

**BMCET**  
**EC (3<sup>rd</sup> sem)**

**EDC**

**Assignment: 1**

**Submission date : 1/7/2017**

1. What is semiconductor? Explain in brief.
2. Explain the formation of barrier potential in open circuited PN junction Diode.
3. What is cutin voltage? Write approximate value of cutin voltage for Si and Ge.
4. Draw and explain V-I characteristic of PN junction diode.
5. Compare V-I characteristic of Si and Ge Diode.
6. Draw and explain equivalent circuit and V-I characteristic of following related to PN junction diode.
  - a. Ideal Diode
  - b. 2<sup>nd</sup> approximation
  - c. 3<sup>rd</sup> approximation
7. Explain PN junction diode dynamic and static resistance.
8. Explain two types of biasing of PN junction diode with necessary diagram.

**Assignment: 2**

**Submission date : 31/7/2017**

1. What do you mean by rectifier? Explain in brief full wave and half wave rectifier.
2. Explain following terms.
  - a. PIV
  - b. Ripple factor
3. Explain capacitor input filter.
4. Draw and explain bridge rectifier with capacitor filter with necessary waveform.
5. State use of clipper circuit.
6. Draw and explain different clipper circuit.
7. What do you mean by clamper?
8. Explain two types of clamper.
9. Write a short note on voltage doubler circuit.

**Assignment: 3****Submission date : 14/8/2017**

1. Draw symbol and explain in brief the working principle of zener diode.
2. Draw and explain V-I characteristic of zener diode.
3. Compare PN junction and zener diode.
4. Draw and explain regulated power supply system.
5. Explain voltage regulation using zener diode.
6. Draw and explain zener diode load lines and Q point.
7. Write principle and application of LED.
8. Compare PN junction diode and LED.
9. Explain principle of photo diode.
10. Compare LED and photo diode.
11. Why the name varicap is given to varactor diode?
12. Write down the application of varactor diode.
13. Compare PN junction diode and tunnel diode.
14. Draw and explain V-I characteristic of tunnel diode with symbol.

**Assignment: 4****Submission date : 1/9/2017**

1. Draw and explain transistor current component when it is operated in active region.
2. Define  $\alpha_{dc}$  and  $\beta_{dc}$ . Derive the relationship between them.
3. Draw CE transistor configuration and give its input and output characteristic with brief explanation.
4. State region of operation of transistor.
5. Explain biasing condition for three regions of transistor.
6. What is reverse saturation current?
7. Why transistor is called bipolar?
8. What is biasing? Why it is required in transistor?
9. Explain DC load line and Q point for any transistor configuration.
10. Draw and explain circuit of transistor as a switch.
11. Compare two types of LED drivers.
12. Explain working of photo transistor.

13. Compare photo diode and phototransistor.
14. Draw and explain emitter bias with example.
15. State the application of transistor as switch.
16. How do you recognize the region of operation of transistor? State various techniques for same and explain any one in brief.

**Assignment: 5**

**Submission date : 18/9/2017**

1. What do you mean by bias stability in transistor amplifier circuit?
2. Explain thermal instability for Q point for the same.
3. Define stability factors.
4. Derive the expression for stability factors?
5. List biasing techniques for transistor.
6. Draw and explain VDB.
7. Write down the advantages of VDB.
8. Draw the self-biasing circuit and explain how it establishes the stable operating point.
9. Derive the expression for stability factors of VDB.
10. Draw and explain TSEB.
11. Draw fixed biased circuit and explains advantages and disadvantages.
12. Draw and explain modified base bias circuit.
13. Draw and explain collector feedback bias circuit.
14. Draw and explain collector emitter feedback bias.
15. Explain advantages and disadvantages of collector feedback bias circuit.
16. Derive the expression for stability factors of fixed bias circuit.
17. Compare all biasing techniques.

**Assignment :6**

**Submission date : 2/10/2017**

1. Draw and explain ac equivalent circuit of VDB amplifier.
2. Calculate voltage gain, current gain, input impedance and output impedance of VDB.
3. Draw and explain two stage R-C coupled transistor amplifier.
4. Draw and explain emitter follower.
5. Derive expression for  $A_i$ ,  $R_i$ ,  $A_v$  and  $V_o$  in terms of CE h-parameters for emitter follower circuit.
6. Explain Darlington pair in brief.

7. Classify power amplifier based on position of Q-point.
8. State difference between voltage and power amplifier.
9. Draw and explain class B push pull amplifier.
10. Show that the maximum conservation efficiency of class B push pull amplifier is 78.5%.

## **Assignment 7 Submission date : 24/11/2016**

1. Draw and explain structure of n channel JFET.
2. Compare BJT and FET in brief.
3. Explain principle of operation of JFET.
4. Draw and explain characteristic of JFET.
5. Define following terms in terms of FET:
  - a. Pinch-off voltage
  - b. Dynamic drain resistance
  - c. Amplification factor
6. List the basic configuration of a low frequency FET amplifier.
7. How FET can be used as voltage variable resistance?
8. Draw and explain MOSFET with circuit symbol.