CS/EB/EC/EE/EI/IT 701 INDUSTRIAL ORGANIZATION AND MANAGEMENT

Module 1
Organisation: Introduction, definition of organization, system approach applied to organization, necessity of organization, elements of organization, process of organization, principles of organization, formal and informal organization, organization structure, types of organization structure.
Forms of business organization: Concept of ownership organization, types of ownership. Individual ownership, partnership, joint stock Company, private and public limited company, co-operative organizations, state ownership, public corporation

Module 2
Basic concept of management: Introduction, definitions of management, characteristics of management, levels of management, management skills
Management theory: Scientific management, contribution of Gilbreth. Gantt, Neo-classical theory, modern management theories
Functions of management: Planning, forecasting, organizing, staffing, directing, motivating, controlling, co-coordinating, communicating, decision making.

Module 3
Personnel management: Introduction, definition, objectives, characteristics, functions, principles and organization of personnel management
Markets and marketing: Introduction, the market, marketing information, market segmentation, consumer and industrial markets, pricing, sales, physical distribution, consumer behaviour and advertisement.
Financial management: the basics, financial accounts, inflation, profitability, budgets and controls, cost accounting, valuation of stock, allocation of overheads, standard costing, marginal costing

Module 4
Productivity and production: Measurement of productivity, productivity index productivity improvement procedure
Materials management and purchasing: Objectives, functions, importance of materials management. Stores and storekeeping
Inventory control: Classification, functions, inventory models, inventory costs, EOQ, Materials requirement planning

References:
1. Fraidoon Mazda, Engineering Management-, Addison-Wesley
5. Monks J.G Operations Management, MGH

Type of questions for University Examination
Question 1 - 8 short answer questions of 5 marks each. 2 questions from each module
Question 2-5 – There will be two choices from each module. Answer one question from each module of 15 marks
EC 702 RADIO COMMUNICATION

Module I

Module II

Module III

Module IV
Introduction to RADAR:- RADAR range equation – pulse RADAR- applications of RADAR –accuracy and resolution – Doppler effect to find velocity – pulse repetition frequency – unambiguous range and velocity – factors affecting the performance of RADAR. Synthetic and Raw displays (concepts only). CW RADAR with non zero IF – FM CW RADAR - applications – MTI and Pulse Doppler RADAR
Tracking RADAR:-Sequential lobing- conical scanning- helical scanning- Monopulse tracking- SAR.(Basic concepts and Block diagrams only) Electronic counter measures – main beam jamming – side lobe jamming – passive ECM.

Text Books:
1. J.D.Kraus, R.J Marhefka and Ahmed S Khan ,Antennas for all applications, Tata Mc Graw Hill, 3rd edition

References:

Type of questions for University Examination
Question 1 - 8 short answer questions of 5 marks each. 2 questions from each module
Question 2-5 – There will be two choices from each module .Answer one question from each module of 15 marks
EC/EI 703 COMPUTER COMMUNICATION AND NETWORKS

Module I


Module II

Application layer: WWW and HTTP- File transfer protocol: FTP, DNS, SMTP, SNMP, RPC


Module -III


Module IV


Text Books:
2. F. Halsall, Data Communication, Computer Networks and Open Systems, Addison Wesley, 1996

References:
3. Uysel Black, Computer Networks - Protocols, Standards and Interfaces, Prentice Hall India, New Delhi, 1994

Type of questions for University Examination

Question 1 - 8 short answer questions of 5 marks each. 2 questions from each module

Question 2-5 – There will be two choices from each module. Answer one question from each module of 15 marks
EC 704 ELECTRONIC PRODUCT DESIGN

Module I
Representation of development tasks using standard tools showing timing and dependencies- Product Life Cycle.

Module II

Module III

Module IV
EMI/EMC Considerations in Electronic Product Design: Sources of EMI, inter/intra system EMI- Noise performance of passive components- Cabling, Shielding and Grounding - Cables, Connectors, components and equipments for interference suppression/minimization- Intrinsic noise sources and their management- EMI standards and Regulations.
PCB design: PCB design process-Design rules for analog, digital, high-frequency, power-electronic and MW PCBs-PCB design guidelines for EM compatibility-Designing PCBs for manufacturability- Design considerations for power efficiency-Thermal Considerations in PCB design.
Introduction to SPICE simulation of circuits- Circuit description- Modeling of active and passive circuit elements - DC, AC, Transient and Parametric circuit analysis.

Module V (Tutorial Only-No questions from this module for University Examination)
Electronic Design Automation Tools: Introduction to PC based Electronic Design Automation Tools: Schematic Capture, Circuit Simulation, Layout Design etc. features like EMI analysis, Thermal analysis, 3d visualization etc. of such packages with reference to EDA tools such as Orcad, EDWIN XP etc. (As assignment, each student shall design and simulate an electronic product following the above syllabus using EDA tools.)

Reference:
4. Mohammed H. Rasheed, Spice for circuits & Electronics using Pspice, Prentice Hall India


*Type of questions for University Examination*

*Question 1* - 8 short answer questions of 5 marks each. 2 questions from each module

*Question 2-5* – There will be two choices from each module. Answer one question from each module of 15 marks
EC/EI 705A INTELLIGENT SYSTEMS

Module I

Module II
Artificial Neural Networks: Biological aspects, Pitt’s Neuron Model, Perception model, Learning algorithm – supervised & unsupervised multilayer perception, Back propagation algorithm, Associative memory, Feed back networks, Applications of Neural Networks.

Module III

Module IV

Text Book:

REFERENCES:
1. Rajasekharan & Pai Neural Networks, Fuzzy Logic and Generic Algorithms, PHI
2. Elaine Rich, Kevin Knight, Artificial Intelligence, Tata McGraw Hill, 2006
3. Yegnanarayana, Artificial Neural Netowrks, PHI, 1999

Type of questions for University Examination
Question 1 - 8 short answer questions of 5 marks each. 2 questions from each module
Question 2-5 – There will be two choices from each module. Answer one question from each module of 15 marks
EC 705B FUNDAMENTALS OF RF DESIGN

Module I

Passive Components for RF: Behavior at High Frequencies: Wire, Resistors, Capacitors, Inductors, Toroids and their winding, Impedance Transformation, Coupling of resonant circuits.

Active RF components: RF diodes, RF transistors; The Transistor at Radio Frequencies: Equivalent Circuit, Y-Parameters, S-Parameters, and other relevant two-port parameters, RF Transistor Data Sheets.

Computer-Aided Design and Analysis Interconnection of networks Analysis techniques, Optimization Use of SPICE (Practical assignments using HSPICE is recommended)

Module II

Microwave Printed Circuits & Microwave Solid State Devices: Bipolar Microwave Transistor, MESFET, MODFET/HEMT Microwave IC’s, Microwave Diodes, and MODAMPs, Strip lines, Micro strips, Printed Microwave Components, Surface Acoustic Wave device.


Module III


Module IV

Oscillators and Mixers: Basic oscillator model, Oscillator, Synthesizer, Phase-locked loop, Phase noise, PLL structures & Architectures. Direct Digital Synthesis; Mixer- basic concepts, single ended, single balanced and double balanced mixers. Software Radio and DSP in Radio communication.

References:
4. M N Radmanesh, RF and Microwave electronics illustrated, Pearson Education,

Type of questions for University Examination

Question 1 - 8 short answer questions of 5 marks each. 2 questions from each module

Question 2-5 – There will be two choices from each module .Answer one question from each module of 15 marks
EC 705C HARDWARE MODELING

Module I


Module II


Module III


Module IV


Text Book:


Reference:

1. Sudhakar Yakmandhiri, Introducing VHDL from simulation to synthesis, Pearson Education Asia

Type of questions for University Examination

Question 1 - 8 short answer questions of 5 marks each. 2 questions from each module
Question 2-5 – There will be two choices from each module .Answer one question from each module of 15 marks
EB/EC/EI 705D MECHATRONICS

Module I

**Introduction** to Mechatronics- Elements of Mechatronic Systems.

**Sensory System:** Sensors & Transducers- Performance measure, static and dynamic characteristics- Sensing displacement, position, proximity, velocity and motion, force, pressure, flow, level, range, temperature and Light.

**Signal Conditioning and Data Acquisition:** Signal Conditioning Elements- amplification, attenuation, impedance matching, linearization, digitization, level shifting, filtering, error compensation, etc. Data acquisition and presentation in mechatronic systems- signal measurement and calibration- Design Considerations

Module II

**Actuation System:** *Pneumatic & Hydraulic Systems:* Process Control Valves, Directional and Pressure Control valves, Linear and Rotary actuators.

**Mechanical Actuation Systems:** Translational and Rotational motions, Kinematic Chains, Cams, Gear Trains, Ratchet and Pawl, Belt and Chain drives, Bearings.

**Electrical Actuation Systems:** Mechanical and Solid State Relays, Solenoids, DC & AC motors, Servo & Stepper motors- Specifications and Selection considerations.

**Power sources** for mechatronic Systems

Module III

**Mathematical modeling of Engineering Systems:** System Building blocks for Mechanical, Electrical, Fluid and Thermal systems.

**General Engineering System Modeling:** Rotational, Translational, Electromechanical, Hydraulic, Mechanical systems- System Transfer Function- Dynamic response of systems for standard test signals (Detailed mathematical analysis not required).

**MEMS:** Internal Structure, advantages, manufacturing, applications- Fibre Optic Devices in Mechatronics (For this module assignments on Simulation studies using computer software such as MATLAB with SIMULINK is recommended)

Module IV

**Mechatronic System Controllers:** ON/OFF, P, I, D, PI and PID Controllers, Digital controllers, Intelligent Controllers in Mechatronics.

**Programmable Logic Controllers:** Structure, I/O processing, Programming, applications – Selection Criteria.

Typical Mechatronic Systems: Robotic Systems, CNC machines, FMC, FMS, AGV etc.

Text Books:


References:


Type of questions for University Examination

Question 1 - 8 short answer questions of 5 marks each. 2 questions from each module

Question 2-5 – There will be two choices from each module. Answer one question from each module of 15 marks
EC/EI 706 SIGNAL PROCESSING LABORATORY

1. Familiarization of Signal processing tool box-MATLAB
2. Familiarization of DSP trainer kit (Sampling & reconstruction of signals)

List of experiments to be implemented

1. Generation of basic input signals (both discrete & continuous)
2. DFT and spectral analysis computation of DFT, properties of DFT
3. Convolution
4. Correlation
5. Digital filter design- FIR & IIR Filters
6. FFT
7. Spectral estimation

Note: 50% Marks is earmarked for continuous evaluation and 50% marks for end semester examination to be assessed by two examiners. A candidate shall secure a minimum of 50% marks separately for the two components to be eligible for a pass in that subject.
EC 707 COMMUNICATION LABORATORY II

PART A (compulsory)

1. Sampling and reconstruction of signals
2. PCM generation
3. Differential PCM generation
4. Implementation of Delta modulator and demodulator
5. Matched filter receiver for rectangular pulse
6. Generation and detection of BASK and BFSK signals
7. Generation and detection of BPSK signals
8. Generation and detection of QAM using IC multipliers
9. Microwave Communication (Any 2 Experiments from)
   (a) Study of Klystron source-Power, mode and impedance, SWR, guide wavelength
   (b) Gunn Source-Characteristics, Hybrid T, Directional coupler, Circulator
   (c) FET M/W source-SWR, Impedance, Guide wavelength, Tees
   (d) Study of Microwave links
10. Antenna characteristics- Radiation pattern and beam width, gain measurements.

PART B (*)

1. Communication system simulation using software tools
2. DAS using Microprocessors
3. Experiments on Computer communication
4. Development of an optical fiber communication transmitter and receiver module.
5. A small project work using ANN, image processing or biomedical instrumentation.

* At least two topics from part B has to be covered

Note: 50% Marks is earmarked for continuous evaluation and 50% marks for end semester examination to be assessed by two examiners. A candidate shall secure a minimum of 50% marks separately for the two components to be eligible for a pass in that subject.
EC 708 SEMINAR

Students shall individually prepare and submit a seminar report on a topic of current relevance related to the field of Electronics & Communication Engineering. The reference shall include standard journals, conference proceedings, reputed magazines and textbooks, technical reports and URLs. The references shall be incorporated in the report following IEEE standards reflecting the state-of-the-art in the topic selected. Each student shall present a seminar for about 30 minutes duration on the selected topic. The report and presentation shall be evaluated by a team of internal experts comprising of 3 teachers based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the seminar report.
EC 709  PROJECT DESIGN

Each batch comprising of 3 to 5 students shall identify a project related to the curriculum of study. At the end of the semester, each student shall submit a project synopsis comprising of the following.

- Application and feasibility of the project
- Complete and detailed design specifications.
- Block level design documentation
- Detailed design documentation including circuit diagrams and algorithms / circuits
- Bill of materials in standard format and cost model, if applicable
- Project implementation action plan using standard presentation tools

Guidelines for evaluation:

i)  Attendance and Regularity                      10
ii) Quality and adequacy of design documentation  10
iii) Concepts and completeness of design          10
iv)  Theoretical knowledge and individual involvement 10
v)   Quality and contents of project synopsis     10

Total 50 Marks

Note: Points (i)-(iii) to be evaluated by the respective project guides and project coordinator based on continuous evaluation. (iv)-(v) to be evaluated by the final evaluation team comprising of 3 internal examiners including the project guide.