Instructions to the candidates

The shortlisted candidates for the written test for Temporary Faculty position is put up in the NIT website www.nitt.edu

The written test for the shortlisted candidates is scheduled on 19.02.2014(Wednesday). The duration of the test will be for one hour from 09.30 a.m. to 10.30 a.m. on 19.02.2014 at IT Center (Computer Science Building), NIT, Tiruchirappalli. The candidates are requested to be present in the test venue half-an-hour before written test i.e.by 09.00 a.m. on 19.02.2014. The candidates are requested to produce a valid Photo ID proof and also requested to submit one set of photo copies of consolidated mark sheets (both UG and PG), GATE score card/SLET/NET(if any), community certificate and filled copy of data sheet(given in the page no 15) at the time of written test. The syllabus for the written test of the concerned department is available from page no 6-14.

After the written test, the candidates will be shortlisted and then they will be called for interview. All the shortlisted candidates for the interview have to appear before a selection committee and also have to give a presentation on any topic of their interest (no power point presentation) to test their communication skills. The shortlisted candidates for oral presentation and interview will be displayed in test venue itself, department wise, by 11.00 a.m. onwards on 19.02.2014.

The interview will be held at Oom Room(next to Director's Office), Administrative building NIT, Tiruchirappalli, Tamilnadu. The oral presentation and interview will be held as per the following schedule.

<table>
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<tr>
<th>S.NO</th>
<th>DEPARTMENT</th>
<th>DATE</th>
<th>TIME</th>
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<td>1</td>
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<td>Architecture</td>
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Additional information for the candidates:-

1. Kindly refer the application number in the short listed candidates list (given beside your name) to the written test for seating arrangements.
2. Report to the venue of written test/interview half an hour before the scheduled time.
3. Bring one set of attested copies of relevant documents such as educational qualification, experience certificates, community certificate, etc. You are also required to bring all the original documents for verification purpose.
4. Bring at least one of the following documents as proof of identity
   i. Valid passport
   ii. Voter identify card
   iii. PAN Card
   iv. Driving License
   v. Govt. or PSU undertaking issued valid photo identity cards.
   vi. Aadhar card
   vii. Any other valid Identity card
5. Venue for the interview:---

   Oom ROOM(NEXT TO DIRECTOR'S OFFICE),
   ADMINISTRATIVE BUILDING
   NIT, TIRUCHIRAPPALLI, TAMILNADU-620015.

Please note the following:

1. No TA/DA will be paid for attending the written test and interview.
2. The request for change of date will not be entertained.
3. The invitation is a mere request to appear for written test/interview and does not assure that he/she will be recommended or selected.
4. The decision of the selection committee of the institute is final.

Encl:  1. Instructions : Page No-1
      2. List of candidates called for written test : Page No-2-5
      3. Syllabus for written test for concern Department : Page No-6-14
## DEPARTMENT OF ARCHITECTURE

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## DEPARTMENT OF CENTRE FOR ENERGY & ENVIRONMENTAL SCIENCE AND TECHNOLOGY (CEESAT)

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## DEPARTMENT OF CIVIL ENGINEERING

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<td>Jasmine Mary,J</td>
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<td>M. Nandagopal</td>
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<td>Dr. B. Sathyaseelan</td>
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### DEPARTMENT OF PRODUCTION ENGINEERING

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<td>I. Arun Gandhi</td>
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SYLLABUS FOR WRITTEN TEST FOR SELECTION OF TEMPORARY FACULTY

DEPARTMENT OF ARCHITECTURE

Building Construction and Materials
Building Services (Water supply and Drainage, Lighting, Air-conditioning, Fire, Electrical and Mechanical Services)
History/ Contemporary Architecture
Energy Efficient/ Green Buildings
Urban Planning/ urban Design
Landscape Architecture
Professional Practice, Bye-laws and Construction Management

CENTRE FOR ENERGY & ENVIRONMENTAL SCIENCE AND TECHNOLOGY (CEESAT)

1. Heat Transfer.
2. Mass Transfer
4. Thermal Engineering.
5. Wind Energy
7. Air Pollution.
8. Water Pollution.

DEPARTMENT OF CHEMICAL ENGINEERING

ENGINEERING MATHEMATICS

Linear Algebra: Matrix algebra, Systems of linear equations, Eigen values and eigenvectors.

Calculus: Functions of single variable, Limit, continuity and differentiability, Mean value theorems, Evaluation of definite and improper integrals, Partial derivatives, Total derivative, Maxima and minima, Gradient, Divergence and Curl, Vector identities, Directional derivatives, Line, Surface and Volume integrals, Stokes, Gauss and Green’s theorems.

Differential equations: First order equations (linear and nonlinear), Higher order linear differential equations with constant coefficients, Cauchy’s and Euler’s equations, Initial and boundary value problems, Laplace transforms, Solutions of one dimensional heat and wave equations and Laplace equation.

Complex variables: Analytic functions, Cauchy’s integral theorem, Taylor and Laurent series, Residue theorem.

Probability and Statistics: Definitions of probability and sampling theorems, Conditional probability, Mean, median, mode and standard deviation, Random variables, Poisson, Normal and Binomial distributions.


CHEMICAL ENGINEERING

Process Calculations and Thermodynamics: Laws of conservation of mass and energy; use of tie components; recycle, bypass and purge calculations; degree of freedom analysis. First and Second laws of thermodynamics. First law application to close and open systems. Second law and Entropy. Thermodynamic properties of pure substances: equation of state and departure function, properties of mixtures: partial molar properties, fugacity, excess properties and activity coefficients; phase equilibria: predicting VLE of systems; chemical reaction equilibria.

Fluid Mechanics and Mechanical Operations: Fluid statics, Newtonian and non-Newtonian fluids, Bernoulli equation, Macroscopic friction factors, energy balance, dimensional analysis, shell balances, flow through pipeline systems, flow meters, pumps and compressors, packed and fluidized beds, elementary boundary layer
theory, size reduction and size separation; free and hindered settling; centrifuge and cyclones; thickening and classification, filtration, mixing and agitation; conveying of solids.

**Heat Transfer:** Conduction, convection and radiation, heat transfer coefficients, steady and unsteady heat conduction, boiling, condensation and evaporation; types of heat exchangers and evaporators and their design.

**Mass Transfer:** Fick’s laws, molecular diffusion in fluids, mass transfer coefficients, film, penetration and surface renewal theories; momentum, heat and mass transfer analogies; stagewise and continuous contacting and stage efficiencies; HTU & NTU concepts design and operation of equipment for distillation, absorption, leaching, liquid-liquid extraction, drying, humidification, dehumidification and adsorption.

**Chemical Reaction Engineering:** Theories of reaction rates; kinetics of homogeneous reactions, interpretation of kinetic data, single and multiple reactions in ideal reactors, non-ideal reactors; residence time distribution, single parameter model; non-isothermal reactors; kinetics of heterogeneous catalytic reactions; diffusion effects in catalysis.

**Instrumentation and Process Control:** Measurement of process variables; sensors, transducers and their dynamics, transfer functions and dynamic responses of simple systems, process reaction curve, controller modes (P, PI, and PID); control valves; analysis of closed loop systems including stability, frequency response and controller tuning, cascade, feed forward control.

**Plant Design and Economics:** Process design and sizing of chemical engineering equipment such as compressors, heat exchangers, multistage contactors; principles of process economics and cost estimation including total annualized cost, cost indexes, rate of return, payback period, discounted cash flow, optimization in design.

**Chemical Technology:** Inorganic chemical industries; sulfuric acid, NaOH, fertilizers (Ammonia, Urea, SSP and TSP); natural products industries (Pulp and Paper, Sugar, Oil, and Fats); petroleum refining and petrochemicals; polymerization industries; polyethylene, polypropylene, PVC and polyester synthetic fibers.

**DEPARTMENT OF CHEMISTRY**

**Organic Chemistry**

**Reaction mechanism:** Definition of reaction mechanism, transition state theory, kinetics, qualitative picture. Substituent effects, linear free energy relationships, Hammett equation and related modifications. Basic mechanistic concepts like kinetic vs thermodynamic control, Hammond postulate, Curtin-Hammett principle, isotope effects, general and specific acid-base catalysis, and nucleophilic catalysis.

**Nucleophilic substitution:** Reactivity, structural and solvent effects, substitution in $\text{SN}_1$, $\text{SN}_2$, $\text{SN}_i$. Neighbouring group participation -Norbornyl and bridgehead systems, substitution at allylic and vinylic carbons, substitution by ambident nucleophiles, aromatic nucleophilic substitution, $\text{SN}_\text{Ar}$, benzyne, $\text{SN}_1$. Aromatic nucleophilic substitution of activated halides

**Addition to carbon-carbon multiple bonds:** Electrophilic, nucleophilic and free radical addition. Stereochemistry and orientation of the addition. Hydrogenation, halogenation, hydroxylation, hydroboration. Addition to carbonyl compounds - 1,2 and 1,4-addition, benzoin, Knoevenegal, Stobbe and Darzenglycidic ester reactions.

**Elimination reactions:** E1, E2, E1CB- mechanism, stereochemistry, orientation of double bonds - Hoffmann, Zaitsev, Breddts rule - pyrolytic elimination, Chugaev reaction. Oxidation and reduction: Reduction using hydride reagents, LiAlH$_4$, NABH$_4$ and other organoboranes: chemo- and stereoselectivity, catalytic hydrogenation (homogenous and heterogeneous catalysts), Swern and Dess-Martin oxidations, Corey-Kim oxidation, PCC, KMnO$_4$ oxidations.

**Theories of aromaticity:** Aromaticity, antiaromaticity, Huckel’s rule, annulences and heteroannulenes, fullerenes (C60). Other conjugated systems, Chichibabin reaction. Aromatic electrophilic substitution: Orientation, reactivity, and mechanisms. Substitution in thiophene and pyridine. Reactive intermediates - carbenes, nitrenes, radicals, Ylides - Formation, stability and their applications.
Fundamentals of photochemistry: Qualitative introduction about different transitions, cis-trans isomerization, Paterno-Buchi reaction, Norrish type I and II reactions, photo reduction of ketones, photochemistry of arenes, di-π-methane and Hoffmann-Löffler-Freytag rearrangements.


Optical activity and chirality: absolute and relative configuration - R-S notation system, molecules with more than one asymmetric center. Enantiotopic and diastereotopic atoms, groups and faces. Stereo specific and stereo selective synthesis, optical isomerism of biphenyls, allenes and spiranes. Compounds containing chiral nitrogen and sulfur. Geometrical isomerism, E, Z- nomenclature of olefins, cumulenes and oximes.


Introduction to retrosynthesis: Synthon, synthetic equivalent, target molecule, functional group interconversion, disconnection approach, importance of the order of events in organic synthesis. Chemoselectivity, one group C-C and C-X disconnection (disconnection of alcohols, alkenes, and carbonyl compounds).

Two group C-C & C-X disconnections: 1,3 and 1,5 difunctionalised compounds, α,β-unsaturated carbonyl compounds, control in carbonyl condensation, synthesis of 3,4,5 and 6 membered rings in organic synthesis. Diels-Alder reaction, connection in retro synthesis.

Protecting groups: Protection of hydroxyl, carboxyl, carbonyl, amino groups. Umpolung reagents, definition of umpolung, acyl anion equivalent, protection of carbon-carbon multiple bonds. Illustration of protection and deprotection in synthesis.

Reagents in organic synthesis: Functional group transformation, complex metal hydrides, Gilman’s reagent, lithium diisopropylamide (LDA), dicyclohexylcarbodiimide, dimethylsilyl iodide, Woodward and Provost hydroxylation, osmium tetroxide, DDQ, SeO₂, lead tetraacetate, H₂O₂, phase transfer catalyst, crown ethers and Merrifield resin, Wilkinson’s catalyst, Baker yeast.

Name reactions in organic synthesis: Peterson olefination, McMurry, Shapiro reaction, Wittig and its modifications, palladium based reactions - Suzuki, Heck, Sonagashira, Miyama, Stille, Glazer-Eglington coupling, Sharplessepoxidation, Sharpless, Henry reaction, Michael addition, aldol, Claisen, Dieckman condensations, Barton, Barylis Hillman reaction, Stork enamine reaction and selective mono and di alkylation via enamines.

Inorganic Chemistry


Reactions: Substitution reactions in square planar complexes - the rate law for nucleophilic substitution in a square planar complex - the trans effect - theories of trans effect - mechanism of nucleophilic substitution in square planar complexes - kinetics of octahedral substitution - ligand field effects and reaction rates - mechanism of substitution in octahedral complexes - reaction rates influenced by acid and bases - racemization and isomerization - mechanisms of redox reactions - outer sphere mechanisms - excited state outer sphere electron transfer reactions - inner sphere mechanisms - mixed valent complexes.

Electronic spectra and magnetism: Microstates, terms and energy levels for d¹ – d⁰ ions in cubic and square fields - selection rules - band intensities and band widths - Orgel and Tanabe-Sugano diagrams - evaluation of
10 Dq and β for octahedral complexes of cobalt and nickel - charge transfer spectra - magnetic properties of coordination compounds - change in magnetic properties of complexes in terms of spin orbit coupling - temperature independent paramagnetism - spin cross over phenomena.

**IR and Raman spectroscopy:** Structural elucidation of simple molecules like N₂O, ClF₃, NO₃⁻, ClO₄⁻ - effect of coordination on ligand vibrations - uses of group vibrations in the structural elucidation of metal complexes of urea, thiourea, cyanide, thiocyanate, nitrate, sulphate and DMSO - effect of isotopic substitution on the vibrational spectra of molecules - applications of Raman spectroscopy

**Structure:** Structure of coordination compounds with reference to the existence of various coordination numbers (2, 3, 4, 5 & 6) - site preferences - isomerism - trigonal prism - absolute configuration of complexes - stereo selectivity and conformation of chelate rings - coordination number seven and eight. Spectral and magnetic properties of lanthanide and actinide complexes.


**Reaction mechanism and catalysis:** Ligand substitution - oxidative addition and reductive elimination - 1,1 and 1,2-insertion - addition and elimination reactions - alkene isomerization- hydoraboration - hydrocyanation - hydrogenation of olefins - Wilkinson’s catalyst - hydroformylation of olefins - Wacker-Smidt synthesis - Monsanto acetic acid process -Eastman Halcon process - Fischer-Tropsch process - hydrosilylation.

**Carbenes:** Fischer and Schrock carbenes - bonding & reactivity - Grubbs catalyst - carbynes structure, synthesis and reactions- alkene metathesis – mechanism - RCM-ROMP, SHOP and ADMET - C-H and C-C activation - agostic bonds - Ziegler-Natta polymerization of olefins - Heck reaction - The PausonKhand reaction - Ene reaction.

**Transport of metal ions:** Uptake, transport and storage of metal ions by organisms - structure and functions of biological membranes - the generation of concentration gradients (the Na⁺-K⁺ pump) - mechanisms of ion transport across cell membranes – bleomycin - siderophores (e.g. enterobactin and desferrioxamine) - transport of iron by transferring - storage of iron by ferritin - bio chemistry of calcium as hormonal messenger.

**Metalloporphyrins/Metalloenzymes:** Dioxygen transport and storage - hemoglobin and myoglobin: electronic and spatial structures - heme group and hemocyanine - synthetic oxygen carriers, model systems - blue copper proteins (Cu) - iron-sulfur proteins (Fe) - cytochromes electron transport chain - carbon monoxide poisoning - iron enzymes - peroxidase, catalase and cytochrome P-450, copper enzymes - superoxide dismutase, vitamin B12 and B12 coenzymes, photosynthesis - photosystem-I & II, nitrogen fixation, cisplatin.

**Fundamentals:** Types of solids - close packing of atoms and ions - bcc , fcc and hep voids - Goldschmidt radius ratio - derivation - its influence on structures - structures of rock salt - cesium chloride - wurtzite - zinc blende - rutile - fluorite - antifluorite - diamond and graphite - spinel - normal and inverse spinels and perovskite - lattice energy of ionic crystals - Madelung constant - Born-Haber cycle and its applications.


**X- Ray diffraction:** Theory- the crystal systems and Bravais lattices - Miller indices and labelling of planes - symmetry properties - crystallographic point groups and space groups - X-ray diffraction - powder and rotating crystal methods - systematic absences and determination of lattice types - analysis of X-ray data for cubic system - structure factor and Fourier synthesis - Fundamentals of electron and neutron diffraction.

**Nuclear structure:** Mass and charge, nuclear moments, binding energy, mass defect, packing fraction, stability, magic numbers. Modes of radioactive decay and rate of radioactive decay - half-life, average life, radioactive equilibrium: Transient and secular -nuclear reactions: Energetics and types - nuclear fission- liquid
Inorganic rings and polymers: Catenation, heterocatenation, intercalation chemistry, one dimensional conductor, polymeric sulfur nitride - Preparation, properties - isopoly anions - heteropoly anions - borazines - phosphazenes - phosphazene polymers - ring compounds of sulphur and nitrogen. Interhalogen compounds - oxoacids of selenium and tellurium. Noble gas chemistry and their halides and pseudohalides.

Physical Chemistry


Group theory: Elements of group theory, definition, group multiplication tables, conjugate classes, conjugate and normal subgroups, symmetry elements and operations, point groups, assignment of point groups to molecules, Matrix representation of geometric transformation and point group, reducible and irreducible representations, construction of character tables, bases for irreducible representation, direct product, symmetry adapted linear combinations, projection operators. Orthogonality theorem - its consequences. Symmetry aspects of molecular orbital theory, planar π-systems, symmetry factoring of Hückel determinants, solving it for energy and MOs for ethylene and 1,4-butadiene, sigma bonding in AX₂ molecules, hybridization, tetrahedral, octahedral, square planner, trigonal planar, linear, trigonalbipyramidal systems, hybrid orbitals as linear combination of AOs, electronic spectra, selection rule, polarization electron dipole transition, electronic transitions in formaldehyde, butadiene, configuration interaction, vibrational spectra, symmetry types of normal molecules, symmetry coordinates, selection rules for fundamental vibrational transition, IR and Raman activity of fundamentals in CO₂, H₂O, N₂F₂, the rule of mutual exclusion and Fermi resonance.

Thermodynamics: Laws of thermodynamics, Nerst heat theorem and other forms of stating the third law. Thermodynamic quantities at absolute zero, apparent exceptions to the third law - thermodynamics of systems of variable composition, partial molar properties, chemical potential, relationship between partial molar quantities, Gibbs Duhem equation and its applications (the experimental determination of partial molar properties not included) - thermodynamic properties of real gases, fugacity concept, calculation of fugacity of real gas, activity and activity coefficient, concept, definition, standard states and experimental determinations of activity and activity coefficient of electrolytes.

Phase rule, colloids and micelles: Three component systems, representation by triangular diagrams, systems of three liquids, formation of one pair of partially miscible liquids, formation of two pairs of partially miscible liquids, solid, liquid phases, eutectic systems - colloids: Distinction between suspension, colloidal solutions and true solutions, lyophilic and lyophobic colloids, Tyndall effect, stability of colloids, coagulation, emulsions, various types. Micelles: Surfactant (amphipathic molecule), micellisation, critical micelle concentration, size of micelle, aggregation number, thermodynamics of micellization, solubilisation behavior of micelles, reverse micelles.

Electrochemistry: Ion transport in solution - migration, convention and diffusion -Fick’s laws of diffusion conduction - influence of ionic atmosphere on the conductivity of electrolytes - The Debye Huckel-Onsager equation for the equivalent conductivity of electrolytes - experimental verification of the equation - conductivity at high field and at high frequency - conductivity of non aqueous solutions - effect of ion association on conductivity. The electrode-electrolyte interface - electrical double layer - electro capillary phenomena -Lippmann equation - the Helmholtz - Perrin - Guoy - Chapmann and Stern models, electokinetic phenomena Tisei us method of separation of protons of proteins - membrane potential. Electrodics - mechanism of electrode reactions - polarization and over potential - the Butler volmer equation for one step and multistep electron transfer reaction - significance of equilibrium exchange current density and symmetry factor -
significance of transfer coefficient - mechanism of the hydrogen evolution reaction and oxygen evolution reactions. Some electrochemical reactions of technological interest - corrosion and passivity of metals - construction and use of Pourbaix and Evans diagrams - methods of protection of metals from corrosion, fuel cells - electro deposition.

**Chemical kinetics:** Simultaneous reactions - opposing, parallel and consecutive reactions, the steady state approximation - theories of reaction rates - transition state theory and collision theory a comparison - enthalpy, entropy and free energy of activation, potential energy surfaces, reaction coordinates, kinetic isotope effects, factors determining reaction rates in solution, solvent dielectric constant and ionic strength. Chain reactions - linear reactions, branching chains - explosion limits; Rice–Herzfeld scheme; kinetics of free radical polymerization reactions. Enzyme catalysis - rates of enzyme catalysed reactions - effect of substrate concentration, pH and temperature - determination of Michael’s parameters.


**DEPARTMENT OF CIVIL ENGINEERING**

**STRUCTURAL ENGINEERING**

**Mechanics:** Bending moment and shear force in statically determinate beams. Simple stress and strain relationship: Stress and strain in two dimensions, principal stresses, stress transformation, Mohr’s circle. Simple bending theory, unsymmetrical bending, flexural and shear stresses, unsymmetrical bending, shear centre. Thin and thick cylinders, uniform torsion, buckling of column, combined and direct bending stresses. 

**Structural Analysis:** Analysis of statically determinate and indeterminate structures, influence lines for determinate and indeterminate structures. Basic concepts of matrix methods of structural analysis.

**Concrete Structures:** Concrete Technology- properties of concrete, basics of mix design. Concrete design-basis working stress and limit state design concepts, analysis and design of members subjected to flexure, shear, compression and torsion by limit state methods. Basic elements of prestressed concrete, analysis of beam sections at transfer and service loads.
Steel Structures: Analysis and design of tension and compression members, beams and beam-columns, column bases. Connections- simple and eccentric, beam-column connections, plate girders and trusses. Plastic analysis of beams and frames.

Building materials and construction, construction management – principles and applications

ENVIRONMENTAL ENGINEERING

Water requirements: Quality standards, basic unit processes and operations for water treatment. Drinking water standards, water requirements, Water quality and tests, bacteriology of water – tests, basic unit operations and unit processes for surface water treatment, distribution of water. Sewage and sewerage treatment, quantity and characteristics of wastewater. Primary, secondary and tertiary treatment of wastewater, sludge disposal, effluent discharge standards. Domestic wastewater treatment, quantity of characteristics of domestic wastewater, primary and secondary treatment Unit operations and unit processes of domestic wastewater, sludge disposal.

Air Pollution: Types of pollutants, their sources and impacts, air pollution meteorology, air pollution control, air quality standards and limits.

Municipal Solid Wastes: Characteristics, generation, collection and transportation of solid wastes, engineered systems for solid waste management (reuse / recycle, energy recovery, treatment and disposal).


TRANSPORTATION ENGINEERING

Highway Engineering: Highway development and planning - Highway alignment - Geometric design - Pavement materials - Pavement Design

Traffic Engineering: Characteristics of traffic elements – Highway capacity – Traffic studies and surveys - Road accidents - Traffic regulation and control

Railway Engineering: Location surveys and alignment - Permanent way - Geometric design - Track Junctions - Points and crossings - Railway stations and yards - Signaling and interlocking

Airport Engineering: Aircraft characteristics - Airport obstructions and zoning - Runway - Taxiways and aprons - Terminal area planning

Docks and Harbours: Types of harbour - Layout and planning principles - breakwaters – docks - wharves and quays - Transit sheds – warehouses - navigation aids

GEOTECHNICAL ENGINEERING

Soil Mechanics: Origin of soils, soil classification, three-phase system, fundamental definitions, relationship and interrelationships, permeability &seepage, effective stress principle, consolidation, compaction, shear strength.


WATER RESOURCES ENGINEERING


Hydrology: Rainfall, evaporation & infiltration, unit hydrographs, flood estimation, reservoir capacity, Ground water, Well hydraulics.

SURVEYING
Importance of surveying, principles and classifications, mapping concepts, coordinate system, map projections, measurements of distance and directions, leveling, theodolite traversing, plane table surveying, errors and adjustments, curves, remote sensing and GIS

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

1. Data Structures and Algorithms

2. Operating Systems
Basic OS Concepts - Thread and process scheduling - Synchronization - Semaphores - Critical regions - Deadlock prevention and recovery - Memory Management - File Management - I/O Management – Case Studies on Windows and Linux OS.

3. Computer Organization and Architecture

4. C Programming

5. Microprocessors

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING (EEE)
Mathematics for electrical engineers;
Electric circuits, signals and systems and field theory;
dc machines, transformers and ac machines;
Transmission & distribution systems, power systems - analysis, operation & control;
Control systems;
Electrical and electronics measurements;
Power electronics and drives;
Analog and digital electronics – integrated circuits;
Microprocessors and basics of computers;

DEPARTMENT OF HUMANITIES (ECONOMICS)

DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
"The question paper for written test in dept Metallurgical and materials engineering , for temporary faculty will be at the general competency level of a degree holder in B.Tech. Metallurgical and Materials Engineering. Question will cover various areas of metallurgy and materials.”
### DEPARTMENT OF MANAGEMENT STUDIES

1. Marketing Management  
2. Principles of management  
3. Fundamentals of principal accounting  
4. Financial management  
5. Information Management  
6. Corporate IS Strategy and Management  
7. Intro to BAITC

8. System Analysis and Design  
9. Software Project Management  
10. Organizational behaviour  
11. Human Resource Management  
12. Operation Research  
13. Production and operations research  
14. Quantitative techniques

### DEPARTMENT OF MECHANICAL ENGINEERING


### DEPARTMENT OF PRODUCTION ENGINEERING

**ENGINEERING MATHEMATICS:** Linear Algebra Calculus Differential equations:  
Complex variables: Probability and Statistics: Numerical Methods:

**GENERAL ENGINEERING:** Engineering Materials: Applied Mechanics: Theory of Machines and Design: Thermal Engineering:


### DEPARTMENT OF PHYSICS

**Mathematical Physics:** Determinants and matrices – Vector analysis – Complex analysis – Ordinary differential equations – Fourier analysis.  
**Classical Mechanics:** Lagrangian formulation – Central force problem – Hamiltonian formulation – Rigid body motion – Special theory of relativity.  
**Electronics:** Network analysis – semiconductor devices – amplifiers and oscillators – operational amplifiers – digital circuits.  
**Electromagnetic Theory:** Electrostatics – Magnetostatics – Maxwell equations – Electromagnetic waves and propagation.  
**Atomic and Molecular Physics:** Atomic spectra – resonance spectroscopy – IR and microwave spectroscopy – electronic spectroscopy.  
**Nuclear Physics:** Nuclear forces – nuclear models – radioactivity – nuclear reactions – elementary particles
**DATA SHEET FOR TEMPORARY FACULTY**

Post applied for: Temporary Faculty in Department of ______________________________

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<th><strong>Details of Applicant</strong></th>
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