SARASWATI MAHILA MAHAVIDHYALAYA, PALWAL

LESSON-PLAN

Class: M.Sc Physics-I[st] Sem **Semester: ODD/EVEN**

Subject: Physics of Electronic Devices **Session: 2020-21**

Lecture Number	Topic
1.	Unit-I : Introduction to Semiconductors ; Energy Bands of metals ; Semiconductors & Insulators.
2.	Brief of Direct & Indirect Bandgaps in Semiconductors
3	Variation of Energy Band gap with alloy composition.
4	Intrinsic & Extrinsic Semiconductors Brief
5	Explaination of Concept of fermi level
6	Electron and Hole Concentration eq[n] at equilibrium
7	Temperature dependency of Charge carriers concentration and their effects.
8	Compensation and Space Charge neutrality.)
9	Conductivity and mobility and numericals of it
10	Effect of temperature and Doping on mobility.
11	Hall Effect
12	Invariance of fermi level.
13	Revision of Unit-I ; Discussion ; Assignment.
14	Unit-II
15	Optical Absorption & Luminescence in Semiconductor.
16	Carrier Lifetime & Photoconductivity
17	Direct & Indirect Recombinations of Electron and holes

Nisha Pagar.

Signature:

SARASWATI MAHILA MAHAVIDHYALAYA, PALWAL

LESSON-PLAN

Class: M.Sc-Physics Ist Sem ✓ Semester: ODD/EVEN

Subject: Physics of Electronic Devices Session: 2020-21

Lecture Number	Topic
18	Introduction and effects of Traps & defects.
19	Steady state Carrier Generation Study.
20	Explaination of Quasi fermi levels
21	Brief of Diffusion and Drift of Carriers.
22	Explaination of Diffusion & Recombination
23	Diffusion length & its numericals
24	Haynes Shockley Experiment.
25	Gradients in Quasi fermi level
26	External & Internal photoelectric effect.
27	Unit-2 Revision; Discussion; Assignment.
28	Unit-3 Vacuum Photodiode ⇒ Working & applications
29	Photo-multipliers, microchannels workings
30	PN Junction → Structure, EB diagram, Built in potential, Electric field, Space charge width & Current flow
31	Zener diode → construction, working.
32	Application of Zener diode; Numericals.
33	Power diode; PN-Photodiode → Construction, working Applications.
34	PIN diode; Avalanche Photodiode

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LESSON-PLAN

Class: M.Sc-Physics-IInd Sem **Semester: ODD/EVEN**

Subject: Physics of Electronic devices **Session: 2020-21**

Lecture Number	Topic
35	Phototransistor, Solar cell.
36	Varactor diode, LED
37	Diode laser; Condition of laser action & optical gain.
38	Revision of Unit-III; Assignment; Discussion.
39	Unit-IV Introduction to IC; their importance and applications.
40	Type of Integrated Circuits
41	fabrication of IC → Crystal growth; Epitaxial growth.
42	Thermal oxidation; Photolithography
43	Dry & wet etching; Impurity Doping
44	Metallization of Ic's Thermal evaporation
45	Metallization by e-Beam evaporation & DC sputtering.
46	Packaging & testing of IC's.
47	Process flow for fabrication of monolithic transistor.
48	Construction of monolithic diodes
49	Construction of Integrated Registors
50	Construction of Integrated Capacitors
51	Revision of Unit-IV; Assignment; Discussion.

Signature: Nisha Nagar