

BASIC ELECTRONICS**(Computer Science and Engineering)****Time: 3 Hours****Max. Marks: 60****Note:** All Questions from **PART-A** are to be answered at one place.Answer any **FOUR** questions from **Part-B**. All Questions carry equal Marks.**PART-A****6 × 2 = 12M**

1. Draw the Energy band diagram of an open circuited PN junction diode?
2. Draw the circuit symbol and equivalent circuit of a Varactor diode?
3. Define the following terms.
(i) Ripple factor (ii) TUF
4. What is the relation between I_B , I_E and I_C in CB configuration?
5. Explain about pinch-off voltage?
6. State and briefly Explain Barkhausen criterion for oscillation?

PART – B**4 × 12 = 48M**

1. a) Derive the expression for transition capacitance of a PN Junction Diode? (8M)
b) Explain how Depletion region is formed in a PN junction diode? (4M)
2. a) Draw the equivalent circuit of UJT and explain its operation with the help of emitter characteristics? (7M)
b) Draw the two transistor model of an SCR and explain its Breakdown operation? (5M)
3. a) Explain the operation of Zener voltage regulator? (6M)
b) Obtain the ripple factor of a FWR using inductor filter? (6M)
4. a) Derive an expression for stability factor of a voltage divider bias circuit? (6M)
b) Explain the operation of transistor as an amplifier? (6M)
5. a) Explain the drain and transfer characteristics of an n-channel JFET? (6M)
b) Explain the construction and operation of n-channel enhancement mode MOSFET? (6M)
6. a) Explain the effects of negative feedback on the various characteristics of the amplifier? (4M)
b) Derive an expression for frequency of oscillations of a Wien-bridge oscillator? (8M)