

CBCS SCHEME

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18EC33

Third Semester B.E. Degree Examination, Aug./Sept.2020 Electronic Devices

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain different types of bonding in solids with the help of neat diagram. (10 Marks)
b. With a neat diagram explain direct and indirect semiconductor. (10 Marks)

OR

- 2 a. Explain Electron-Hole pair concept with the help of neat diagram and equations. (10 Marks)
b. What is Hall-effect? With suitable diagram and equation explain how does Hall-effect works? (10 Marks)

Module-2

- 3 a. What is tunneling? Explain voltage current characteristic of a tunnel diode with the help of energy band diagram. (10 Marks)
b. Mention the differences between Zener effect and Avalanche effect. (03 Marks)
c. Explain light emitting diode with a neat sketch. (07 Marks)

OR

- 4 a. Explain qualitative description of current flow at forward and reverse bias junction of a diode. (10 Marks)
b. How does photodiode works as a photovoltaic cell explain with the help of diagram? (10 Marks)

Module-3

- 5 a. Explain how BJT acts as a amplifier with the help of equation. (10 Marks)
b. Draw the Ebers – Moll model for a PNP transistor and explain its significance. (10 Marks)

OR

- 6 a. Explain how BJT acts as a switch with necessary equations and diagram. (10 Marks)
b. Explain specification for switching transistor BJT with suitable diagram. (04 Marks)
c. Explain the effect of base narrowing with neat diagram. (06 Marks)

Module-4

- 7 a. Explain the construction and operation of n-JFET with neat diagram and equations. (06 Marks)
b. Explain small signal equivalent circuit of JFET with neat diagram. (06 Marks)
c. Explain the principle of operation n-channel enhancement mode MOSFET with neat diagram and equations. (08 Marks)

OR

- 8 a. Explain two-terminal MOS structure using energy band diagram. (10 Marks)
b. Explain the principle of operation of p-channel enhancement mode MOSFET with neat diagram and equations. (10 Marks)

Module-5

- 9 a. Explain thermal oxidation process with neat diagram. (10 Marks)
b. What is metallization process explain with neat diagram by showing all the steps in the fabrication of p-n junctions. (10 Marks)

OR

- 10 a. Explain integration of other circuit elements with suitable diagrams. (10 Marks)
b. Explain CMOS process of integration with the help of neat diagram. (10 Marks)

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