DIRECTORATE OF ADMISSIONS
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
KUKATPALLY, HYDERABAD - 500 085, TELANGANA STATE, INDIA

Part Time Post Graduate Programs (PTPG) in M.Tech, M.Sc. and MBA
For the Academic Year 2024-25

ENTRANCE TEST SYLLABUS

M.Tech. (ELECTRICAL POWER ENGINEERING)

NETWORK THEORY: General circuit concept - RLC Parameters - Response of RL - RC - RLC for impulse, step and sinusoidal excitations - Magnetic circuits - Single phase circuits - Concept of Real and Reactive powers - Power factor -Series & Parallel resonance - Three phase circuits - Star & delta connections - line & phase quantities - Analysis of balanced & unbalanced ckts. - Network theorems - Two port networks.

ELECTROMECHANICS: DC Generators - EMF equation - methods of excitation - characteristics of shunt, series and compound generators - DC Motors - Principle of operation - Torque equation - methods of speed control - efficiency -Applications - Single phase transformers - principle of operation - Phasor diagram - Equivalent circuit - iron and copper losses —efficiency - regulation - Polyphase induction motor - principle of operation - Phaser diagram - equivalent circuit - Torque equation - mech. Power developed - torque slip characteristics –
speed control methods & starting methods -Synchronous generators - Principle of operation - Armature reaction -leakage reactance - synchronous reactance & impedance - phasor diagram - voltage regulation - load - characteristics - synchronizing and parallel operation - Synchronous motor - theory of operation - phasor diagram - power developed - excitation & power circles - methods of starting.

POWER SYSTEMS: Operation of Hydropower stations - Thermal Power Stations - Nuclear power Stations - Economic aspects of power station - transmission line parameters - types of conductors - calculation of inductance - capacitance for 2 wire and 3 wire systems. Transmission line performance - short, medium and long line - T and TT network models - ABCD constants - Ferranti effect - Corona - Insulators - Underground cables - Calculation of insulation resistance - Power factor improvement - Protection against over voltage - Fuses - Circuit breakers - Currant limiting reactors - Electromagnetic & Static relays - application of relays - protection of busbars - transformers & generators - economic operation of power systems - load frequency control - single area and two area systems - power system transient & steady - state stability analysis, load flow studies.

CONTROL SYSTEMS: System concept - mathematical models of physical systems - block diagram algebra - feedback characteristics - reduction in parameter variations by use of feed back - PID controllers - time response analysis- concept of stability - frequency response analysis.

POWER ELECTRONICS: Basic theory of operation of SCR, BJT and their characteristics - On & Off methods - Snubber circuits - di/dt, dv/dt protection - Line commutaled converters both midpoint & bridge type - Single Phase & 3 phase with R, RL loads - Output equations - waveforms - dual converters - AC Voltage controllers (single phase) with R, RL loads - output equation - waveforms - single phase cycle converter - principle of operation'- wave forms -forced commutation - techniques - D.C. choppers, single quadrant and two - quadrant operation - Output equation, wave forms - inverters - series & parallel inverters - single phase and three phase - operation - wave forms.

ELECTRICAL MEASUREMENTS: Measuring instruments - classification, ammeter, voltmeter - expression for deflection torque & control torque - Instrument transformers - CT & PT - Measurement of active and reactive power in balanced load -Measurement of energy (single phase) - potentiometers - applications -bridges for resistance, inductance and capacitance measurements.

E N D

DIRECTORATE OF ADMISSIONS
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
KUKATPALLY, HYDERABAD - 500 085, TELANGANA STATE, INDIA

Part Time Post Graduate Programs (PTPG) in M.Tech, M.Sc. and MBA
For the Academic Year 2024-25

ENTRANCE TEST SYLLABUS

M.Tech. (ENGINEERING DESIGN)

M.Tech. (THERMAL ENGINEERING)

M.Tech. (ADVANCED MANUFACTURING SYSTEMS)

APPLIED MECHANICS AND DESIGN

Engineering Mechanics: Equivalent force systems, free-body concepts, equations of equilibrium, trusses .and frames, virtual work and minimum potential energy. Kinematics and kinetics of particles and rigid bodies, impulse and momentum (linear and angular), energy methods, central force motion.

Strength of Materials: Stress and strain, elastic constants, stress-strain relationship, Mohr's circle.

Deflection of beams, bending and shear stresses, shear force and bending moment diagrams, torsion of circular shafts, thin and thick cylinders, Euler's theory of columns, strain energy methods, thermal stresses.

Theory of Machines: Analysis of plane mechanisms, dynamic analysis of slider-crank mechanism, planar cams and followers, gear tooth profiles, kinematics and design of gears, governors and flywheels, balancing of reciprocating and rotating masses.

Vibrations: Free and forced vibration of single degree freedom systems, effect of damping, vibration isolation, resonance, critical speed of shafts.

Design of Machine Elements: Design for static and dynamic loading, fatigue strength, failure theories. Design of bolted, riveted and welded joints; design of shafts and keys; design of spur gears, brakes and clutches,, rolling and sliding contact bearings; belt, ropes and chain drives, springs, IC engine components, power screws.

THERMAL SCIENCE AND ENGINEERING

Fluid Mechanics: Fluid properties, fluid statics, manometry, buoyancy, control-volume analysis of mass, momentum and energy, fluid acceleration, differential equation of continuity and momentum. Bernoulli's equation. Viscous flow of incompressible fluids; boundary layer, flow through pipes, head losses in pipes, bends etc. turbo machines: velocity triangles Euler's equation, specific speed, Pelton wheel, centrifugal pump, Francis and Kaplan. turbines.

Heat-Transfer: Modes of heat transfer, one dimensional heat conduction, resistance concept, electrical analogy, unsteady heat conduction, fins, dimensionless parameters in free and forced convective heat transfer, various practical correlations for heat transfer over flat plates and through

pipes thermal boundary layer, effect of turbulence, radiative heat transfer, black and grey surfaces shape factors, network analysis, heat exchanger performance, LMTD and NTU methods.

Thermodynamics: Zeroth, first and second laws of thermodynamics, thermodynamic system and processes irreversibility and availability, behaviour of ideal and real gases, properties of pure substances, calculation of work and heat in ideal processes, Analysis of thermodynamics cycles related to energy conversion. Carnot, Rankine, Otto, Diesel, Brayton and Vapour compression cycle.

Steam Engineering: Steam generators, Steam engines, steam turbines-impulse and reaction, velocity diagrams, compounding, reheat factor.

I.C. Engines; Requirements and suitability of fuels in IC engines, fuel ratings, fuel-air mixture requirements, normal combustion in S1 and Cl engines, engine performance and testing gas turbines.

Reciprocating Air Compressor: Isothermal, adiabatic and polytropic compression, staging the compression process, intercooling and aftercooling, minimum work requirement, volumetric efficiency. Centrifugal and axial flow compressors.

Refrigeration and Air-conditioning: Refrigerant compressors, expansion devices, condensers and evaporators, properties of moist air, psychrometric chart, basic psychrometric processes.

MANUFACTURING AND INDUSTRIAL ENGINEERING

Engineering Materials: Structure and properties of engineering materials and their applications, heat treatment.

Metal Casting: Casting processes - pattern making, moulds and cores, solidification, design of casting, casting defects.

Metal Working: Stress-strain diagrams for ductile and brittle material, plastic deformation, mechanisms, fundamentals of hot and cold working processes-forgoing, extrusion, wire drawing, sheet metal wording, punching, blanking, - bending, deep drawing, coining and spinning.

Metal Joining Processes. Fusion and non-fusion welding processes, design of welded joints, modern welding processes.

Machining Processes and Machine Tool Operation: Mechanics of metal cutting, single and multipoint cutting tools, geometry and machining aspects, tool life, machinability, economics of machining, non-traditional machining processes.

Metrology and Inspection: Limits, fits and tolerances, linear and angular measurements, comparators, gauge design, interferometry, form and finish measurement, measurement of screw threads, alignment and testing methods.

Tool Engineering: Principles of work holding, design of jigs and fixtures, design of press working tools.

Manufacturing Analysis. Part-print analysis, tolerance analysis in manufacturing and assembly, time and cost analysis.

Computer Integrated Manufacturing: Basic concepts of CAD, CAM, Group technology.

Work Study. Method study, work measurement time study, work sampling, job evaluation, merit rating. Production Planning and Control. Forecasting models, aggregate production planning" master scheduling, materials requirements planning.

Inventory Control: Deterministic and probabilistic models, safety stock inventory control systems.

Operations Research: Linear programming, simpler and duplex method, transportation, assignment, network flow models, simple queuing models, PERT and CPM.

E N D

DIRECTORATE OF ADMISSIONS
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
KUKATPALLY, HYDERABAD - 500 085, TELANGANA STATE, INDIA

Part Time Post Graduate Programs (PTPG) in M.Tech, M.Sc. and MBA
For the Academic Year 2024-25

ENTRANCE TEST SYLLABUS

M.Tech.(EMBEDDED SYSTEMS)

Engineering Mathematics

Linear Algebra: Vector space, basis, linear dependence and independence, matrix algebra, eigen values and eigen vectors, rank, solution of linear equations – existence and uniqueness.

Calculus: Mean value theorems, theorems of integral calculus, evaluation of definite and improper integrals, partialderivatives, maxima and minima, multiple integrals, line, surface and volume integrals, Taylor series.

Differential Equations: First order equations (Linear and Nonlinear), higher order linear differential equations with constant coefficients, method of variation of parameters, Cauchy's and Euler's equations, initial and boundary value problems, partial differential equations and variable separable method.

Complex Variables: Analytic functions, Cauchy's integral formula: Cauchy's integral theorem, Taylor's and Laurent' Series, residue theorem.

Probability and Statistics: Probability, Joint and conditional probability, discrete and continuous random variables, probability distribution and density functions. Exponential, Poisson, normal and Binomial Distributions Functions. mean, mean square and standard deviation.

Numerical Methods: Solutions of non-Linear equations, single and multi-step methods for differential equations.

Networks: Definition and properties of Laplace transform**,** Network Solution Methods: nodal and mesh analysis. Network Theorems: Superposition, Thevenin and Norton's Maximum Power Transfer; Wye-Delta Transformation; Steady State Sinusoidal Analysis Using Phasors; Time domain analysis of simple linear circuits, Solution of Network Equations Using Laplace Transform; Frequency Domain analysis of RLC circuits; 2-Port Network Parameters: Driving point and transfer functions. State Equations for Networks.

Signals and Systems: Continuous-time and discrete-time Fourier series, Continuous-time and discrete-time Fourier transform, DFT and FFT, Z-Transform. Sampling theorem. Linear Time-Invariant (LTI) Systems: Definitions and properties; Causality, stability, impulse response, convolution, poles and zeros, parallel and cascade structure, frequency response, group delay, phase delay.

Electronic Devices: Energy bands in intrinsic and extrinsic Silicon. Carrier transport in silicon: Diffusion current, drift current, mobility, and resistivity. Generation and recombination of carriers. P-N Junction diode, Zener diode, Tunnel diode, BJT, JFET, MOS Capacitor, MOSFET, LED, Avalanche Photo Diode. Device Technology: Integrated circuits fabrication process, oxidation, diffusion, ion implantation, photolithography.

Analog Circuits: Small signal equivalent circuits of diodes, BJTs, MOFETs and analog CMOS. Simple diode circuits, clipping, clamping, rectifier. Biasing and bias stability of BJT and FET amplifiers. Amplifiers: single- and multi-stage, differential, operational, feedback, and power amplifiers. Frequency response of an amplifiers. Simple op-amp circuits. Filters. Sinusoidal oscillators; Criterion for oscillation; Single-Transistor and op-amp configurations and wave-shaping circuits, 555 timers. Power supplies, regulation, series and shunt transistor regulators.

Digital Circuits: Boolean algebra, minimization of Boolean Functions; logic gates; digital IC families (DTL, TTL, ECL, MOS, CMOS, Number systems.). Combinational circuits: Arithmetic circuits, code converters, multiplexers, decoders, PROMs and PLAs. Sequential circuits: Latches and flip-flops, counters and shift-registers. Sample and hold circuits, ADCs, DACs. Semiconductor memories: ROM, SRAM and DRAM, Microprocessor (8086): Architecture, addressing modes, programming, memory and I/O Interfacing, 8051 Micro Controller Architecture and Interfacing, Arm processor fundamentals.

Control Systems: Basic control system components; Feedback principle; Transfer function; Block diagram representation; Signal flow graph; Transient and steady-state analysis of LTI systems; Frequency response; Routh- Hurwitz and Nyquist stability criteria.

Communications: Deterministic and Random Signals, types of noise, autocorrelation, power spectral density, properties of white noise, filtering of random signals through LTI systems; analog communication systems: amplitude and angle modulation and demodulation systems, spectra of AM and FM. Information theory: entropy, mutual information and channel capacity theorem; Digital communications: Types of sampling Pulse Code Modulation (PCM); Digital modulation schemes: Amplitude, phase and frequency shift keying schemes (ASK, PSK, FSK, QAM); Matched filter receiver, calculation of bandwidth, SNR and BER for digital modulation schemes; Fundamentals of error correction, Hamming codes; Timing and frequency synchronization, intersymbol interference. Basics of TDMA, FDMA and CDMA.

Electromagnetics: Transmission Lines: equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Antennas: antenna types, radiation pattern, gain and directivity, return loss, Basics of radar.

E N D

DIRECTORATE OF ADMISSIONS
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
KUKATPALLY, HYDERABAD - 500 085, TELANGANA STATE, INDIA

Part Time Post Graduate Programs (PTPG) in M.Tech, M.Sc. and MBA
For the Academic Year 2024-25

ENTRANCE TEST SYLLABUS

M.Tech. (COMPUTER SCIENCE)

CS – Computer Science

Discrete Mathematics:

Propositional and first order logic, Sets, relations, functions, partial orders and lattices. Monoids, Groups,
Graphs: connectivity, matching, coloring, Combinatorics: counting, recurrence relations, generating functions.

Probability and Statistics:

Random variables, Uniform, normal, exponential, poisson and binomial distributions, Mean, median, mode and standard deviation. Conditional probability and Bayes theorem.
Computer Science and Information Technology.

Digital Logic:

Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (Fixed and floating point).

Computer Organization and Architecture:

Machine instructions and addressing modes. ALU, data-path and control unit. Instruction pipeling, pipeline hazards. Memory hierarchy: cache, main memory and secondary storage; I/O interface (interrupt and DMAmode.)

Programming and Date Structures

Programming in C.Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.

Algorithms

Searching, sorting, hashing. Asympotic worst case time and space complexity. Algorithm design techniques: greedy, dynamic programming and divide- and-conquer. Graph traversals, minimum spanning trees, shortest paths

Theory of Computation

Regular expressions and finite automata. Context-free grammars and push-down automata. Regular and contex-free Languages, pumping lemma. Turing machines and undecidability.

Compiler Design

Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation.Local optimization, Date flow analysis: constant propagation, liveness analysis, common subexpression elimination.

Operating System

System calls, processes, threads, inter-process communication, concurrency and synchronization. Deadlock. CPU and I/O schelding. Memory management and virtual memory. File systems.

Databases

ER-model. Relational model: relational algebra, tuple calculus, SQL. Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees). Transactions and concurrency control**.**

Computer Networks

Concept of layering: OSI and TCP/IP Protocol Stacks; Basics of packet, circuit and virtual circuit-switching; Data link layer: framing, error detection, Medium Access Control, Ethernet bridging; Routing protocols: shortest path, flooding, distance vector and link state routing; Fragmentation and IP addressing, IPv4, CIDR notation, Basics of IP support protocols (ARP, DHCP, ICMP), Network Address Translation (NAT); Transport layer: flow control and congestion control, UDP,TCP, sockets; Application layer protocols: DNS, SMTP, HTTP, FPT, Email.

E N D

DIRECTORATE OF ADMISSIONS

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

KUKATPALLY, HYDERABAD - 500 085, TELANGANA STATE, INDIA

Part Time Post Graduate Programs (PTPG) in M.Tech, M.Sc. and MBA
For the Academic Year 2024-25

ENTRANCE TEST SYLLABUS

M. Tech. (INDUSTRIAL METALLURGY)

Thermodynamics and Rate Processes: Laws of thermodynamics, activity, equilibrium constant, applications to metallurgical systems, solutions, phase equilibria, Ellingham and phase stability diagrams, thermodynamics of surfaces, interfaces and defects, adsorption and segregation; basic kinetic laws, order of reactions, rate constants and rate limiting steps; principles of electro chemistry- single electrode potential, electro-chemical cells and polarizations, aqueous corrosion and protection of metals, oxidation and high temperature corrosion - characterization and control; heat transfer - conduction, convection and heat transfer coefficient relations, radiation, mass transfer - diffusion and Fick's laws, mass transfer coefficients; momentum transfer - concepts of viscosity, shell balances, Bernoulli's equation, friction factors.

Physical Metallurgy: Crystal structure and bonding characteristics of metals, alloys, ceramics and polymers, structure of surfaces and interfaces, nano-crystalline and amorphous structures; solid solutions; solidification; phase transformation and binary phase diagrams; principles of heat treatment of steels, cast iron and aluminum alloys; surface treatments; recovery, recrystallization and grain growth; industrially important ferrous and non-ferrous alloys; elements of X-ray and electron diffraction; principles of scanning and transmission electron microscopy; industrial ceramics, polymers and composites; electronic basis of thermal, optical, electrical and magnetic properties of materials; electronic and opto-electronic materials.

Mechanical Metallurgy: Elasticity, yield criteria and plasticity; defects in crystals; elements of dislocation theory - types of dislocations, slip and twinning, source and multiplication of dislocations, stress fields around dislocations, partial dislocations, dislocation interactions and reactions; strengthening mechanisms; tensile, fatigue and creep behaviour; super-plasticity; fracture - Griffith theory, basic concepts of linear elastic and elasto-plastic fracture mechanics, ductile to brittle transition, fracture toughness; failure analysis; mechanical testing - tension, compression, torsion, hardness, impact, creep, fatigue, fracture toughness and formability.

Manufacturing Processes: Metal casting - patterns and moulds including mould design involving feeding, gating and risering, melting, casting practices in sand casting, permanent mould casting, investment casting and shell moulding, casting defects and repair; hot, warm and cold working of metals, Metal forming - fundamentals of metal forming processes of rolling, forging, extrusion, wire drawing and sheet metal forming, defects in forming; Metal joining - soldering, brazing and welding, common welding processes of shielded metal arc welding, gas metal arc welding, gas tungsten arc welding and submerged arc welding; welding metallurgy, problems associated with welding of steels and aluminium alloys, defects in welded joints; powder metallurgy; NDT using dye-penetrant, ultrasonic, radiography, eddy current, acoustic emission and magnetic particle methods.

E N D

DIRECTORATE OF ADMISSIONS

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
KUKATPALLY, HYDERABAD - 500 085, TELANGANA STATE, INDIA

Part Time Post Graduate Programs (PTPG) in M.Tech, M.Sc. and MBA
For the Academic Year 2024-25

ENTRANCE TEST SYLLABUS

M.Tech. (BIO TECHNOLOGY)

Microbiology: History of Microbiology, Classification of Protists. Morphological, Structural and Biochemical characteristics of procreates and Eukaryotes. Growth characteristics of microbes.

Methods of microbiology including pure culture techniques and microscopy. Industrially important micro organisms and important fermentation products.

Media formulation Principles of microbial nutrition, construction of culture media.

Isolation, improvement and preservation of industrial micro-organisms.

Microbial Genetics: Transformation, Transduction and Conjugation, Structure and Classification of viruses, replication of viruses including bacteriophases and animal viruses.

DNA: Structure of DNA and arrangement of genes on chromosomes, DNA synthesis and replication, RNA syntheses and processing, Different classes of RNA and their functions, Ribozymes, Protein expression in prokarytes and Eukarytes.

Plasmids, Transposable elements, TY Elements and repetitive sequences, Mutations.

Structure of Bio-Molecules, Metabolism of Carbohydrates, liquids, proteins, amino acids and Nucleic acids, photosynthesis.

Enzymes: Specificity, catalysis, kinetics, inhibition and allosteric enzymes. Metabolic organization and regulasation of metabolism. Signal Transduction.

Plasma Membrane: Structure and Transport, Signal Hypothesis.

Thermodynamics: First law of thermodynamics: Internal energy, enthalpy, molar heat capacities, reversible and irreversible processes. Isothermal and adiabatic changes. Second law: entrophy, Free energy change and chemical reaction equilibria. Heat of reaction, Hess's law, heat of formation, combustion etc.

Chemical Reaction Kinetics: Rate of reactions: Molecularity, order and rate consists, Arrhenius equation, Energy of activation, catalysis design of Ideal Reactors for single reactions.

Mathematics: Differential and integral calculus including integration Ordinary and partial differential equations. Laplace transforms of elementary functions, solution to ordinary differential equation by transform methods. Solutions of a system of linear algebraic equations by matrix method eigen values, of a square matrix. Fourier and Taylor's series. Mean value theorem.

Contd.page

Fluid Mechanics: Fluids vs Solids, Fluids statics and applications, Mass and energy balances in fluid flow, bernoulli's equation, its corrections and applications including pump work. Newton's law of viscosity, flow curves for non-newtonian fluids.

Pressure drop due to skin friction by Rayleigh's method of dimensional analysis – significance of friction, factor and Reynol's number. Boundary layer theory and form friction pressure drop due to form friction. Flow past immersed bodies and drag coefficients. Pressure drop in flow through packed beds. Fluidization and pressure drop across fluidized beds. Flow metering, machinery and control.

Heat Transfer: Modes of heat transfer and examples. Fourier's law of heat conduction and analogy with momentum transfer, heat transfer through a cylindrical pipe wall.

Convection and concept of heat transfer coefficient, application of dimensional analysis to heat transfer from pipe to a flowing fluid. Thermal boundary layer and prandtlnumber. Overall heat transfer coefficient.

Correlations for heat transfer coefficients in natural and forced convection, significance of dimensionless numbers. Overview of heat exchangers and concept of LMTD. Overview of other heat transfer operations, viz., boiling and condensation and evaporation. Overview of radiation, combined heat transfer by conduction – convection and radiation.

Diffusion and Mass Transfer: Fick's law of diffusion, analogy with momentum and energy transport, diffusivities of gases and liquids, fundamentals of mass transfer coefficient, dimensionless numbers and significance, correlation for mass transfer, overview of separation operations. Equipment for mass transfer operations. Equilibrium stage operations.

Mechanical Unit Operations: Principles of the following operations for size reduction and size separation, crushing, grinding, filtration, centrifugation.

E N D

DIRECTORATE OF ADMISSIONS

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
KUKATPALLY, HYDERABAD - 500 085, TELANGANA STATE, INDIA

Part Time Post Graduate Programs (PTPG) in M.Tech, M.Sc. and MBA
For the Academic Year 2024-25

ENTRANCE TEST SYLLABUS

M. Tech. (ENVIRONMENTAL MANAGEMENT)

Ecology & Environment:

1. Nature of ecosystems
2. Energy flow in ecosystems-energy fixation by Autotrophs –Energy beyond the producers
3. Biogeochemical cycles and ecosystems
4. Ecology of populations - population growth - age structure - equilibrium level -
5 . Dynamics of ecological communities.

Recommended Books: Concepts of Ecology, E. J. Kormondy, Prentice-Hall 1984

Microbiology:

1. Major characteristics of microorganisms --- bacteria - Fungi, molds and yeasts - algae - protozoa – Viruses.
2. Cultivation of microorganisms – Control of microorganisms - physical and chemical agents.
3. Microorganisms in aerobic & anaerobic biological waste treatment- major groups of microbes and their role.
4. Microorganisms, growth kinetics- bacterial growth curve, various phases of growth, growth rate and doubling time.

Environnemental Chemistry:

1. Basic concepts and scope of environmental chemistry – Environmental Segments.
2. Atmosphere - Structure - Chemical and photo chemical reactions – and ozone chemistry - green house effect.
3. Hydrosphere - hydrologic cycle – chemistry of water and waster water.
4. Lithosphere - micro and macro nutrients – Wastes and pollution of soil air and water.
5. Environmental technologies, Environmental effects of pollution – Health effects of pollution.

Contd..page

Pollution Control Engineering:

1. Solid, Liquid and Gaseous Wastes, Various Pollutants and their Harmful effects.
2. Waster quality, waster purificatrion systems.
3. Waste water characteristics, Primary / Secondary treatment methods.
4. Air Pollution control methods.
5. Dispersion of pollutants and self-purification aspects.

Geology , Remote Sensing & GIS

1. Origin and age of the earth, internal Constitution of the earth, Geological processes - Exegetic and endogenic, ligneous, metamorphic and sedimentary rocks, distinguishing features of these three types of rocks, basic principle of structural geology, geology of dams and reservoirs.
2. Geomorphic cycle, geomorphic agents, definition of weathering, types of weathering physical and chemical, definition of erosion and denudation, cycle of erosion, landforms created by geomorphic agents.
3. Map terminology: map reading, topographic map, conventional symbols, locating points, map projections and classification of maps.
4. Aerial photogrametry: Definition, photo scale, classification of Ariel photographs, Air photo interpretation key elements, photo grammetric terminology.
5. Remote Sensing: Electromagnetic energy, Electro magnetic spectrum, various satellites and sensors, latest advancements in satellite remote sensing, General knowledge on Indian remote sensing Programmes.

Elementary Mathematics, Statistics and Computer Science:

1. Elementary Mathematics: Solutions of simultaneous linear equations, quadratic equations, progressions, perambulations and combinations, concepts of matrices and determinants.
2. Statistics: sample mean and variance, random variable, distributed and continuous distributions, mean and variance of distribution, correlation, coefficient, confidence intervals, goodness of fit, test, pairs of measurements, fitting straight lines.
3. Introduction to computers and programming: components of computers, characteristics of computer, modes of operation, type of computer algorithms, flowcharts, programming languages, operating systems, fundamentals, of C, structure of C, variables and constants, arithmetic and logical expressions, standard output-input functions, conditional statements and looping in C, various types of functions.

E N D

DIRECTORATE OF ADMISSIONS
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
KUKATPALLY, HYDERABAD - 500 085, TELANGANA STATE, INDIA

Part Time Post Graduate Programs (PTPG) in M.Tech, M.Sc. and MBA
For the Academic Year 2024-25

ENTRANCE TEST SYLLABUS

M.Tech. (REMOTE SENSING AND GIS)

I. COMPUTER GRAPHICS AND PROGRAMMING COMPTER GRAPHICS

Representative uses of computer graphics, framework for interactive graphics, input devices, raster graphics features, scan converting lines, Incremental algorithm and mid point line algorithm for scan converting lines.

INTRODUCTION TO C :
Fundamentals, structure of C functions, variables constants, data types and arithmetic expressions, standard input – output functions, conditional statements.

PROGRAMMING IN C
Logical operations, program looping, operators, arrays, functions, structures, pointers, modular programming, user defined data types input output from files libraries and generalized functions, recursion

Suggested Reading Material :

1. Programming in C by Stephen G Kochan – Schaum's Series
2. Computer Graphics by Foley, vanDam, Feiner, Hughes

II. CONVENTIONAL SURVEYING REMOTE SENSING and PHOTORAMMETRY. CONVENTIONAL SURVEYING and MAPPING

Surveying methods, Topographics Surveying, Theodolite application, General features of Survey of India topographical sheets, Map scale, Indtroduction to Map scale, Introduction to Map projections, Introduction to cartography.

REMOTE SENSING PHYSICS AND SATELLITES :
Physical principles of Remote Sensing, Sources of Electro magnetic energy, Electro Magnetic Spectrum, General aspects of Indian Space program.

PHOTOGRAMMETRY :
Aerial Photo formats, Scale of aerial photograph, Relief displacement, Eements of Photogrammetry, stereoscopic products and applications.

Suggested reading material :

1. Physical Geography by Tikka
2. Soil Physics By M.C. Oswal
3. Geology by P.K.Mukherjie

Contd..page

III. GEO-SCIENCES GEOGRAPHY

Landforms origin, classification and distribution, elements of weather and climate, heating of atmosphere, temperature, atmospheric pressure, winds, humidity, evaporation and condensation, precipitation,

SOILS

Mechanical composition of soil-soil texture, soil structure. Irrigation – irrigation methods, soil salinity and water quality. Soil conservation – soil erosion, water erosion, types of water erosion factors affecting soil erosion, estimation of soil loss; erosion control; wind erosion, factors influencing wind erosion, control of wind erosin

Suggested Reading material :

1. Physical Geography by Tikka
2. Soil Physics By M.C.Oswal
3. Geology by P.K.Mukherjie

IV. PROBABILITY AND STATISTICS:

PROBABILITY :

Sample space and events, axioms of probability, finite probability spaces, infinite sample spaces, conditional probability, multiplication theorem for conditional probability, independence, independent or repeated trails, binomial distribution, normal distribution.

STATISTICS:

Sample mean and sample variance, random variable discrete and continuous distributions, Mean and Variance of distribution, estimation of parameters, confidence intervals, testing of hypothesis.

Suggested Reading Material :

1. Probability and Statistics - Schaum's Series.

- **END ***

DIRECTORATE OF ADMISSIONS

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

KUKATPALLY, HYDERABAD - 500 085, TELANGANA STATE, INDIA

Part Time Post Graduate Programs (PTPG) in M.Tech, M.Sc. and MBA
For the Academic Year 2024-25

ENTRANCE TEST SYLLABUS

M. B. A.

(HR / Finance / Marketing / Entrepreneurship)

Section A: Analytical / Reasoning ability

(a). Problem solving (b) Data Sufficiency

Section B: Mathematical ability

(a). Arithmetical ability (b). Algebraic and Geometrical ability (c). Statistical ability

Section C: Communication ability

(a). Vocabulary (b). Business Terms(c). Functional grammar (d). Reading comprehension

E N D