FROM NEAMAN

*Chapters 1.1 – 1.4, 2.1 – 2.3*

* **Diode:** Basic structure and operating principle, current-voltage characteristic, large and small-signal models, iterative and graphical analysis
* **Diode Applications :** Rectifier circuits (half-wave and full-wave rectifiers, rectifiers with capacitor filter), Voltage regulator (using Zener diode), Clipper (limiter) circuits, clamper circuits

*Chapters 5.1 – 5.4, 6.1 – 6.5*

* **BJT and their Applications**: Structure and modes of operation
* ***BJT*** *n-p-n*and *p-n-p* transistor in active mode, DC analysis of both transistor circuits
* **BJT** as an amplifier, small-signal equivalent circuits, single-stage BJT amplifier (common-emitter mode)
* **BJT** as a switch

POST MID SEM

*Chapters 3.1-3.3, 4.1-4.3*

* **MOSFET** and their Applications: Structure and physical operation of n-type and *p-*typeMOSFET
* **MOSFET:** DC analysis of circuits
* **MOSFET** as an amplifier, small-signal equivalent circuits, single-stage MOSFET amplifier (common-source mode)
* **MOSFET** as a switch

*Chapters 9.1, 9.2, 9.3, 9.4, 9.5*

* **Operational Amplifier (Op Amp)**: Ideal op amp
* **Op Amp:** Inverting amplifier, Amplifier with a T-network, effect of Finite Gain, Summing Amplifier
* **Op Amp:** Non-inverting configuration, Voltage follower
* **Op Amp** **applications:** Current-Voltage converter, Voltage-Current converter, Differential Amplifier, Instrumentation Amplifier, Integrator and Differentiator

*Chapters 12.1,12.2,12.3*

* **Feedback**: Basic concepts of negative feedback
* **Feedback:** Four ideal feedback topologies

*Chapters 15.2*

* **Oscillators**: Basic principles of sinusoidal oscillation
* **Oscillators**:Example circuits
* **Digital Electronics:** Boolean algebra and rules of simplification (Read from anywhere)
* **Digital Electronics:** Combinational circuits like Adder, Decoder, Encoder, Multiplexer and De-Multiplexer (No idea, not in Neaman)
* **Digital Electronics:** Sequential circuits like Flip-Flops, Counters and Shift Registers (*Chapters 16.7)*