

SCHEME OF TEACHING AND EXAMINATION

B.E. ELECTRICAL & ELECTRONICS ENGINEERING

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SI. No.

Subject Code

Title of the Subject

Teaching Dept.

Teaching Hrs / Week

B.E. ELECTRICAL & ELECTRONICS ENGINEERING V SEMESTER

Written by Administrator

Friday, 06 November 2009 06:58 - Last Updated Sunday, 17 January 2010 19:03

Examination

Theory

Practical

Duration

(Hrs)

Marks

IA

Theory / **Practical**

Total

01

06AL51

Management and Entrepreneurship

@

4

-

3

25

100

125

02

06EE52

Signals and Systems

E&EE

4

-

3

25

100

125

03

06EE53

Transmission and Distribution

E&EE

4

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-

3

25

100

125

04

06EE54

D.C. Machines and

Synchronous Machines

E&EE

4

-

3

25

100

125

05

06EE55

Modern Control theory

E&EE

4

-

3

25

100

125

06

06EE56

Linear IC's and Applications

E&EE

4

-

3

25

100

125

07

06EEL57

Circuit Simulation and Measurements Laboratory

E&EE

-

3

3

25

50

75

08

06EEL58

Transformers and Induction Machines Laboratory

E&EE

-

3

3

25

50

75

Total

24

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06

24

200

700

900

@ Any Engineering department or department of Business study.

V SEMESTER

MANAGEMENT AND ENTREPRENEURSHIP

Subject Code

:

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06AL51

IA Marks

25

No. of Lecture Hrs./ Week

04

Exam Hours

03

Total No. of Lecture Hrs.

52

Exam Marks

:

100

PART - A

UNIT - 1

Management: Introduction- meaning nature & characteristic of management, scope & functional areas of management. Management as a science, art or profession, management and Administration, Role of management, levels of management, Development of management thought – early management approaches – modern management and approaches

7 Hours

UNIT - 2

Planning: Nature, Importance and purpose of planning process, objectives, types of plans (meaning only), decision – making, importance of planning, steps in planning and planning premises, Hierarchy of plans

6 Hours

UNIT - 3

Organizing and Staffing: Nature and purpose of organization, principles of organization, Types of organization – Departmentation – committees – centralization v/s decentralization of authority and responsibility, span of control- MBO and MBE (meaning only), nature and importance of staffing, process of selection and recruitment (in brief)

6 Hours

UNIT - 4

Directing & Controlling: Meaning and nature of directing, leadership styles, motivation theories, communication- meaning and importance, co-ordination, meaning and importance, techniques of co-ordination, Meaning and steps in controlling, essentials of a sound control system, methods of establishing control (in brief)

7 Hours

PART - B

UNIT - 5

Entrepreneur: Meaning of entrepreneur, evaluation of the concept, function of an entrepreneur types of entrepreneur, evolution of entrepreneurship, development of entrepreneurship, stages in entrepreneurial process, role of entrepreneurs in economic development entrepreneurship in India, entrepreneurship - its barriers

6 Hours

UNIT - 6

Small Scale Industry: Definition, characteristics, need and rationale, objectives, scope, role of SSI in economic development, advantages of SSI, steps to start an SSI – Govt policy towards SSI, different policies of SSI, Govt support for SSI during 5 year plans. Impact of liberalization, privatization, globalization on SSI, effect of WTO/ GATT, supporting agencies of Govt for SSI, meaning; nature of support, objectives, and functions, types of help, ancillary industry and tiny industry (Definition only)

7 Hours

UNIT - 7

Institutional Support: Different Schemes, TECKSOK, KIADB, KSSIDC, KSIMC, DIC single window Agency SISI, NSIC, SIDBI, KSFC

6 Hours

UNIT - 8

Preparation of Project-Meaning of Project; Project Identification Project Selection Project Report, Need and significance of Report, Contents, Formulation Guidelines by Planning Commission for Project report; Network Analysis; Errors of Project Report, Project Appraisal, Identification of Business Opportunities. Market Feasibility Study, Technical Feasibility study, Financial Feasibility Study & Social Feasibility study.

7 Hours

TEXT BOOKS:

1. **Principles of Management** - PC Tripathi, P N Reddy,–THM Hill,
2. **Dynamics of Entrepreneurial Development & Management** - Vasant Desai Himalaya Publishing House –
3. **Entrepreneurship Development** – small Business Enterprises Poornima M Charanthmath Pearson Education – 2005

REFERENCE BOOKS:

1. **Management Fundamentals** - Robert Lusier,– Concepts, Application, Skill Development” Thomson
2. Entrepreneurship Development - S S Khanka S Chand & Co
3. **Management** - Stephan Robbins Pearson Education/PHI 17th Edition 2003.

SIGNALS AND SYSTEMS

Subject Code

:

52

Exam Marks

:

100

PART - A

UNIT - 1

Introduction-Definitions of signals and a system, classification of signals, basic operations on signals. elementary signals viewed as interconnections of operations, properties of systems.

10 Hours

UNIT - 2

Time – domain representations for LTI systems-Convolution, impulse response, properties, solution of differential and difference equations, block diagram representation.

10 Hours

UNIT - 3

Fourier representation of periodic signals-Introduction, Fourier representation of continuous-time periodic signals (FS), properties of continuous-time Fourier series (excluding derivation of defining equations for CTFS), Fourier representation of discrete-time periodic signals, properties of discrete-time Fourier series (DTFS)

8 Hours

PART - B

UNIT - 4

The Continuous-Time Fourier Transform-Representation of a periodic signals:
continuous-time Fourier transform (FT), Properties of continuous-time Fourier transform

4 Hours

UNIT - 5

The Discrete-Time Fourier Transform-Representations of periodic signals: The discrete-time
Fourier transform (DTFT), Properties of DTFT.

4 Hours

UNIT - 6

Application of Fourier representations-Frequency response of LTI systems, solution of
differential and difference equations using system function, sampling of continuous time signals
and signal reconstruction(only low pass).

8 Hours

UNIT - 7

Z- Transforms-Introduction, Z-transform, properties of ROC properties of Z-transforms, inversion of Z-transforms methods - power series and partial expansion, Transforms analysis of LTI systems, transfer function, stability and causality,

unilateral Z-transform and its application to solve difference equations

8 Hours

TEXT BOOKS:

1. **Signals and Systems**- Simon Haykin and Barry Van Veen, John Wiley & Sons, 2001. Reprint 2002.
2. **Signals and Systems**- Hsuetal Schaums Outline Series, TMH.

REFERENCE BOOKS:

1. **Signals and Systems Analysis of signals through linear systems**- Michel J Roberts,

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No. of Lecture Hrs./ Week

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04

Exam Hours

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03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

Part - A

UNIT - 1

Typical transmission & distribution systems scheme- Standard voltages for transmission. Advantage of high voltage transmission. Feeders, distributors & service mains.

5 Hours

UNIT - 2

Overhead transmission lines- sag calculation in conductors a) suspended on level supports b) support at different levels. Effect of wind & ice tension & sag at erection. Stringing chart

5 Hours

UNIT - 3

Corona- Phenomena, expression for disruptive & visual critical voltages & corona power loss

4 Hours

UNIT - 4

Insulators- Types, potential distribution over a string of suspension insulators. String efficiency & methods of increasing strings efficiency, testing of insulators.

6 Hours

UNIT - 5

Underground cables- Types, material used, insulation resistance, thermal rating of cables, charging current, grading of cables, capacitance grading & inter sheath grading, testing of cables.

6 Hours

Part - B

UNIT - 6

Line parameters: calculation of inductance of single phase, 3phase lines with equilateral & unsymmetrical spacing. Inductance of composite conductor lines. Capacitance-calculation for two wires & three phase lines, capacitance calculation for two wire three-phase line with equilateral & unsymmetrical spacing.

10 Hours

UNIT - 7

Performance of power transmission lines- Short tr.-lines, medium tr.-lines, nominal T method, end condenser method, π method and long transmission lines, ABCD constants of transmission lines, Power flow through lines, P-V & Q-V coupling.

10 Hours

UNIT - 8

Distribution- radial & ring main systems, ac to dc distribution: calculation for concentrated loads and uniform loading

6 Hours

TEXT BOOKS:

1. **A Course in Electrical Power-** Soni Gupta & Bhatnaagar, Dhanpat Rai & Sons (New Delhi)
2. **Electrical Power Systems-** C. L. Wadhwa Wiley Eastern.

REFERENCE BOOKS:

1. **Elements of Power System Analysis-** W.D. Stevenson, Mc. Graw - Hill. Comp. Ltd.
2. **Electric power generation Transmission & Distribution-** S. M. Singh, PHI, 2007.

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52

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100

Part - A

UNIT - 1

DC Generator-Classification of DC generator, types of armature winding, EMF equation, armature reaction, commutation, No load & load characteristics, use of interlopes

& compensating winding (only qualitative treatment).

8 Hours

UNIT - 2

DC Motors- Classification, Back EMF equation, Torque equation, Characteristics of shunt, series & compound motors, speed control of shunt & series compound motors, losses in DC machines both generator and motor

9 Hours

UNIT - 3

Voltage Regulation: Voltage regulation by EMF, MMF, ZPF & ASA method

6 Hours

UNIT - 6

Synchronizing to infinite bus bars, parallel operation of alternators. Operating characteristics, power angle characteristics excluding armature resistance, operating for fixed input and variable excitation and vice-versa for both generating and motoring modes, V curves of synchronous machines, power flow equations including armature resistance, capability curves of synchronous generators hunting in synchronous machines, damper winding starting methods for hunting in synchronous machines.

12 Hours

UNIT - 7

Salient pole synchronous machines, two-reaction theory, power angle diagram, reluctance power, slip test

4 Hours

TEXT BOOKS:

1. **Performance & Design of Alternating Current machines**, M. G. Say, CBS publishers.
2. **Performance & Design of DC machines** A.E Clayton & Hancock ELBS Publication.
3. **Electrical Machines** Ashfaq Hussain, Dhanpat Rai Publications 2003 Edition.

REFERENCE BOOKS:

1. **Electrical machines**-Nagarath & DP Kothari, 2nd edition, TMH.
2. **Theory of alternating** -current machines. Alexander Langsdorf,
3. **Electrical machinery**- P.S Bhimbra, Khanna Publishers.

MODERN CONTROL THEORY

Subject Code

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06EE55

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IA Marks

:

25

No. of Lecture Hrs./ Week

:

04

Exam Hours

:

03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

Part - A

UNIT - 1

State Variable Analysis and Design: Introduction, concept of state, state variables and state model, state modeling of linear systems, linearization of state equations.

5 Hours

UNIT - 2

State space representation using physical variables, phase variables & canonical variables

5 Hours

UNIT - 3

Derivation of transfer function from state model, digitalization, Eigen values, Eigen vectors, generalized Eigen vectors.

6 Hours

UNIT - 4

Solution of state equation, state transition matrix and its properties, computation using Laplace transformation, power series method, Cayley-Hamilton method, concept of controllability & observability, methods of determining the same

10 Hours

UNIT - 7

Phase plane method, singular points, stability of nonlinear system, limit cycles, construction of phase trajectories.

7 Hours

UNIT - 8

Liapunov stability criteria, Liapunov functions, direct method of Liapunov & the linear system, Hurwitz criterion & Liapunov's direct method, construction of Liapunov functions for nonlinear system by Krasvskii's method.

6 Hours

Text Books:

1. **Digital control & state variable methods-** M. Gopal - 2nd edition, THM Hill 2003
2. **Control system Engineering-** I. J. Nagarath & M. Gopal, - 3rd edition, New Age

International (P) Ltd.

Reference Books:

1. **State Space Analysis of Control Systems-** Katsuhiko Ogata -Prentice Hall Inc
2. **Automatic Control Systems-** Benjamin C. Kuo & Farid Golnaraghi, 8th edition, John Wiley & Sons 2003.
3. **Modern Control Engineering-** Katsuhiko Ogata- PHI 2003
4. **Control Engineering□ theory and practice-** M. N. Bandyapadhyay PHI, 2007
5. **Modern control systems-** Dorf & Bishop- Pearson education, 1998

LINEAR IC'S AND APPLICATIONS

Subject Code

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06EE56



IA Marks

:

25

No. of Lecture Hrs./ Week

:

04

Exam Hours

:

03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

Part - A

UNIT - 1

Op-amps as ac Amplifier: Capacitor coupled voltage follower, high Zin capacitor coupled voltage follower, capacitor coupled non-inverting amplifier, high Zin capacitor coupled non-inverting amplifier, capacitor coupled inverting amplifier, setting upper cut off frequency, capacitor coupled difference amplifier, and use of single polarity supply.

8 Hours

UNIt 2

Op-amps frequency response and compensation: Op amp circuits stability, frequency and phase response, frequency compensating methods ,manufacturer's recommended compensation, op-amp circuit band width, slew rate effects ,stray capacitance effects, load capacitance effects, Zin mod compensation, circuit stability precautions.

8 Hours

Unit - 3

Signal processing circuits: Precision half wave & full wave rectifiers, limiting circuits, clamping circuits, peak detectors, sample &hold circuit.

6 Hours

UNIt - 4

Opamps and nonlinear circuits: Op-amps in switching circuits, crossing detectors, inverting Schmitt trigger circuits, non-inverting Schmitt circuits, astable multivibrator, and monostable multivibrator.

6 Hours

Part - B

UNIT - 5

Signal generator: Triangular/rectangular wave generator, waveform generator design, phase shift oscillator, oscillator amplitude stabilization, wein bridge oscillator, signal generators output controllers

6 Hours

UNIT - 6

Active filters: First and second order high pass and low pass filters, band pass filter, band stop filter.

6 Hours

UNIT - 7

Specialized IC applications: Universal active filter, switched capacitor filter, phase locked loops, power amplifiers.

6 Hours

UNIT - 8

DC voltage regulators: Voltage regulators basics, voltage follower regulator adjustable output regulator, precision voltage regulators, and integrated circuit voltage regulators.

6 Hours

Text Books:

1. **Operational amplifiers and linear IC's**– David A Bell, -PHI 2008
2. **Operational amplifiers and linear** - Ramakanth A Gayakwad,-IC's Pearson, 4th edition,

2007.

3. **Operational amplifier and linear integrated circuits** - K.Lal kishore -Pearson education

Reference Books:

1. **Operational amplifiers and linear IC's**- Roy & Choudhry, - New age International
2. **Operational amplifiers and linear IC's**- Stanley William D, - 4th edition, Pearson Education.

CIRCUIT SIMULATION & MEASUREMENTS LAB

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06EEL57

□ □ □ □

IA Marks

:

25

No. of Practical Hrs./Week

:

03

Exam Hours

:

03

Total No. of Practical Hrs.

:

42

Exam Marks

:

50

1. Measurement of low resistance using Kelvin's double bridge.
2. Measurement of cable insulation and earth resistance using Meggar
3. Measurement of inductance using Maxwell Inductance-Capacitance bridge & determination of Q-factor
4. Measurement of capacitance using De-Sauty's bridge & determination of dissipation factor.
5. Determination of ratio & phase angle error in CT and PT.

6. Adjustment & calibration of 1-phase energy meter.

7. Measurement of active and reactive power in balanced 3-phase circuit using two-watt meter method.

8.
 - a) Inverting, non-inverting & scale changing of signals using op -amps

 - b) RC phase shift oscillator using op amps (Both using simulation package)

9. RC coupled amplifier-frequency response for variation of bias & coupling using simulation package

10. Rectifier circuits-Bridge rectifier, diode clipping & clamping circuits using simulation package.

11. Schmitt –trigger- inverting and non-inverting.

12. Signal generator- triangular, saw tooth and rectangular wave generation

TRANSFORMERS AND INDUCTION MACHINES LAB

Subject Code

:

06EEL58

IA Marks

:

25

No. of Practical Hrs./Week

:

03

Exam Hours

:

03

Total No. of Practical Hrs.

:

42

Exam Marks

:

50

1. OC, SC test on 1- phase transformer: predetermination of efficiency & regulation. Experimental determination of Equivalent circuit constants and calculation of efficiency and regulation to be done to correlate results obtained earlier.

2. Sumpner's test.

3. Parallel operation of two dissimilar (different KVA) 1-phase transformers. Preferably the experiment to be conducted on two dissimilar transformers.

4. Polarity test & connection of 3 single phase transformers in star – delta and determination of efficiency & regulation – for balanced direct loading for UPF. Polarity test to be conducted on both AC and DC supply.

5. Scott connection- for balanced and unbalanced two phases UPF loads.

6. Load test on 3-phase induction motor- performance evaluation (Torque- speed, HP- efficiency, HP-PF, slip-HP).

7. Circle diagram of 3-phase induction Motor- performance evaluation.

8. Draw the equivalent circuit diagram of a 3-phase I.M after obtaining its circle diagram after conducting OC and SC test. from equivalent circuit, obtain the machine performance parameters.

9. Speed control of 3-phase induction motor by rotor resistance control only (for two different values of rotor resistance).

10. Load test on- induction generator.

11. Load test on 1 phase induction motor.

12. NL and SC test on 1-phase Induction motor.