VEER NARMAD SUTH GUJARAT UNIVERSITY,SURAT

CHEMICAL ENGINEERING

BASIC ELECTRONICS

SEMESTER -III

TEACHING SCHEME	**L=3; P/D=2; TA=1**
EXAMINATION SCHEME	**Theory = 3hours; Marks= 100**
PRACTICAL / DRAWING	**Internal evaluation marks: - 20** **External evaluation marks – 30** **Tutorial marks: - 25** **Total Marks - 75**

1. Electron emission, work function, thermionic, secondary, photo electric and field emission, Richardson's equations, thermionic cathodes of different types.
2. Semi-conductor devices: Properties of intrinsic and doped semi-conductors, p-n junction diode, transistors, zener diode, uni-junction transistors, silicon controlled rectifiers, biasing circuits for transistors.
3. Rectifiers and filters: Analysis of single/half wave and full wave rectifiers using silicon diodes, 3-phase rectifiers circuits, introduction to bridge rectifiers and controlled rectifiers with resistive load, votage doublers, simple filters.
4. Amplifiers: Load line, classification of amplifiers, graphical and analytical treatment of R-C coupled amplifiers, introduction to choke coupled, transformer coupled and push-pull amplifier circuits, basic principles of feedback amplifiers.
5. Oscillators: General expression for the Berkhausen criterion for oscillators, introduction to LC and RC Transistorisied oscillators, Astable-multi-vibrators, saw tooth generator.
6. Photo-electricity: Photo conductive, photo voltaic and Photo-emissive effects, photo tubes, semi-conductor photo-diode and photo-transistor, photo-sensitive rely circuits, light emitting diode.
7. Industrial applications: C. R. T. and Cathode ray oscilloscope, deflection sensitivity of C. R. T. and Cathode Ray Oscilloscope, uses of C. R. O., electronic voltmeters, typical applications of electronic devices for the measurements of non-electrical quantities like temperature, pressure, displacement, velocity, acceleration, vibration, strain etc. , Strain Gauge bridge, electronic timers, introduction to radio frequency, induction heating, industrial applications of heating, digital computers, basics.

Practicals and Term Work will be based on above.

REFERENCES:

1. V. K. Mehta, Basic Electonics Principles.
2. A. K. Sawhany, Electonic Instrumentation and Measurements.
3. M. Morris, Digital Computer Fundamentals.