Guru Jambheshwar University of Science and Technology, Haryana B.E./B.Tech CSE Sem 2 syllabus

Basic Electrical Engineering

Module 1: DC Circuits (8 hours)

Electrical circuit elements (R. L and C), voltage and current sources, Kirchoff current andvoltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin andNorton Theorems. Time-domain analysis of first-order RL and RC circuits.

Module 2: AC Circuits (8 hours)

Representation of sinusoidal waveforms, peak and rms values, phasor representation, realpower, reactive power, apparent power, power factor. Analysis of single-phase ac circuitsconsisting of R. L.C, RL, RC, RLC combinations (series and parallel), resonance. Three-phasebalanced circuits. voltage and current relations in star and delta connections.

Module 3: Transformers (6 hours)

Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit,losses in transformers, regulation and efficiency. Auto-transformer and three-phasetransformer connections.

Module 4: Electrical Machines (8 hours)

Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working,torque-speed characteristic and speed control of separately excited dc motor. Construction andworking of

synchronous generators.

Module 5: Power Converters (6 hours)

DC-DC buck and boost converters, duty ratio control. Single-phase and three-phase voltagesource inverters sinusoidal modulation.

Module 6: Electrical Installations (6 hours)

Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types ofWires and Cables. Earthing. Types of Batteries, Important Characteristics for Batteries.Elementary calculations for energy consumption, power factor improvement and batterybackup.

Suggested Text / Reference Books:

(1) D.P. Kothari and I.J. Nagrath. "Basic Electrical Engineering" Tata McGraw Hill, 2010.

(2) D.C. Kulshreshtha. Basic Electrical Engineering". McGraw Hill, 2009.

(3) D. S. Bobrow. "Fundamentals of Electrical Engineering". Oxford University Press, 2011.

(iv) E.Hughes, “Electrical and Electronics Technology". Pearson, 2010.

(v) V.D. Toro, "Electrical Engineering Fundamentals". Prentice Hall India, 1989.

English

1. Vocabulary Building

The concept of land formation

Root words from Foreign languages and their use in English

Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives.

Synonyms, antonyms, and standard abbreviations.

2. Basic Writing Skills

Sentence Structures

Use of phrases and clauses in sentences

Importance of proper punctuation

Creating coherence

Organizing principles of paragraphs in documents

Techniques for writing precisely

3. Identifying Common Errors in Writing

Subject-verb agreement

Noun-pronoun agreement

Misplaced modifiers

Articles

Prepositions

Redundancies

Clichés

4. Nature and Style of sensible Writing

Describing

Defining

Classifying

Providing examples or evidence

Writing introduction and conclusion

5. Writing Practices

Comprehension

Prose Writing

Essay Writing

6. Oral Communication

(This unit involves interactive practice sessions in Language Lab)

Listening Comprehension

Pronunciation, Intonation, Stress and Rhythm

Common Everyday Situations: Conversations and Dialogues

Communication at Workplace

Interviews

Programming for problem Solving

Unit 1

Conditional branching and Loops (6 lectures)

Writing and evaluation of conditionals and consequent branching (3 lectures)

Iteration loops (3 lectures)

Unit 2

Arrays (6 lectures)

Arrays: 3-D 2-D), Character arrays and Strings

Unit 3

Basic Algorithms (6 lectures)

Searching Basic Sorting Algorithms (Bubble, Insertion and Selection), Finding roots of equation of order of complexity through example programs (no formal definitionrequired)

Unit - 4

Function (5 lectures)

Function including using built in libraries), Parameter passing in

functions, call by value, Passing arrays to functions: idea of call by reference

Unit 5

Recursion (5 lectures)

Recursion is a different way of solving problems. Example programs, such as Finding Factor to Fibonacci series, Ackerman function etc. Quick sort or Merge sort.

Unit 6

Structures

Structure Defining structures and Array of Structures

Unit 7

Pointers (12 lectures)

Idea of Pointers, Defining pointers. Use of Pointers in self-referential structures, notion oflinked lists of implementation)

Unit 8

File handas(only if time is available, otherwise should be done as part of the lab)

Suggested Book

1. Schaum's Outline of Programming with C. McGraw-Hill
2. E.Balaguruswamy. Programming in ANSIC, Tata McGraw-Hill

SuggestedReferenceBooks

(1) Brian Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India