Guru Nanak Dev University, Punjab B.E./B.Tech CSE Sem 2 syllabus

Basic Electrical and Electronics Engineering

SECTION – A

Electricity and power supply: Features of the power supply system, power station, transmission, distribution lines, difference between AC and DC, voltage, current and resistance, concept of electromagnetic induction and production of alternating e.m.f - single phase and 3 phase, 3-phase star and delta connections, voltage and current relations.

Electrical Machinery: Transformer, its working principle, types of transformers and their applications, performance losses, efficiency and voltage regulation, open circuit and short circuit tests on transformer, auto transformers.

SECTION – B

Circuit Analysis: A brief review of DC and single phase AC circuits. , Star-delta load transformation, concept of balanced and unbalanced three phase circuits, measurement of power and power factor in three phase balanced circuits.

Semiconductors: Introduction to semiconductors, Intrinsic Semiconductor, n-type and p-type semiconductors, Effect of Doping, Fermi levels, Charge flow in semiconductors.

SECTION – C

PN junction diode: Theory of PN junction diode, depletion layer,

barrier potential,
Volt-Ampere Characteristics, Current Components, Storage Capacitance and
transition capacitance, Junction diode switching times, Zener diode, LED,
Photodiode, Varactor diode, Schottky diode
Bipolar Junction Transistors: Junction Transistor, Current components, transistor
as an amplifier, CB, CE and CC configurations and characteristics.

SECTION – D
Fundamentals of DC & AC Motors: Working principle, construction, types &
characteristics of DC motor, Working principle of Single-Phase & Three-Phase
Induction motor, Three phase synchronous motor.
Control and Protection: Control mechanism, principle and applications of
protection devices: Fuses, MCB, LCB, relays. Need& types of earthing and
grounding, Cables, Construction of LT & HT cables.

Suggested / Reference Books:
1 Principles of Electrical Engineering by Gupta BR; S. Chand and Company, New Delhi.
2 Electrical Technology by Hughes Edward; The English Language Book Society and
Longmans.
3 Group Limited, London Electrical Machines by Bhattacharya SK; Tata McGraw Hill, Delhi.
4 Basic Electrical Engineering by T.K. Naggarkar& Ms. Sakhija Seventh Edition 2008, Oxford
University Press.
5 Electronic Devices and Circuit Theory, Boylestad R.L. VIII Edition, Pearson Education, 2008.
6 Electronic Fundamentals & Application, J.D. Ryder, PHI, 2006.
7 Experiments in Electrical Engineering by Bhatnagar US; Asia Publishing House, Bombay.

Fundamentals of IT & Programming using Python

SECTION - A
Block diagram of Computer, Associated peripherals, Memories –

RAM, ROM,
Secondary Storage Devices, Classification of Computers and Languages,
Introduction to Compilers, Interpreter and Assemblers, Introduction of various
operating system with their file system.

SECTION - B
Algorithm and Flowchart, Introduction to Python and Setting up the Python
development environment, Basic syntax, interactive shell, editing, saving, and
running a script, Concept of data types, Random number, Real numbers,
immutable variables, Python console Input / Output. Arithmetic operators and
expressions, Conditions, Comparison operators, Logical Operators, Is and In
operators, Control statements: if-else, Nested If-Else, Loops (for, while)

SECTION - C
Built in function and modules in python, user defined functions, passing
parameters, arguments and return values; formal vs actual arguments, Recursion,
lists, Common List operations

SECTION - D
String Handling, Unicode strings, Strings Manipulation:-compare strings,
concatenation of strings, Slicing strings in python, converting strings to numbers
and vice versa. Strings and text files; manipulating files and directories, os and
sys modules; text files: reading/writing text and numbers from/to a file; creating
and reading a formatted file (csv or tab-separated).

Suggested / Reference Books:

1 Computers Today by Sanders.
2 Fundamentals of Computers TTTI Publication.
3 Learning Python by Mark Lutz, 5th edition
4 Python cookbook, by David Beazley , 3rd Edition
5 Python Essential Reference, by David Beazley , 4th edition
6 Python in a Nutshell, by Alex Mortelli, 2nd Edition.
7 Python programming: An Introduction to computer science, by John Zelle, 2nd Edition.