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BTECH
(SEM III) THEORY EXAMINATION 2023-24
ELECTRONIC DEVICES

TIME: 3HRS**M.MARKS: 70**

Note: Attempt all Sections. If require any missing data, then choose suitably.

SECTION A**1. Attempt all questions in brief.**

Q no.	Question	Marks
a.	Discuss thermal Equilibrium Condition.	2
b.	Illustrate the energy band diagram for PN junction in reverse mode.	2
c.	A transistor has an α of 0.98. Determine the value of β .	2
d.	Illustrate Electroluminescence.	2
e.	State the de Broglie principle of duality.	2
f.	Write properties of MOS capacitor.	2
g.	Differentiate between drift and diffusion current.	2

SECTION B**2. Attempt any three of the following:**

a.	Explain photoelectric effect. justify how this effect verifies the particle nature of light.	7
b.	Illustrate Intrinsic and Extrinsic Semiconductor in detail.	7
c.	Explain the small signal model of PN-Junction Diode	7
d.	Describe stability factor and explain how it affect the transistor biasing.	7
e.	Explain the C-V Characteristic of MOS Transistor.	7

SECTION C**3. Attempt any one part of the following:**

a.	Discuss Application of Schrodinger wave equation for infinite Potential well and discuss the effect of various in relation to the energy of the particle.	7
b.	Illustrate the concept of allowed and forbidden energy bands in a single crystal both qualitatively and more rigorously from the results of using the Kronig-Penney model.	7

4. Attempt any one part of the following:

a.	Define the term Doping. Explain the effect of Impurity on energy band gap Diagram in detail.	7
b.	Using the concept of drift and diffusion of carriers, derive the continuity equation.	7

5. Attempt any one part of the following:

a.	Describe the importance of Einstein relation and prove the relation.	7
b.	Derive the relation of voltage and current for PN junction diode.	7

6. Attempt any one part of the following:

a.	Explain Ebers-Moll model for PNP transistor.	7
b.	Name the different biasing schemes used transistor biasing. Explain voltage divider biasing in detail.	7

7. Attempt any one part of the following:

a.	Explain various biasing schemes for JFET.	7
b.	Explain Enhancement P channel MOSFET in detail. Draw and elaborate the drain Characteristic	7