

ओउम्



कोल्हान विश्वविद्यालय, चाईबासा

विद्युत अभियांत्रिकी विभाग

FOURTH YEAR

| SEVENTH SEMESTER | | | | | | | | | | | |
|--------------------------|------------|--------------------------------------|---------|---|----|------------------|----|-----|-----|-----------|---------|
| SL. NO. | COURSE NO. | SUBJECT | PERIODS | | | EVALUTION SCHEME | | | | | CREDITS |
| THEORY | | | L | T | P | SESSIONAL EXAM | | | ESE | SUB TOTAL | |
| | | | | | | TA | CT | TOT | | | |
| 1 | EE1701 | Computer Aided Power System | 3 | 1 | 0 | 30 | 20 | 50 | 100 | 150 | 4 |
| 2 | EE1702 | Process Control & Instrumentation | 3 | 1 | 0 | 30 | 20 | 50 | 100 | 150 | 4 |
| 3 | EE1703 | Power System Protection & Switchgear | 3 | 1 | 0 | 30 | 20 | 50 | 100 | 150 | 4 |
| 4 | CS2721 | Open Elective I | 3 | 1 | 0 | 30 | 20 | 50 | 100 | 150 | 4 |
| 5 | EE2725 | Professional Elective I | 3 | 1 | 0 | 30 | 20 | 50 | 100 | 150 | 4 |
| PRACTICAL/DRAWING/DESIGN | | | | | | | | | | | |
| 1 | EE1704-P | | 0 | 0 | 3 | 25 | 0 | 25 | 25 | 50 | 2 |
| 2 | EE1705-P | Computer Aided Power System Lab | 0 | 0 | 3 | 25 | 0 | 25 | 25 | 50 | 2 |
| 3 | EE1706-P | Switchgear & Protection Lab | 0 | 0 | 3 | 25 | 0 | 25 | 25 | 50 | 2 |
| 4 | EE7107-P | Project 1 | 0 | 0 | 3 | 25 | 0 | 25 | 25 | 50 | 2 |
| 5 | HS1707-P | General Proficiency 7 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | 2 |
| TOTAL | | | 15 | 5 | 12 | 0 | 0 | 0 | 0 | 1000 | 30 |

TA-TEACHER ASSESSMENT

CT-CLASS TEST

ESE- END SEMESTER EXAMINATION

TOTAL MARKS- 1000

TOTAL PERIOD-32

TOTAL CREDITS-30

रवि भास्कर

| 7TH SEMESTER ELECTIVE | | | |
|----------------------------|-----------|--------|---|
| ELECTIVE | SERIAL NO | CODE | PAPER |
| OPEN ELECTIVE I | 1 | HS2721 | Enterprise Resource Management |
| | 2 | CS2721 | E-Commerce, Strategic IT |
| | 3 | HS2722 | Technology management |
| | 4 | HS2723 | Decision Support & Executive Information System |
| | 5 | CS2722 | Software Technology |
| PROFESSIONAL ELECTIVE I | 1 | EE2725 | Non Conventional Energy Sources |
| | 2 | EE2722 | Special Electrical Machine |
| | 3 | EE2723 | HVDC Transmission |
| | 4 | EE2724 | Computer Aided Design of Electrical Machine |
| | 5 | EC2721 | Microprocessor based System Design |

SEMESTER VII

EE1701

COMPUTER AIDED POWER SYSTEMS

(3-1-0)

I. REPRESENTATION OF POWER SYSTEM COMPONENTS:-

- Modeling, Y-Bus formulation.
- GS, NR,FDLF methods.

II. OPTIMAL POWER SYSTEM OPERATION:-

- Unit commitment.
- Reliability.
- Economic Dispatch.
- Emission Dispatch.
- Optimal load flow.
- Optimal Hydro-thermal scheduling.
- Power System security.

State estimation.

Load forecasting.

Fault analysis – balanced and unbalanced.

Automatic generation control.

Power System Transients.

Computer Aided Power system Protection.

SUGGESTED BOOKS & REFERENCES:-

- Nagrath, I.J. and Kothari, D.P. “Power system Engineering”, Tata McGraw Hill, New delhi, 1994.

Mahalanabis, A. K., Kothari, D.P. and Ahson “Computer Aided Power System Analysis and Control”, TMH, New delhi, 1998.

I. DESCRIPTION OF SIGNALS AND SYSTEMS:-

Types of signals and their characteristics, types of systems and their behaviour.

II. DISCRETE TIME DESCRIPTION OF SIGNALS:-

Discrete time sequences, their frequency domain behaviour, comparison with analog signals, convolution of two sequences, sampling a continuous function to generate a sequence, reconstruction of continuous-time signals from discrete time sequences, discrete-time description of systems. Unit sample response of a system, time-invariant systems, Superposition principle for linear systems, stability criterion for discrete-time systems, causality criterion for discrete-time systems, linear constant-coefficient, difference equations.

III. DISCRETE-TIME FOURIER TRANSFORM:-

Definition of Fourier transform (FT), important properties of FT, properties of FT for real-valued sequences, use of FT in signal processing, FT of special sequences, the inverse FT, FT of the product two discrete-time sequences.

IV. DISCRETE FOURIER TRANSFORM:-

Definition of Discrete Fourier Transform (DFT), computation of the DFT from the discrete-time sequence, properties of the DFT, circular convolution performing a linear convolution with the DFT, computations for evaluating the DFT.

V. Z-TRANSFORM:-

Definition of the z-transform, properties of the z-transform, the system function of a digital filter, combining filter sections to form more complex filters, digital filter implementation from the system function.

Relationship between the Fourier transform and the z-transform, the z-transform of symmetric sequences, the inverse z-transform.

SUGGESTED BOOKS AND REFERENCES:-

1. Theory and Applications of Digital Signal Processing-Rabiner and Gold, Pearson.
2. Digital Signal Processing-Oppenheim and Schaffer, Pearson.
3. Digital Signal Processing: A Computer Based Approach-Sanjit K. Mitra, TMH

I. PROTECTION:-

Importance of Protective relaying in Power Systems, Fundamental requirements of a good protection Scheme; Primary and Back – up Relaying.

II. CLASSIFICATION OF RELAYS:-

Constructional – Electromechanical and Static Relays, Over-current, Directional, Differential, Distance Relays, etc. and their principles and applications.

III. CURRENT TREND IN PROTECTIVE RELAYING:-

Microprocessor and PC Relaying.

IV. SWITCHGEAR:-

Classification of Switchgear, Fault Analysis, Symmetrical Faults on Synchronous machine, Fault clearing process, Arcing phenomena and principles of arc interruption, AC and DC circuit breakers, Different types of Circuit Breakers and their constructional features, Testing and Selection of Circuit Breakers.

SUGGESTED BOOKS & REFERENCES:-

- The Elementary Council, “*Power System Protection*”, Vol. 1, 2 & 3, Peter Peregrinus Ltd., 1990.
- Van, A.R. & Warrington, C. “*Protective Relays: Their Theory and Practice*”, Vol. 1 & 2, Chapman and Hall, 1969.
- Paithankar, Y.G., “*Transmission Network Protection: Theory and Practice*”, Marcel Dekker Inc., 1988.

GEC Measurements, “*Protective Relays: Application Guide*” GEC Measurements, 1987.

I.E-COMMERCE:-

E-commerce doing business on the internet,the scope of internet and the web,using web to reach customers,benefits of e-commerce market,e-commerce technology,the internet environment.

II.E-COMMERCE MODELS AND MARKETS:-

E-business models,e-business markets,traditional buy build approach and vendors,online sales channels,advantages of outsourcing an infrastructure to an ECIP.

III.E-COMMERCE WEBSITE CREATION:-

The elements of e-commerce,website server,developing a commerce site,requirement of your site,building the site,implementation.

IV.BUILDING SHOPPING CART APPLICATIONS:-

A shopping cart scenario,a customer servlet,a real world application model,loose component coupling.

V.MOBILE E-COMMERCE:-

Wireless industry standards,wireless communication platforms for LANs,wirelessWANs, facilities for wireless environment,concerns for mobile enterprise.

VI.SECURITY ISSUES:-

Security solutions,symmetric and asymmetric cryptosystems,RSA,DES and digital signature, protocols for secure messaging,secure electronics transaction(SET) protocol,electronics cash over internet,internet security.

VII.ELECTRONICS PAYMENTS TECHNOLOGY:-

Issues,smart cards,digital currencies.

SUGGESTED BOOKS & REFERENCE:-

1.Electronics Commerce,Pete Loshin & Vacca.