



Birla Institute of Technology & Science, Pilani

Hyderabad Campus

ADMISSIONS TO NON-RESIDENTIAL HIGHER DEGREE PROGRAMMES AT HYDERABAD CAMPUS – Academic Year 2012-13

The Birla Institute of Technology and Science (BITS) Pilani is an Institution declared as a University under Section 3 of the UGC act. Applications are invited for admission to the following nonresidential higher degree programmes offered by the institute at its BITS-Pilani, Hyderabad Campus. These programmes are available to candidates who are not in a position to attend the regular residential programmes offered by the institute. The programmes may be conducted in the evening hours or at the weekend depending upon number of suitable applicants for each of the programme. Admissions will be made on all-India basis strictly according to merit and suitability of the candidate to pursue the following programmes of studies.

Programme Offered:

M.E. (Embedded Systems), M. Pharm. (General), M.E. (Mechanical Engineering)

Duration: Normally five semesters. If needed, in addition, one summer term.

Eligibility: A minimum of 60% aggregate in the qualifying examination.

Input Qualifications:

M.E. (Embedded Systems) – Integrated first degree of BITS in Electrical & Electronics / Electronics & Instrumentation/ Computer Science or its equivalent

M.Pharm. – Integrated first degree of BITS in Pharmacy or its equivalent.

M.E. (Mechanical Engineering) - Integrated first degree of BITS in Mechanical Engineering or its equivalent.

Note: Offering of Programmes will depend upon the number of suitable candidates for the particular programme.

- Classes will be held on every weekend (Saturday/Sunday) at Hyderabad campus.

Admissions to the Programmes are based on the performance of the candidates in the written test and interviews conducted by BITS. Shortlisted candidates will be asked to come to Hyderabad at their own cost for the written tests and interview which will be held on **Saturday, 28th July 2012 at BITS PILANI, Hyderabad Campus**. Based on the performance in test and interviews candidates will be selected for admission. **The details of test, syllabus for the test are available herewith.**

C. APPLICATION PROCEDURE

Interested and eligible candidates should apply through the prescribed application form attached herewith. The completed application form along with the prescribed fee of Rs 1500/- in the form of a crossed Demand Draft should be sent to **Faculty In-Charge, Admissions, BITS-Pilani, Hyderabad Campus, Jawahar Nagar, Shameerpet Mandal, R. R. District, Hyderabad 500 078, Andhra Pradesh**. Demand drafts should be drawn in favour of **Birla Institute of Technology & Science (BITS), Pilani in State Bank of India or State Bank of Hyderabad or**



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any Nationalized bank, Payable at State Bank of Hyderabad, Jawahar nagar Branch, BITS Hyderabad Campus (**Code: 21092**)

Deadline for submission of the completed application form is **15th July 2012**.

May 2012

Director
BITS-Pilani- Hyderabad Campus.

Important Dates:

Last date for Application: 15th July 2012

Date for Entrance Test & Interview: Saturday, 28st July 2012

Registration for course work: To be announced

Starting Date for Classes: 5th /12th August 2012.

DETAILS OF ENTRANCE TEST:

Date of test: 28st July 2012

Duration: 120 Minutes. Total number of questions: 100

Compulsory for Students applying for all higher degree programmes. This paper will attempt to test student's grasp of the basic subjects of your discipline. The discipline courses of different degree programmes of BITS have been used for constructing the questions. The course descriptions are available in the syllabus given later in this brochure.

The questions will be selected at random from a large question bank. An expert committee will ensure that the question sets are of comparable difficulty level, content, question type etc. In this matter the decision of the expert committee will be final and binding on the candidate.

All the questions and instructions of the test will be in English only.



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SYLLABUS FOR TEST for M.E: EMBEDDED SYSTEMS STREAM

Analog Electronics:

Operational amplifier basics, ideal and practical Op-amp configurations, special purpose linear Op-amp circuits: instrumentation amplifiers, isolation, programmable, negative feedback amplifiers etc., Active filters, IC filters; non-linear operational amplifier circuits, analog multipliers, precision and wave shaping circuits, comparators and Schmitt triggers and applications, Signal generators: sinusoidal and non-sinusoidal oscillators, integrated circuits timers. function generators, PLL, Voltage Regulators; voltage regulator IC, switched capacitor voltage converters, switching regulators, Power amplifiers and output stage circuits, IC power amplifiers, high frequency amplifiers, tuned amplifiers.

Reference books:

L K Maheshwari & M M S Anand "Analog Electronics" PHI Private Ltd. 2005.

Adel S Sedra & K C Smith "Microelectronic Circuits" OUP, 5th edition, 2005.

Digital Electronics & Computer Organization:

Number systems & Codes, Boolean algebra & Simplification, Digital Logic Families, Combinational logic Design – Decoders, Encoders, MUX, DeMUX, Arithmetic Circuits, Sequential Logic design- Flip-flops, State machines, ASM Counters & Registers, PLDs & FPGAs & Computer Organization.

Reference books:

M. Morris Mano, "Digital Design", PHI, 3rd Edition, 2002.

Microprocessors:

Architectures of Intel - x85 & x86 Processors, Instruction set & Assembly Language programming, Memory Interfacing, Data Transfer Schemes, Peripherals & I/O Interfacing using 8255, 8253, 8251, Disk Organization

Reference books: Barry B Brey, C R Sarma, The Intel Microprocessors. Pearson, Sixth Ed. 2005.

Circuits & Signals, Digital Signal Processing:

Linear convolution, Fourier Transforms, DFT & FFT, Laplace Transforms & its application to system analysis, Z-transform & its application to system analysis, Analog & digital filter design (FIR, IIR), Multirate signal processing.

Reference books:

B P Lathi "Signal Processing & Linear Systems" Oxford Univ. Press, 2004.

2.Sanjit K Mitra "Digital Signal Processing" Tata MCGra Hill 3rd Edition, 2006.

Electrical Sciences:

Basic Circuit elements and laws, Analysis Techniques & Theorems, Time-domain analysis of 1st & 2nd Order Circuits, AC Circuit Analysis, Frequency domain analysis, Series and Parallel RCL Circuit, Important Power Concepts, Semiconductors, Construction, operation and application of Junction Diode, Zener Diode, Transistor (BJT's), FET's, MOSFET etc., Feedback in Amplifier Circuits, AC Generation and Magnetic Circuits, Single- phase circuit analysis, Magnetic Circuit Calculations, Three- phase Circuit analysis, Electrical Machines (Construction, Operation & usage), Transformers, DC Machines, Three-phase synchronous generator, Three-phase induction motors, Single-phase induction motor, Fractional KW motors.

Communication Systems:

Principles of modern analog and digital communication with more emphasis on digital communication, Amplitude and Angle modulation, sampling, PCM, DM, ADPCM, pulse shaping, digital modulation: FSK, PSK, DPSK, QPSK. Information theory, source coding & channel coding, Shannon capacity theorem, emerging trends in communication systems. Experiments in analog and digital communication.

Reference Books:

B.P. Lathi and Zhi Ding, *Modern Digital and Analog Communication Systems*, 3rd OR 4th Edition, Oxford University Press, 2010

Simon Haykin & Michael Moher, *Communication Systems*, 4th OR 5th Edition, John Wiley & Sons, 2010





SYLLABUS FOR TEST FOR M.PHARMACY

Pharmacy Natural Drugs, Phyto chemistry, Pharmacognosy:

General Pharmacognosy, traditional systems of medicine, plant nomenclature & classification, macro & micro morphology, standardization parameters; Properties, isolation techniques, tests and functions of alkaloids, alkaloidal drugs belonging to the classes: tropane, ecgonine, quinoline, isoquinoline, indole, purine, phenanthrine, diterpene, peptide, steroidal classes including pseudoalkaloids; Classification, isolation techniques, test for glycosides, glycoside drugs of class: anthraquinone, cardenolide, bufedienolide, saponins; Classification, isolation techniques, tests for volatile oils and fixed oils, volatile oil containing drugs including acyclic, monocyclic, bicyclic and tri cyclic terpenoidal drugs, fixed oils containing saturated, unsaturated fatty acids; Classification, isolation procedures, test for resins, drugs of resin alcohol, acid resin and ester

resin classes, classification and tests for gums, prepared gums and naturally occurring gums.

Reference books:

Trease & Evans 'Pharmacognosy' Saunders, 15th Ed., 2002.

Wallis T. E. 'Text book of Pharmacognosy', 5th Ed. 1997.

Anatomy Physiology & Hygiene:

Anatomy of a generalized cell, cellular transport mechanisms, cell division, body tissue types and functions, their properties and characteristics., Composition and functions of blood, Plasma Proteins, RBC, WBC, platelets- anatomy & functions, hemoglobin and blood groups, blood typing, anatomy and physiology of the heart, blood pressure, ECG and its significance, blood vessels., General aspects of neurology, central, peripheral nervous system (CNS and PNS), autonomic nervous system, endocrine glands, hormones:- their functions and mechanisms of action., Anatomy of the urinary system, mechanisms of urine production, diseases of the kidney, male, female reproductive systems and related disorders., Organs of the respiratory system, process of respiration, diseases related to the systems.

Reference books:

Martini F H – Fundamentals of Human Anatomy & Physiology. 4th Ed, P-H International Inc.

Guyton & Hall, A Text book of Medical Physiology XI Ed., WB Saunders Co. (Indian Ed.), Elsevier 2006.

Pharmaceutical Chemistry (Medicinal Chemistry, Chemistry of Synthetic Drugs and Applied Pharmaceutical Chemistry):

Physico-chemical and stereo chemical properties affecting drug actions, drug-receptor interactions, pro-drugs and drugs metabolism., Classification, structure, synthesis, S.A.R. and mechanism of action of local anaesthetics, sedatives, hypnotics, anti-histaminics, antihypertensive agents., Various organic reactions involved in drug synthesis, addition, condensation, rearrangement, carbon – carbon bond formation, carbon heteroatom bond formation, heterocyclic ring forming reactions., Chemotherapeutic agents: sources, synthesis and S.A.R, mechanisms of action of anti-bacterial, anti-cancer, anti-viral agents., Lead compound identification, retero-synthetic analysis, bio-technological approach to drug design and





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development, alkyl chain addition / deletion, ring expansion, ring contraction methods, synthesis and use of intermediates in organic systems.

Reference books:

Foye, William. "Principles of Medicinal Chemistry" – Lippincott Williams & Williams, 5th Ed., 2002.

D. Sriram, P-Yogeeswari "Medicinal Chemistry" Pearson Education, I Ed., 2007.

Pharmaceutical and Instrumental Methods of Analysis:

IR, NMR, MASS – spectroscopic techniques, their principles, instrumentation, molecular characterization, calibration, operation, sample preparation and interpretation of results., UV-Vis. Spectrophotometer, spectrofluorimeter, AAS: - their principles, instrumentation, calibration, operation, sample preparation and interpretation of results., Chromatographic Techniques – HPLC, GC, Paper, Gel electrophoresis – their principles, instrumentation, calibration, operation, sample preparation and interpretation of results., Titrimetric methods – neutralization (aqueous and non-aqueous), redox, precipitation, complexometric, iodometric and iodimetric titrations: – their principles, applications, assay techniques.,

Limit tests, microbiological assay, determination of water content, methoxyl groups; T.L.C, paper and column chromatographic techniques and their applications.

Reference books:

Willard H H "Instrumental Methods of Analysis" CBS, 7th Ed. 1988.

Beckett and Stenlake J.B. 'Practical Pharmaceutical Chemistry' – 4th Ed. Part I & II, 1997.

Pharmacology and Toxicology:

Introduction, Scope and principles of basic pharmacology and toxicology, mechanisms of drug action, receptors and drug action, pharmacodynamic parameters affecting drug- receptor interaction, Pharmacokinetics and Pharmacodynamics., Cholinergic drugs, cholinergic blockers, adrenergic drugs and their blockers, ganglionic and neuromuscular blocking agents – their mechanisms action., General and local anesthetics, anxiolytics, sedatives and hypnotics, antipsychotics and antidepressants, narcotic and non-narcotic drugs, NSAID's, CNS stimulants anti-convulsants, anti-parkinsonics agents, their mechanisms., Cardiotonics, antianginals, antihypertensives, diuretics, anti arrhythmic, drugs for blood disorders – their mechanisms., Principles of Chemotherapy, classification of chemotherapeutic agents, folate antagonists, protein, cell wall synthesis inhibitors, quinolone antibiotics, drugs for UTI, antifungal, antiviral, antitubercular, anthelmintics, antimoebics, anti-cancer drugs.

Reference books:

Goodman & Gilman's "The Pharmacological Basis of Therapeutics" - Fundamentals, 10th Ed., McGraw Hill, 2001.

M J Mycek et.al., Lippincott's Illustrated reviews – Pharmacology-Lippincott-Ramen-III Ed. 2001.

Pharmaceutical Microbiology and Biochemistry:

Introduction and classification of microbes, bacteria, virus, fungi, protozoa – physiology and cellular function, infections and immunity, microbials in antibiotic and vaccine preparations.,



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Nutritional requirements and cultivation of microbes, culture media types, physical and chemical methods of microbial control, staining techniques, sterility testing and their validation, sterilization methods and applications., Microbial mechanisms of human pathogenicity, diseases of the skin, CNS, GIT, Respiratory Tract, immune system disorders, antimicrobial drugs and their evaluation., Carbohydrates Lipids, Proteins, Nucleic acids: their structures, biosynthesis, biochemical energetic functions, clinical pathology, deficiency disorders., Enzymes and their regulation; classification, structures, kinetics, inhibition mechanisms, applications.

Reference books:

Microbiology – An introduction – 8th Ed. Tortora, et.al Pearson Pub., 2004.

Prescott et.al Microbiology' 6th Ed. McGraw Hill, 2005.

“ Lehniger Principles of Biochemistry” – David L Nelson W.H, Framan & Co, 4th Ed. 2004.

Forensic Pharmacy and Quality Control Management:

Regulatory control of manufacturing and sales of pharmaceuticals and cosmetics, Drugs & Cosmetics Act, Medicinal and Toilet Preparations Act, Narcotics and Psychotropic Substances Act., Regulatory control of teaching and practice of Pharmacy: Pharmacy Act, Objectionable Advertisements Act, Shops and Establishments Act, Drug Price Control Order, Quality Assurance and Quality Audit: QC/QA functions, GLP, Quality audit, ISO certification, Good Manufacturing Practices: All aspects of good manufacturing practices, documentation, protocols involved, design of premises., Pharmaceutical Management: Planning, organizing, controlling of pharmaceutical manufacturing and marketing activities.

Reference books:

B.M. Mittal – Textbook of Forensic Pharmacy Vallabh Prakashan, 10th Ed., 1999.

Khanna O.P., Industrial Engineering and Management, Dhanpat Rai Rev.Ed. 1999.

Willing, etal, Good Manufacturing Practice for Pharmacy: A plan for Total Q.C, Marcel Dekker, 5th Ed., 2001.

Industrial and Physical Pharmacy:

Physicochemical properties of Pharmaceutical agents, Rheology, Interfacial phenomenon, Micromeretics, Raw materials and Materials of construction of equipments., Kinetic Phenomenon, Chemical Kinetics, Stability testing, Dissolution, Diffusion., Materials of construction, Extraction, Communion, Mixing., Heat transfer, Distillation, Evaporation, Drying, Fluid Flow, Humidification, Dehumidification., Filtration, Crystallization, Compression

Reference books for:

Aulton M.E – ‘Pharmaceutics -The Science of Dosage Form Design-Churchill Livingston, 2nd Ed. 2002 or ELBS, I Ed.



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SYLLABUS FOR TEST FOR M.E. (MECHANICAL ENGINEERING)

Workshop Practice:
Metal casting, Metal machining, Metal forming, powder metallurgy, plastic forming and molding, Metal joining, Metrology and heat treatment processes.
Reference books: Campbell J. S., Principles of Manufacturing Materials and Processes, 23rd reprint, Tata McGraw Hill, 2006.
Production Techniques:
Advanced casting processes, Advances in metal cutting theory, machining processes, Advanced welding processes, Advanced metal forming processes, Manufacturing systems.
Reference books: Kalpakijan, S. and Schmid, S. R., Manufacturing Engineering and Technology, 5th edition, Pearson Education, 2006. HMT, Production Technology, 4th reprint, Tata McGraw Hill, 1988.
Production Planning and Control:
Forecasting and product planning, Process planning, job design and work measurements, Facilities location and layout, Capacity planning, aggregate planning and scheduling, Inventory and quality control.
Reference books: Gaither, N. and Frazier, G., Operations Management, 9th Edition, Thomson South Western, 2007 Reprint.
Design of Machine Elements:
Criteria for static failure and fatigue failure, design of screws and bolted joints, design of welded joints and riveted joints, Mechanical springs, Design of rolling element bearings, journal bearings and hydrodynamic lubrication, Design of gears, clutches, brakes, couplings, flywheels, flat and V-belt drives, Computer aided design, geometric modeling of mechanical parts and finite element analysis.
Reference books: Shigley, J. E. and Mischke, C. R., Mechanical Engineering Design, 6th edition, Tata McGraw-Hill, 2001. Zeid, I., CAD/CAM: Theory and Practice, Tata McGraw-Hill, 1991.
Kinematics & Dynamics of Machines and Vibrations:
Principle of virtual work, D'Alembert's principle, Kinetic Modeling, kinetics of mechanism (Four-bar mechanisms) and synthesis of cam – follower motion, Flywheels, governors, gyroscope and balancing, Free and forced vibration, Multi-degree of freedom (two dof) free and forced vibrations, mode shapes, approximate methods of solutions.
Reference books: Uicker J.J., Pennock G.R., Shigley J.E., Theory of Machines and Mechanisms, 3rd edition, Oxford University Press, 2003.
Transport Phenomena I:
Fluid statics, Conservation laws, Viscous and inviscid flow analysis, Dimensional analysis, Analysis of fluid machines.
Reference books: Welty, J. R., Wicks, C. W. and Wilson, R. E., Fundamentals of Heat and Mass Transfer, John Wiley & Sons, 4th edition, 2000. Kadambi, V. and Prasad, V., An Introduction to Energy Conservation, NAIL.
Transport Phenomena II :
Conduction: steady state and unsteady state heat conduction, Convection: analytical and empirical relations for forced and free convection heat transfer, condensation and boiling, Radiation heat transfer: basic laws, shape factor, radiation heat exchange between surfaces, Heat exchanger: analysis and





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design, Mass transfer: diffusion and convective mass transfer.

Reference books:

Holman, J. P., Heat Transfer, McGraw Hill, 9th Edition, 2002.

Welty, J. R., Wicks, C. W. and Wilson, R. E., Fundamentals of Heat and Mass Transfer, John Wiley & Sons, 4th edition, 2000.

Thermodynamics:

Properties of pure substance, First law of thermodynamics, Second law of thermodynamics, Entropy, Irreversibility, energy and thermodynamic relations.

Reference books:

Sonntag, R. E., Borgnakke, C. and Van Wylen, G. J. Fundamentals of Thermodynamics, 6th edition, John Wiley & Sons (Asia) Pte. Limited, 2003.

Applied Thermodynamics:

Air standard cycles, gas power cycles, I.C. engines, Vapour compression and absorption cycle, Psychometrics and air conditioning, Vapour power cycles, boilers, its mountings and accessories.

Reference books:

Nag P.K., Basic and Applied Thermodynamics, 3rd edition, Tata McGraw Hill, 2002.

Ganesan V., Internal Combustion Engines, Tata McGraw Hill, 1994.

Arora, C.P., Refrigeration and Air Conditioning, Tata McGraw Hill, 2nd edition, 2000.

Nag P.K., Power Plant Engineering, 2nd edition, Tata McGraw Hill, 2001.

Mechanics of Solids:

Fundamental principle of mechanics, Introduction to mechanics of deformable bodies, slender members, energy Methods, Stress and strain: stress-strain-temperature relations, Symmetric and asymmetric bending, torsion, Curved beams and thick shells, Buckling.

Reference books:

Candall, S. H., Dahl, N. C. and Langner, T. J., An Introduction to Mechanics of Solids, McGraw Hill, 1984.

Boresi, A. and Schmid, R., Advanced Mechanics of Materials, John Wiley & Sons.



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