

GOVERNMENT POLYTECHNIC, BARGARH

Department Of Electrical Engineering

Semester: 3RD. DIPLOMA

Subject: Electrical Engineering Material

Branch: Electrical Engineering

Session: (WINTER)

No of Period :60 (4p/week)

Name of Faculty: NITESH KU. ACHARYA

Week	Period	Topics to be covered
1 st Week	1	Introduction Resistivity, factors affecting resistivity
	2	Classification of conducting materials into low-resistivity and high resistivity materials
	3	Low Resistivity Materials and their Applications (Copper, Silver)
	4	Low Resistivity Materials and their Applications (Gold, Aluminium, Steel)
2 nd Week	5	Stranded conductors
	6	Bundled conductors
	7	Low resistivity copper alloys
	8	High Resistivity Materials and their Applications (Tungsten, Carbon)
3 rd Week	9	High Resistivity Materials and their Applications (Platinum, Mercury)
	10	Superconductivity
	11	Superconducting materials
	12	Application of superconductor materials
4 th Week	13	Introduction, Semiconductors, Electron Energy and Energy Band Theory
	14	Excitation of Atoms, Insulators, Semiconductors and Conductors, Semiconductor Materials
	15	Covalent Bonds, Intrinsic Semiconductors
	16	Extrinsic Semiconductors
5 th Week	17	N-Type Materials
	18	P-Type Materials
	19	Minority and Majority Carriers, Semi-Conductor Materials
	20	Applications of Semiconductor materials (Rectifiers, Temperature-sensitive resistors or thermistors, Photoconductive cells)
6 th Week	21	Applications of Semiconductor materials (Photovoltaic cells, Varistors, Transistors)
	22	Applications of Semiconductor materials (Hall effect generators, Solar power)
	23	Introduction, General properties of Insulating Materials, Electrical properties, Visual properties
	24	Mechanical properties, Thermal properties, Chemical properties, Ageing
7 th Week	25	Insulating Materials – Classification, properties, applications
	26	Classification of insulating materials on the basis physical and chemical structure
	27	Insulating Gases

	28	Commonly used insulating gases
8 th Week	29	Introduction, Dielectric Constant of Permittivity
	30	Polarisation
	31	Dielectric Loss
	32	Electric Conductivity of Dielectrics and their Break Down
	33	Properties of Dielectrics
9 th Week	34	Applications of Dielectrics
	35	Introduction, Classification (Diamagnetism)
	36	Para magnetism
	37	Ferromagnetism
10 th Week	38	Magnetization Curve
	39	Hysteresis
	40	Eddy Currents
	41	Curie Point
11 th Week	42	Magneto-striction
	43	Soft magnetic Materials
	44	Hard magnetic Materials
	45	Introduction, Structural Materials
12 th Week	46	Protective Materials Lead, Steel tapes
	47	wires and strips
	48	Thermocouple materials
	49	Bimetals
13 th Week	50	Soldering Materials
	51	Fuse and Fuse materials
	52	Dehydrating material
	53	Previous Question Discussion
14 th Week	54	Previous Question Discussion
	55	Previous Question Discussion
	56	Previous Question Discussion
	57	Previous Question Discussion
15 th week	58	Previous Question Discussion
	59	Previous Question Discussion
	60	Previous Question Discussion

DEPARTMENT OF ELECTRICAL ENGINEERING

VISION:

To produce Electrical Engineer professionals who can contribute for socio-economic and technological development to meet global needs.

MISSION:

M1 - To strengthen academic infrastructure leading to quality professional by using modern technical tools and technologies.

M2 - To impart innovative knowledge among the students and make more industry-institution programs to make them successful professionals for serving the society.

M3 - To provide a learning environment to improve problem solving abilities, leadership abilities, ethical responsibilities and lifelong learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1: Apply electrical engineering knowledge and practical skills to solve well-defined engineering problems using modern tools and techniques.

PEO2: Perform effectively in industry and society as competent junior engineer, supervisors, or entrepreneurs with ethical and sustainable engineering practices.

PEO3: Demonstrate teamwork, communication, leadership, and project management skills in professional engineering activities.

PEO4: Engage in lifelong learning and adapt to emerging technologies for career growth and higher education.

PROGRAM SPECIFIC OUTCOMES

The electrical diploma engineers will be able to:

PSO1:-Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design and investigate engineering problems of electric circuits, analog and digital electronics, control system, electrical machines and power system.

PSO2:- Apply the appropriate techniques and modern engineering hardware and software tools in electrical engineering to engage in life-long learning and to successfully adapt in multidisciplinary environments.

PSO3:-Work professionally in power systems engineering, Electrical machinery and electrical circuit.