Code : A1401 R18

II B.Tech I Semester (R18) Regular Examinations November 2019

ELECTRONIC DEVICES AND CIRCUITS

Time : 3 hours Max. Marks: 70

PART- A

(Compulsory Question 10×02=20 Marks)

1 a Sketch the V-I characteristics of typical Ge and Si diodes.
b Compare Tunnel diode and Conventional diode,
c Mention any Two important characteristics of rectifier circuit.
d What is filter? Which elements are used as filtering elements?
e Give the relationship between α and β.
f What is early Effect.
g What is the condition for thermal stability?
h Define three stability factors.
i List the benefits of h-Parameters
j Draw the circuit diagram of simplified CB model.

PART- B

(Answer all the Question 5×10=50 Marks)

2 a Derive diode equation and discuss various parameters involved in the equation.
b A p-n junction diode has a reverse saturation current of 30μA at a temperature of 125^{o}C.At the same temperature, Find the dynamic resistance for 0.2V bias in forward and reverse direction

OR

3 a What is Zener resistance? How to obtain it from the Zener characteristics.
b Describe the principal operation and characteristics of photo diode.

4 a With a circuit diagram, explain the working of bridge rectifier with necessary waveforms
b A half wave rectifier has a load of 3.5 KΩ. If the diode resistance and the secondary coil resistance together have resistance of 800Ω and the input voltage of 240V.Calculate Peak, Average and RMS value of current flowing also calculate efficiency of the rectifier.

OR

5 a Derive the expression for ripple factor for full wave rectifier with inductor filter.
b Design and draw a Zener regulator circuit to meet the following specifications: Load voltage=8v, Input voltage=30v, Load current=0-50mA,I_{zmin}=5mA, P_z=1Watt.5M

6 a Explain the construction and working of NPN and PNP transistors with neat diagrams.
b Compare CB,CE & CC transistor configurations.

OR

7 a Demonstrate the construction and operation of n-channel JFET.5M
b Draw and explain the drain characteristics of N-channel Enhancement type MOSFET.

8 a Explicate the concept of dc load line with the help of neat diagram.5M
b Intricate the criteria for fixing operating point.

OR

9 a Draw the circuit diagram of a self-bias circuit of CE configuration and obtain the expression for stability factor S.
b Compare advantages and disadvantages of biasing schemes

10 Sketch the small signal hybrid model of CE amplifier and derive the expressions for its Ai, Av, Ri, and Ro.

(OR)

11 Obtain the expressions for Av, Ri, and Ro for various FET amplifier configurations