AND DETERMINANTS

Matrices, Algebra of matrices, Types of matrices, Determinants and matrices of order two and three. Properties of determinants, Evaluation of determinants, Area of triangles using determinants. Adjoint and evaluation of inverse of a square matrix using determinants and elementary transformations, Test of consistency and solution of simultaneous linear equations in two or three variables using determinants and matrices.

UNIT 4 :PERMUTATIONS AND COMBINATIONS

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

UNIT 5 :MATHEMATICAL INDUCTION

Principle of Mathematical Induction and its simple applications.

UNIT 6 :BINOMIAL THEOREM AND ITS SIMPLE APPLICATIONS

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

UNIT 7 : SEQUENCES AND SERIES

Arithmetic and Geometric progressions, insertion of arithmetic, geometric means between two given numbers. Relation between A.M. and G.M. Sum upto n terms of special series: Sn, Sn2, Sn3, Sn3. Arithmetic Geometric regression.

UNIT 8 : LIMIT, CONTINUITY AND DIFFERENTIABILITY

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

UNIT 9 : INTEGRAL CALCULUS

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

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

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

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

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

UNIT 10 : DIFFERENTIAL EQUATIONS

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

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

UNIT 11: CO-ORDINATE GEOMETRY

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

Straight lines

Various forms of equations of a line, intersection of lines, angles between two lines, conditions for concurrence of three lines, distance of a point from a line, equations of internal and external bisectors of

angles between two lines, coordinates of centroid, and circumcentre of a triangle, equation of family of lines passing through the point of intersection of two lines.

Circles, conic sections

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

UNIT 12: THREE DIMENSIONAL GEOMETRY

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

UNIT 13: VECTOR ALGEBRA

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

UNIT 14: STATISTICS AND PROBABILITY

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

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

UNIT 15: TRIGONOMETRY

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

UNIT 16: MATHEMATICAL REASONING:

Statements, logical operations AND, OR, IMPLIES, IMPLIED BY, IF AND ONLY IF. Understanding of Tautology, Contradiction, Converse and Contrapositive.

BIOLOGY

Unit I: Diversity of Living Organism

What is living? Biodiversity;Need for classification; Three domain of life; Taxonomy & Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature; Tools for study of Taxonomy-Museums, Zoos, Herbaria, Botanical gardens. Five kingdom classification; Salient features and classification of Monera; Protista and Fungi into major groups; Lichens; Viruses and Viroids. Salient features and classification of plants into major groups-Algae, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms (three to five salient and distinguishing features and at least two examples of each category); Angiosperms – classification up to class, characteristic features and examples. Salient features and classification of animals-non chordate up to phyla level and chordate up to classes level (three to five salient features and atleast two examples).

Unit II: Structural Organisation in Animals and Plants

Morphology and modifications; Tissues; Anatomy and functions of different parts of flowering plants: Root, stem, leaf, inflorescence-cymose and racemose, flower, fruit and seed (To be dealt along with the relevant practical of the Practical Syllabus). Animal tissues; Morphology, anatomy and functions of different system (digestive, circulatory, respiratory, nervous and reproductive) of an insect (cockroach). (a brief account only)

Unit III: Cell Structure and Function

Cell theory and cell as the basic unit of life; Structure of prokaryotic and eukaryotic cell; Plant cell and animal cell; Cell envelope, cell membrane, cell wall; Cell organelles – structure and function;

Endomembrane system-endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles; mitochondria, ribosomes, plastids, microbodies; Cytoskeleton, cilia, flagella, centrioles (ultra structure and function); Nucleus-nuclear membrane, chromatin, nucleous. Chemical constituents of living cells: Biomolecules-structure and function of proteins, carbodydrates, lipid, nucleic acids, Enzymes-types, properties, enzymes action. Cell division : Cell cycle, mitosis, meiosis and their significance.

Unit IV: Plant Physiology

Transport in plants; Movement of water, gases and nutrients; Cell to cell transport-Diffusion, facilitated diffusion, active transport; Plant-water relations-Imbibition, water potential, osmosis, plasmolysis; Long distance transport of water-Absorption, apoplast, symplast, transpiration pull, root pressure and guttation; Transpiration-Opening and closing of stomata; Uptake and translocation of mineral nutrients-Transport of food, phloem transport, Mass flow hypothesis; Diffusion of gases (brief mention). Mineral nutrition: Essential minerals, macro and micronutrients and their role; Deficiency symptoms; Mineral toxicity; elementary idea of Hydroponics as a method to study mineral nutrition; Nitrogen metabolism-Nitrogen cycle, biological nitrogen fixation.

Photosynthesis: Photosynthesis as a means of Autotrophic nutrition; Where does photosynthesis take place, How many pigments are involved in Photosynthesis (Elementary idea); Photochemical and biosynthetic phases of photosynthesis; Cyclic and non cyclic photophosphorylation; Chemiosmotic hypothesis; Photorespiration; C3 and C4 pathways; factors affecting photosynthesis.

Respiration: Exchange of gases; Cellular respiration – glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); Energy relations-Number of ATP molecules generated; Amphibolic pathways; Respiratroy quotient.

Plant growth and development: Seed germination; Phases of plant growth and plant growth rate; Conditions of growth; Differentiation, dedifferentiation and redifferentiation; sequence of developmental process in a plant cell; Growth regulators-auxin, , cytokinin, ethylene, ABA; Seed dormancy; Vernalisation: Photoperiodism.

Unit V: Human Physiology

Digestion and absorption: Alimentary canal and digestive glands, Role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats; Calorific value of proteins, carbohydrates and fat (for box item not to be evaluated); Egeston; Nutritional and digestive disorders-PEM, indigestion, constipation, vomiting, jaundice, diarrhea.

Breathing and Respiration: Respiratory organs in animals (recall only); Respiratory system in humans; Mechanism of breathing and its regulation in humans-Exchange of gases, transport of gases and regulation of respiration, Respiratory volume. Disorders related to respiration-Asthma, Emphysema, Occupatonal respiratory disorders.

Body fluids and circulation: Composition of blood, blood groups, coagulation of blood; Composition of lymph and its function; Human circulatory system-Structure of human heart and blood vessels; Cardiac cycle, cardiac output, ECG; Double circulation; Regulation of cardiac activity; Disorders of circulatory system-Hypertension, Coronary artery disease, Angina pectoris, Heart failure.

Excretory products and their elimination: Modes of excretion – Ammonotelism, ureotelism, uricotelism; Human excretory system-structure and fuction; Urine formation, Osmoregulation; Regulation of kidney function-Renin-angiotensin, A trial Natriuretic Factor, ADH and Diabetes insipidus; Role of other organs in excretion; Disorders-Uraemia, Renal failure, Renal calculi, Nephritis; Dialysis and artificial kidney.

Locomotion and Movement: Types of movement – ciliary, flagellar, muscular; Skeletal muscle-contractile proteins and muscle contraction; Skeletal system and its functions (To be dealt with the relevant practical of Practical syllabus); Joints; Disorders of muscular and skeletal system – Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, Osteoporosis, Gout.

Neural control and coordination: Neuron and nerves; Nervous system in humans-central nervous

system & peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse; Reflex action; Sensory perception; Sense organs; Elementary structure and function of eye and ear.

Chemical coordination and regulation: Endocrine glands and hormones; Human endocrine system-Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary Idea); Role of hormones as messengers and regulators, Hypo-and hyperactivity and related disorders (Common disorders e.g. Dwarfism, Acromegaly, Cretinism, goiter, exphthalmic goiter, diabetes, Addision's disease).

Reproduction

Reproduction in organisms: Reproduction, a characteristic feature of all organisms for continuation of species; Modes of reproduction-A sexual and sexual reproduction; Modes- Binary fission, sporulation, budding, gemmule, fragmentation; vegetative propagation in plants.

Sexual reproduction in flowering plant: Flower structure; Development of male and female gametophytes; Pollination-types, agencies and examples; Outbreedings devices; Pollen- Pistil interaction; Double fertilization; Post fertilization events-Development of endosperm and embryo, Development of seed and formation of fruit; Special modes-apomixis, parthenocarpy, polyembryony; Significance of seed and fruit formation. Human Reproduction: Male and female reproductive systems; Microscopic anatomy of testis and ovary; Gametogenesis-spermatogenesis & oogenesis; Menstrual cycle; Fertilisation embryo development upto blastocyst formation, implantation; Pregnancy and placenta formation (Elementary idea); Parturition (Elementary idea); Lactation (Elementary idea).

VIII SAMPLE QUESTIONS

SAMPLE QUESTIONS - PHYSICS

1. Two point charges +4q and +q are placed 30 cm apart. At which point on the line joining them, the electric field is zero?
   (a) 15 cm from the charge q (b) 7.5 cm from the charge q
   (c) 20 cm from the charge 4q (d) 5 cm from the charge 4q
2. The electric field outside the plates of two oppositely charged plane sheets of charge density s is
   (a) +s/2e0 (b) -s/2e0 (c) +s/e0 (d) Zero
3. Principle of electrostatic induction is used in
   (a) capacitors (b) inductors (c) generators (d) resistors
4. When a number of capacitors of equal capacitances were connected in series, the effective capacitance is 0.4 mF and when they were connected in parallel, the effective capacitance is 90 mF. What is the capacitance of each capacitor?
   (a) 9 mF (b) 10 mF (c) 6 mF (d) 3 mF
5. If p is the dipole moment of the dipole placed in an uniform electric field E, then the torque acting on it is given by
   (a) Pe (b) Pe Cos q (c) Pe Sin q (d) Pe q

SAMPLE QUESTIONS – CHEMISTRY

1. Schottky defect in crystals is observed when
   (a) Unequal number of cations and anions are missing from the lattice.
   (b) Equal number of cations and anions are missing from the lattice.
   (c) An ion leaves its normal site and occupies an interstitial site.
   (d) Density of the crystal is increased.
2. Super conductors are derived from the compounds of
   (a) P – block elements (b) Lanthanides
   (c) Actinides (d) Transition elements
3. Which of the following Fcc structure contains cations in alternate tetrahedral voids?
   (a) NaCl (b) ZnS
   (c) Na2O (d) CaF2
4. A500 g toothpaste sample has 0.2g fluoride concentration .What is the concentration of fluorine in terms of ppm level ?
   (a) 250 (b) 200
   (c) 400 (d) 1000
5. Which of the following 0.10M aqueous solution will have the lowest freezing point?
   (a) $Al_2(SO_4)_3$ (b) $C_6H_{12}O_6$
   (c) KI (d) $C_{12}H_{22}O_{11}$

SAMPLE QUESTIONS – MATHEMATICS

1. Let $V = \{-2, -1, 0, 1, 2\}$ f be a function defined by $f(x) = X^2 + 1$. Find the range of f.
   a) $\{1, 2, 3\}$ b) $\{2, 3, 4\}$ c) $\{1, 2, 5\}$ d) none of these

2. Which of the following is an odd function?
   a) $x^2 + x$ b) $e^{-x} + x$ c) x^3 d) $\cos x$

3. If $f(x) = 5x + 4$, for what value of x is $2f(x) = f(3x)$
   a) $\frac{-5}{4}$ b) $\frac{4}{5}$ c) $\frac{5}{4}$ d) $-\frac{4}{5}$

4. Let $A = \{1, 2, 3, 4\}$ $B = \{a, b, c, d, e\}$ and $f : A \to B$ is such that then f = is $\{1, a), (2, b), (3, c), (4, b)\}$ then f is
   a) one to one function only b) onto function only
   c) both one to one and onto function d) none of these

5. Given $f(x) = x^2 + 1$ and $g(x) = x + 1$ then $f \circ g$ is
   a) $x^2 + (x+1)$ b) $(x+1)^2 + 1$ c) $(1+x)^2$ d) none of these

SAMPLE QUESTIONS – BIOLOGY

1. Species plantarum and Genera plantarum were written by
   a. Bentham and Hooker b. Carolus Linnaeus
   c. Engler and Prantl d. Hutchinsons

2. Select the correct hierarchy
   a. Kingdom, Class, Series, Family, Genera, Species
   b. Kingdom, Series, Class, Family, Genera, Species
   c. Kingdom, Class, Family, Series, Genera, Species
   d. Kingdom, Family, Series, Class, Genera, Species

3. Cell Theory was proposed by
   a. Darwin & Wallace b. Mendel and Morgan
   c. Schleiden & Schwan d. Watson and Crick

4. Animal cells differ from plant cells in having
   a. Endoplasmic reticulum b. Golgi complex
   c. Centrioles d. Ribosomes

5. Chemical nature of the cell membrane
   a. Mucopolysaccharides b. Lipopolysaccharides
   c. Mucoproteins d. Lipoproteins

IX. INSTRUCTIONS TO FILL THE ENTRANCE EXAMINATION APPLICATION (OMR DATA SHEET)

1. NAME OF THE CANDIDATE: Write name in CAPITAL LETTERS as given in Secondary (X Std.) or Higher Secondary (XII Std.) School certificate. Write only one letter in a box. Do not leave any blank box between the letters in a word. One box should be left blank between consecutive words of name. KEEP THE INITIALS OF THE NAME AT THE END. If name has several initials, leave one blank after each of them. Darken the corresponding alphabet underneath each letter of the name. Do not prefix your name with Mr, Ms., etc. Do not use box for full stop between the initials, instead you can leave an empty box.
2. GENDER: Write the appropriate serial number in the boxes provided and then darken the appropriate oval to correspond with the code.
3. COMMUNITY: Write the appropriate serial number in the boxes provided and then darken the appropriate oval to correspond with the code.
4. DATE OF BIRTH: Write the date, month and year of birth as per the English calendar and as recorded in High school/Higher secondary school Examination Certificate. Use numerals 01 to 31 for DATE, numerals 01 to 12 for MONTH, and all the four digits for the YEAR of birth. Darken the corresponding numerals for date, month and year in each column.
5. NATIVE STATE: Write the appropriate serial number (by looking into the following table) in the boxes provided and darken the appropriate oval to correspond with the code.

STATE	CODE	STATE	CODE
ANDHRA PRADESH	01	MAHARASHTRA	15
ARUNACHAL PRADESH	02	MANIPUR	16
ASSAM	03	MEGHALAYA	17
BIHAR	04	MIZORAM	18
CHATTISGARH	05	NAGALAND	19
GOA	06	ODISHA	20
GUJARAT	07	PUNJAB	21
HARYANA	08	RAJASTHAN	22
HIMACHAL PRADESH	09	SIKKIM	23
JAMMU AND KASHMIR	10	TAMILNADU	24
JHARKAND	11	TELANGANA	25
KARNATAKA	12	TRIPURA	26
KERALA	13	UTTARAKAND	27
MADHYA PRADESH	14	UTTAR PRADESH	28
		WEST BENGAL	29

UNION TERRITORY	CODE	UNION TERRITORY	CODE
ANDAMAN & NICOBAR ISLANDS	30	DAMAN & DIU	34
CHANDIGARH	31	LAKSHADWEEP	35
NEW DELHI	32	PUDUCHERRY	36
DADRA & NAGAR HAVELI	33		

6. CONTACT MOBILE NUMBER: Write the MOBILE NUMBER in the boxes provided and then darken the appropriate oval to correspond with the code. This number will be used for sending the SMS relating to the Entrance Examination.

7. PHOTOGRAPH: Affix one recent (taken not earlier than a month) good quality colour passport size photograph with light colour background in the space provided for this purpose. Spectacles if being used regularly are allowed. The photograph should be firmly affixed to the application form. It should not be pinned or stapled. Photograph should not be larger than the space provided in the box for pasting it.

8. SIGNATURE: Candidate's signature establishes identity. Use black ball point pen to sign in the box provided.

9. DETAILS OF THE QUALIFYING EXAMINATION: Whether the candidate has passed or appearing. Give the details of Board, Name and complete address of school, Month and Year of passing or appearing the final year examination.

10. NAME OF THE FATHER / MOTHER / GUARDIAN: Write the name in CAPITAL LETTERS. Write only one letter in a box. Do not leave any blank box between the letters in a word. One box should be left blank between consecutive words of the name. If the name has several initials, leave one blank after each of them. Darken the corresponding alphabet underneath each letter of the name. Do not prefix the name with Mr., Ms., etc

11. YEAR OF PASSING STANDARD 'X' OR EQUIVALENT EXAMINATION: Mention the year of passing the Standard 'X' (or) Equivalent Examination.

12. YEAR OF PASSING STANDARD 'XII' : Mention the year of passing the Standard XII Examination. If the candidate is appearing for final year examination in March/April, 2015, please enter as 2015.

13. OPTIONAL SUBJECT IN ENTRANCE EXAM 2015: While selecting the optional subject, the candidate should consider the following eligibility criteria.

    MATHS: Candidate choosing this as optional subject, needs to answer three subjects in the Entrance examination, i.e., Mathematics, Physics and Chemistry. Candidates who choose this option are eligible for all B.E. / B.Tech / B.Arch Courses and not eligible for BDS Course, Biotech, Bioinfo and Biomedical.

    BIOLOGY: Candidate choosing this as optional subject, to answer three subjects in the Entrance examination, i.e., Biology, Physics and Chemistry. Candidates who choose this option are eligible ONLY for Bio courses (B.Tech. – Biotechnology, Bioinformatics and Biomedical) and BDS. These candidates are not eligible for B.Arch and other B.E./B.Tech Courses.

14. PROGRAMME APPLYING FOR: Write the appropriate serial number in the boxes provided and then darken the appropriate oval to correspond with the code.

15. EXAMINATION CENTRE CODE: Select the appropriate Entrance Examination Centre from the following and shade it accordingly. CHANGE OF EXAMINATION CENTRE WILL NOT BE ENTERTAINED UNDER ANY CIRCUMSTANCES.

STATE	EXAMINATION CENTRE	EXAM CENTRE CODE
ANDAMAN	PORT BLAIR	011
ANDHRA PRADESH	ANANTHAPUR	012
ANDHRA PRADESH	CUDDAPAH	013
ANDHRA PRADESH	GUNTUR	014
ANDHRA PRADESH	KURNOOL	015
ANDHRA PRADESH	NELLORE	016
ANDHRA PRADESH	ONGOLE	017
ANDHRA PRADESH	RAJAHMANDRY	018
ANDHRA PRADESH	TIRUPATI	019
ANDHRA PRADESH	VIJAYAWADA	020
ANDHRA PRADESH	VISAKHAPATNAM	021
ASSAM	GUWAHATI	022
BIHAR	PATNA	023
CHHATTISGARH	BILASPUR	024
GUJARAT	AHMEDABAD	025
MAHARASHTRA	MUMBAI	026
JHARKAND	RANCHI	027
KARNATAKA	BENGALURU	028
KERALA	ERNAKULAM	029
KERALA	THIRUVANANTHAPURAM	030
MADHYA PRADESH	BHOPAL	031
NEW DELHI	NEW DELHI	032
ODISHA	BHUBANESHWAR	033
PUDUCHERRY	PUDUCHERRY	034
TAMILNADU	CHENNAI	035
TAMILNADU	COIMBATORE	036
TAMILNADU	MADURAI	037
TAMILNADU	NAGERCOIL	038
TAMILNADU	SALEM	039
TAMILNADU	TANJORE	040
TAMILNADU	TRICHY	041
TELANGANA	HYDERABAD	042
TELANGANA	KARIMNAGAR	043
TELANGANA	WARANGAL	044
TRIPURA	AGARTALA	045
UTTAR PRADESH	LUCKNOW	046
WEST BENGAL	KOLKATA	047

16. CHOICE OF BRANCH OF STUDY OPTION FOR ADMISSION TO B.E./B.TECH COURSES:

(a) CHOICE OF BRANCH OPTION - 1: Write the appropriate serial number (by looking to the following table) in the boxes provided and then darken the appropriate oval to correspond with the code.

(b) CHOICE OF BRANCH OPTION - 2: Write the appropriate serial number (by looking to the following table) in the boxes provided and then darken the appropriate oval to correspond with the code.

(C) CHOICE OF BRANCH OPTION - 3: Write the appropriate serial number (by looking to the following table) in the boxes provided and then darken the appropriate oval to correspond with the code.

BRANCHES	CODE
AERONAUTICAL ENGINEERING	11
AUTOMOBILE ENGINEERING	12
BIOTECHNOLOGY	13
BIOINFORMATICS	14
BIOMEDICAL	15
CHEMICAL ENGINEERING	16
CIVIL ENGINEERING	17
COMPUTER SCIENCE AND ENGINEERING	18
ELECTRICAL AND ELECTRONICS ENGINEERING	19
ELECTRONICS AND COMMUNICATION ENGINEERING	20
ELECTRONICS AND CONTROL ENGINEERING	21
ELECTRONICS AND INSTRUMENTATION ENGINEERING	22
ELECTRONICS AND TELECOMMUNICATION ENGINEERING	23
INFORMATION TECHNOLOGY	24
MECHANICAL ENGINEERING	25
MECHANICAL AND PRODUCTION ENGINEERING	26
ARCHITECTURE	27
BACHELOR OF DENTAL SURGERY	28

17. COMPLETE POSTAL ADDRESS, STARTING WITH PARENT'S NAME: Write the complete postal address in capital letters to which all communication will be sent. The address must include name of the parent, and all other details including the correct pincode for letters to reach the candidate. Indicate Email ID, Phone No. with the correct STD code and Mobile number. Note that this block will be scanned by machine, hence the details should be written within the rectangular box provided. This address will be used to dispatch the Hall Ticket.

18. DECLARATION: Read the declaration and sign in the boxes provided. Signature of Applicant and Parent is compulsory and should be done with black ball point pen only.

X. FILLED OMR DATA SHEET - SAMPLE

SATHYABAMA UNIVERSITY, CHENNAI .

(Established Under Section 3 of UGC Act, 1956)
(A Christian Minority Institution)

All India Entrance Examination 2015 - 2016

DATA SHEET

Application Form Number

Instructions for filling the OMR DATA Sheet

1. Read the instructions given in the information brouchure carefully before filling up the application form.
2. Use Black ink ball pen for writing in the boxes ☐ and HB pencil for shading the corresponding oval ◯ with alphabets or numerals
3. Do not staple, pin, mutilate, scribble, tear or wet the form.
4. Dispatch the filled in OMR Data sheet in the envelope supplied for this purpose by register post.

Use only HB Pencil to fill the appropriate oval

RIGHT METHOD

WRONG METHOD

1.NAME OF THE CANDIDATE (As in the X std certificate)

D E V A R O S H I N I D

2.GENDER 2

1.MALE

2.FEMALE

3.COMMUNITY 3

1.GENERAL/OC
2.OBC/BC
3.MBC
4.SC
5.ST

4.DATE OF BIRTH

DATE	MONTH	YEAR
01	02	1998

5.NATIVE STATE 24

6.Contact Mobile Number (Compulsory) 9 1 9 4 7 1 2 1 2 2 1 1

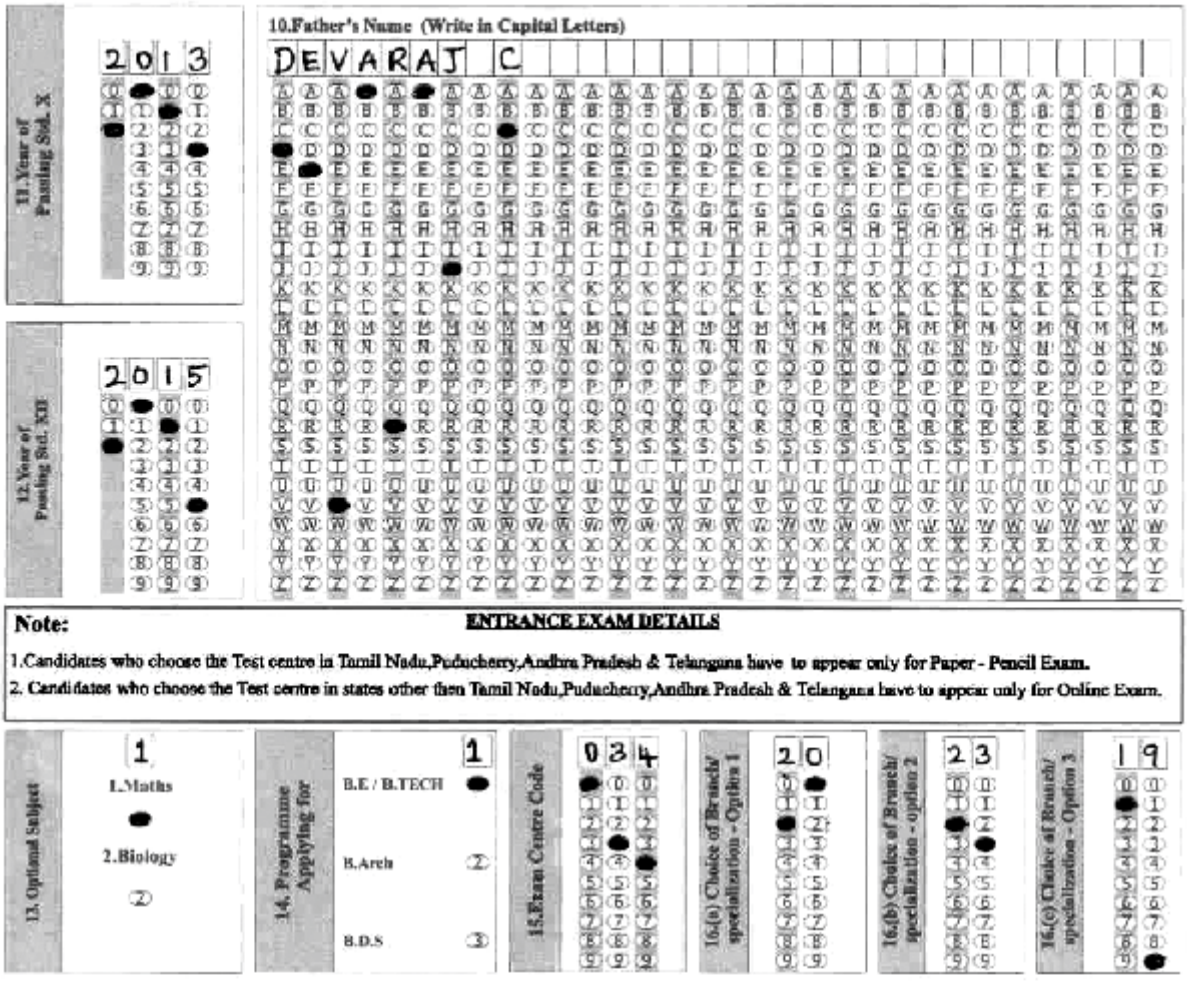
7.PHOTOGRAPH

PASTE A RECENT PASSPORT SIZE COLOUR PHOTOGRAPH WITHIN THE INNER DOTTED BOX

8. SIGNATURE
(use black ink ball pen only)

9.Details of the qualifying examination — Passed ◯ Appearing ●

Qualifying Exam	Name and Complete Address of the school / college	Month and Year of Passing / Appearing
XII	S.D.Eden Matric Higher Secondary School 105, Vellalar Street, Vadalur	MARCH, 2015



11. Year of Passing Std. X: 2013

10. Father's Name (Write in Capital Letters): DEVARAJ C

12. Year of Passing Std. XII: 2015

Note:

ENTRANCE EXAM DETAILS

1. Candidates who choose the Test centre in Tamil Nadu,Puducherry,Andhra Pradesh & Telangana have to appear only for Paper - Pencil Exam.
2. Candidates who choose the Test centre in states other then Tamil Nadu,Puducherry,Andhra Pradesh & Telangana have to appear only for Online Exam.

13. Optional Subject: 1 — 1.Maths; 2.Biology; 2

14. Programme Applying for: 1 — B.E / B.TECH; B.Arch 2; B.D.S 3

15. Exam Centre Code: 034

16(a) Choice of Branch/ specialization - Option 1: 20

16(b) Choice of Branch/ specialization - option 2: 23

16(c) Choice of Branch/ specialization - Option 3: 19

17. COMPLETE POSTAL ADDRESS STARTING WITH PARENT'S NAME (Write legibly in CAPITAL LETTERS using black ink ball pen only).

So,Da,/o	DEVARAJ C
Address	72A ANKUR FLATS
	28 LAKE VIEW ROAD
	KILPAUK
City	CHENNAI — Pincode 600010
District	CHENNAI
State	TAMILNADU
STD	044 — Phone Number 24896756
Email.ID (Compulsory)	ROSHNID@YAHOO.COM

18.DECLARATION

"I hereby declare that I have carefully read the instructions and understood the particulars given to me and that the entries made in this application form are true and correct to the best of my knowledge and belief. I understand that the decision of the University is final with regard to selection for admission. If selected for admission, I promise to abide by the rules and regulations of the University as existing and as would be amended from time to time. The University shall have the right to expel me from the University at any time after admission,provided it is satisfied that I was admitted on false particulars furnished by me or by my antecedents proving that my continuance in the University is not desirable. Fees paid once cannot be claimed back under any circumstances. I agree that all disputes are subject to the jurisdiction of the courts at Chennai only".

Place : CHENNAI

Date : 28.11.2014

Signature of the Applicant (Use black ink ball pen only)

I have fully read the information furnished by my son / daughter / ward and affirm that it is true and correct. If any of the information provided to the University is false, my ward and I shall abide by the actions and decisions taken by the University.

Signature of the Parent / guardian (Use black ink ball pen only)

VALID FOR THE ACADEMIC YEAR 2015-2016 ONLY

XI. UNIVERSITY LOCATION

APPROXIMATE DISTANCE TO SATHYABAMA UNIVERSITY FROM VARIOUS POINTS IN CHENNAI CITY

FROM	DISTANCE (Approx)	TAXI FARE (Approx)	TIME TAKEN (Approx)	NEAREST MTC BUS POINT	BUS ROUTES MTC Bus
Airport	21 Kms	Rs.330	35 Mins.	Tambaram	C51, T51, T151
Central & Egmore Railway Station	27 Kms	Rs.384	90 Mins.	Broadway	21H, 521
CMBT Bus Terminal	31 Kms	Rs.420	90 Mins.	CMBT	568C, 570, 570S
Adyar	12 Kms	Rs.250	25 Mins.	Adyar	19c, M5A, 19D, 19K, 19P, 522, M5, 21H
T.Nagar	18 Kms	Rs.320	40 Mins.	T.Nagar	M51, 19C, 19A, M119A, 519 (AC)

XII. SALIENT FEATURES OF OUR UNIVERSITY

INFRASTRUCTURE FACILITIES

The University is spread over 250 acres, comprising of more than 300 class rooms, nearly 150 laboratories, seven Air Conditioned Auditoriums, a Non Air Conditioned Auditorium, and an Open Air Auditorium. Along with the Departmental Libraries, the University has a full- fledged Central Library with more than Four lakh books. The Library subscribes to more than 1000 journals both off line and on line.

HOSTEL FACILITIES

University has three Gents Hostels and four Ladies Hostels. Each room in the Hostel has attached bathroom. Each Hostel has attached with Mess facilities, Computer Laboratories and Reading Rooms. Laundry and Gym facilities are offered to the students at free of cost.

GUIDANCE FOR HIGHER STUDIES ABROAD

Advisory Bureau for Higher studies, a Centre exclusively meant to help the students aspiring for Higher studies. The Bureau arranges lecturers by eminent speakers from foreign Universities and Consuls from various countries.

RESEARCH & DEVELOPMENT ACTIVITES

Research and Development activities are the core activities of the University. University has Fourteen Exclusive Research Centres. These Centres undertake the sponsored research from various Governmental and Non Governmental Organisations. The total worth of projects undertaken by the University is approximately 65 crores. Sathyabama Satellite, a Student-Research scholar initiative is in the final stages and will be put into orbit in 2015. Towards Social responsibility and economic development, the University has established Village Resource Centres (VRCs) to educate the unemployed rural youth and to offer free medical facility to the village people through Mobile Medical facility.

ENCOURAGEMENT FOR SPORTS AND EXTRA CURRICULAR ACTIVITIES

University has very good sports facilities. Basket ball courts of the University are of international standards. University encourages the students who excel in sports by giving scholarships. NCC-Navy, Air Force and Army; NSS (both for boys and girls); Bharat Scouts and Guides and Youth Red Cross (YRC) are the extra curricular activities in which students are being encouraged.

CAMPUS PLACEMENT

University maintains a minimum of 95% placement for the final year eligible candidates in the Campus Interviews.

To train the students appearing for Campus Interviews, Personality Development Programmes are conducted from the 3rd Semester onwards.

The Department of Placement and Training works with the prime objective of equipping the human resource i.e., the students of the university with necessary skills and training to meet the expectations of the corporate world so as to ensure that they secure employment in reputed companies based on their qualification and capabilities. Apart from this main objective the Department is also involved in:

- Monitoring the employment opportunities available in various domains and arrange the campus interviews for final year students.
- Student and Industry interactions through the training cell.
- Training the students to face the challenging atmosphere of the corporate world based on proper understanding of the corporate expectations.
- Commencement of recruitment activities at the end of the Pre-Final semester examination as per the NASSCOM guideline.
- Continuous monitoring and conducting On Campus recruitment programme till the end of their final semester.
- Assisting the students by arranging Off-Campus Interviews after completion of on campus season.

The Placement and Training Cell offers Career Development Program for those students who are desirous to enter the corporate world and introduce them to the prospective employers according to their aspirations and background. All the Training programs have been formulated after a thorough analysis of specific requirements of various companies so as to ensure that our students have a competitive edge in the recruitment process. The training modules are formulated to polish the following skills-

Presentation Skills	LSRW Skills	Interpersonal Skills
Personal Grooming	Brain Strain	Aptitude Reach
Speed Mathematics	Logical Reasoning	Inference
Deciphering the Matrix	Verbal Reasoning	Situational Conversation
Team Building	Creativity	Group Discussion
Planning & Goal Setting	Time Management	Sentence Construction
Leadership	Entrepreneurship	Innovation

PLACEMENT SUMMARY (LAST 3 YEARS):

Year: 2013-2014 (As on 15.09.2014)

Total students registered for placement	1662
Total students got placed	1544
% of students placed	92.90 * (As on 15.09.2014)
Average annual salary	Rs. 3,30,000 P.A

Year: 2012-2013

Total students registered for placement	1734
Total students got placed	1427
% of students placed	82.3
Average annual salary	Rs. 3,25,000 P.A

Year: 2011-2012

Total students registered for placement	1868
Total students got placed	1776
% of students placed	95.07
Average annual salary	Rs. 3,25,000 P.A

INDUSTRY INSTITUTE COLLABORATION

The Department is instrumental in signing MOUs with Cognizant, Infosys, Wipro, FLSmidth, Virtusa, CSC and Emerson for the purpose of enriching the technical education process and to jointly work for enriching the quality of education imparted to students of all the Engineering disciplines.

We are happy to mention that

- Cognizant accredited as their academic partner and they are involved with us in various Skill development Program. Few of the programs are : Evolve, Faculty Enrichment Programs and Xperience Cognizant.
- Wipro certified Sathyabama University as "TRUSTED ACADEMIC PARTNER". Few of the programs sponsored by Wipro are "Mission 10X", "Jump Start".
- Accenture signed an MOU with us and become a consistent recruiter at Sathyabama. They are conducting "Mind Power Enhancement Program" and "Soft skill development Programs" for our students. "Accenture career Day" is being conducted every day to give an insight on Accenture's offer to the students.
- Infosys training our students through their "Campus Connect" Initiative. Faculty enrichment programs also conducted by Infosys.
- VirtUSA had setup two labs (Mobile Application Development Lab & Rich Internet Access lab) at Sathyabama. Students from CSE, IT and MCA being taught and trained on Mobile Application Development by Virtusa Technical Experts.
- Computer Science Corporation selected 30 of our students and assigned them projects which is being mentored by CSC managers.
- Sathyabama signed MOU with FL Smidth which helps our students to get Industrial exposure through industrial visits and knowledge sharing.
- Emerson Automation had sponsored a machine (UniDrive SP Model) which is being used by Electrical students as part of their regular curriculum and for research activities.
- Aricent accredited Sathyabama as one of their source of recruitment for freshers.

Recruiters at Sathyabama University

ENGINEERING | ARCHITECTURE | DENTAL | RESEARCH | ARTS & SCIENCE

YOUR CAREER BEGINS WITH US

SATHYABAMA UNIVERSITY

Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119.
Phone: 044-24503150 / 3151 / 3153 / 3155 Fax: 044-24502344
Email: entranceexam2015@sathyabamauniversity.ac.in
www.sathyabamauniversity.ac.in
www.fb.com/SathyabamaUniversityOfficial