

Electronics Devices & Circuits – I

S.E. Sem. III [EXTC]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs	100
Practical Exam	–	–
Oral Exam	–	25
Term Work	–	25

SYLLABUS

Objective To understand the analysis and synthesis/design of BJT and JFET and diode applications.
To understand the concept of design.

Pre- requisite DC/AC network theorems.

1. Biasing of BJT :

DC operating point, BJT characteristics and parameters, all biasing, with and without emitter resistance, analysis of above circuits and their design, variation of operating point and its stability.

2. Small Signal BJT amplifiers :

AC equivalent circuit, R_{in} , A_v , A_i , R_o , hybrid re model and their use in amplifier design. BJT as switch, BJT as a diode, emitter coupled pair, design considerations.
Design of CE, BJT amplifier.

3. Biasing of FET :

Types of FET, characteristics and parameters of JFET, D-MOSFET, E-MOSFET, different biasing circuits, their analysis and design, location of operating point and its stability CMOS devices.

4. Small signal FET amplifiers ;

AC operating point, R_{in} , A_v , R_o , common source, common drain, common gate characteristics.
Design of CS, JFET amplifier.

5. Power Circuits :

Design of rectifier circuit with Filters (L, LC, C Multiple LC, L and pi section) and regulator design using zener, BJT in series, BJT in shunt.

6. Power switching and control devices :

Characteristics, ratings and applications of silicon controlled switch (SCS), Schottky diode, DIAC, TRIAC, UJT, PUT, photo transistor, light activated SCR, optical couplers, IGBT, Power MOSFET.

Reference :

1. Foundation of Electronic: circuits & devices (*Russell L. Meade*) – Cengage (Thomson).
2. Microelectronic Circuits Analysis and Design (*Rashid*) – PWS Publishing
3. Electronic Circuit Analysis and Design (*Donald*) – A Neamen, TMH
4. Electronic Devices & Circuit Theory, (*Boylestad, Nashelsky*) – Pearson Education.
5. Electronic Devices and Circuits (*A. K. Maini*) – Wiley.
6. Electronic devices (*Floyd*) – Pearson Education Asia publication.
7. Microelectronics (*Jacob Millman & Arcin Grabel*) Mc-Graw Hill publication.

