



GOVERNMENT POLYTECHNIC, NABARANGPUR

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 6TH	Name of the Teaching Faculty: Lect. Laxman Golari
Subject: POWER STATION ENGINEERING	No. of days/per week class allotted: 4	Semester From date: 14.02.2023 To Date: No. of Weeks: 15
COURSE OUTCOMES	CO1: UNDERSTAND GENERATION OF POWER BY VARIOUS ENERGY SOURCES. CO2: UNDERSTAND USE OF STEAM, OPERATION IN THERMAL POWER STATION. CO3: UNDERSTAND NUCLEAR ENERGY SOURCES & POWER DEVELOPED. CO4: UNDERSTAND DIESEL ELECTRIC & HYDROELECTRIC POWER STATION. CO5: UNDERSTAND THE BASICS OF GAS TURBINE POWER STATION.	
Week	Class Day	Theory/Practical Topics
1 ST	1 ST	DESCRIBE SOURCES OF ENERGY.
	2 ND	CENTRAL & CAPTIVE POWER STATION, CLASSIFY POWER PLANTS.
	3 RD	IMPORTANCE OF ELECTRICITY IN DAY-TO-DAY LIFE.
	4 TH	DESCRIBE METHOD OF ELECTRICAL POWER GENERATION
2 ND	1 ST	QUIZ & ASSIGNMENT - I
	2 ND	LAYOUT OF STEAM POWER STATION.
	3 RD	STEAM POWER CYCLE: CARNOT VAPOUR POWER CYCLE (CVPC)
	4 TH	CVPC WITH P-V & T-S DIAGRAM & THERMAL EFFICIENCY (CON..)
3 RD	1 ST	RANKINE CYCLE WITH P-V, T-S & H-s DIAGRAM, WORK DONE
	2 ND	RANKINE CYCLE: WORK RATIO, THERMAL EFFICIENCY, SPECIFIC STEAM CONSUMPTION (CONTD...)
	3 RD	RANKINE CYCLE NUMERICALS (CONTD...)
	4 TH	LIST OF THERMAL POWER STATIONS IN THE STATE
4 TH	1 ST	BOILER: OPERATION OF AIR PRE-HEATER, ECONOMISER
	2 ND	BOILER: ELECTROSTATIC PRECIPITATOR, SUPER HEATER (CONTD..)
	3 RD	NEED OF BOILER MOUNTINGS & OPERATION OF BOILER. (CONTD..)
	4 TH	DRAUGHT SYSTEMS: NATURAL, FORCED, BALANCED
5 TH	1 ST	DRAUGHT SYSTEMS: ADVANTAGES & DISADVANTAGES (CONTD..)
	2 ND	STEAM TURBINE: ELEMENTS, ADV. & DISADV. PERFORMANCE
	3 RD	STEAM TURBINE: GOVERNING, THERMAL EFFICIENCY, STAGE EFFICIENCY, GROSS EFFICIENCY (CONTD..)
	4 TH	STEAM CONDENSER: CLASSIFICATION, FUNCTION.
6 TH	1 ST	FUNCTION OF CONDENSER AUXILLARIES SUCH AS HOT WELL
	2 ND	EXTRACTION PUMP: CONDENSER, CIRCULATING, AIR EXTRACTION
	3 RD	COOLING TOWER: FUNCTION, TYPES; SPRAY PONDS.
	4 TH	SELECTION OF SITE FOR THERMAL POWER STATIONS.
7 TH	1 ST	QUIZ & ASSIGNMENT - II
	2 ND	CLASSIFY NUCLEAR FUEL (FISSILE & FERTILE MATERIAL)
	3 RD	EXPLAIN FUSION & FISSION REACTION
	4 TH	WORKING OF NUCLEAR POWER PLANT WITH BLOCK DIAGRAM.
8 TH	1 ST	NUCLEAR POWER PLANT BLOCK DIAGRAM (CONTD..)
	2 ND	WORKING & CONSTRUCTION OF NUCLEAR REACTOR.
	3 RD	COMPARE NUCLEAR & THERMAL POWER PLANTS.

	4 TH	EXPLAIN THE DISPOSAL OF NUCLEAR WASTE.
9 TH	1 ST	SELECTION OF SITE FOR NUCLEAR POWER STATION.
	2 ND	LISTS OF NUCLEAR POWER STATION IN THE STATE.
	3 RD	QUIZ & ASSIGNMENT - III
	4 TH	DIESEL ELECTRIC POWER STATION: ADVANTAGES
10 TH	1 ST	DIESEL ELECTRIC POWER STATION: DISADVANTAGES (CONTD...)
	2 ND	DIFFERENT SYSTEMS OF DIESEL ELECTRIC POWER STATIONS
	3 RD	FULL STORAGE, FUEL SUPPLY SYSTEM, FUEL INJECTION SYSTEM.
	4 TH	AIR SUPPLY, EXHAUST, COOLING, LUBRICATION, STARTING, GOVERNING SYSTEM. (CONTD...)
11 TH	1 ST	SELECTION OF SITE FOR DIESEL ELECTRIC POWER STATION.
	2 ND	PERFORMANCE OF DIESEL ELECTRIC POWER STATION.
	3 RD	EFFICIENCY OF DIESEL ELECTRIC POWER STATION.
	4 TH	REVISION
12 TH	1 ST	QUIZ & ASSIGNMENT - IV
	2 ND	HYDROELECTRIC POWER PLANT: ADV. & DISADV.
	3 RD	CLASSIFY & EXPLAIN THE GENERAL ARRANGEMENT OF STORAGE TYPE HYDROELECTRIC POWER PLANT (STHPP)
	4 TH	OPERATION OF STORAGE TYPE HYDROELECTRIC PLANT (CONTD...)
13 TH	1 ST	SELECTION OF SITE FOR HYDROELECTRIC POWER PLANT.
	2 ND	LIST OF HYDROPOWER STATIONS: CAPACITIES & NO. IN STATE
	3 RD	TYPES OF TURBINES & GENERATIONS USED
	4 TH	TYPES OF TURBINES & GENERATIONS USED (CONTD...)
14 TH	1 ST	SIMPLE NUMERICALS.
	2 ND	SIMPLE NUMERICALS.
	3 RD	QUIZ & ASSIGNMENT - V
	4 TH	SELECTION OF SITE FOR GAS TURBINE STATIONS.
15 TH	1 ST	FUELS FOR GAS TURBINE.
	2 ND	ELEMENTS OF SIMPLE GAS TURBINE POWER PLANTS.
	3 RD	MERITS, DEMERITS & APPLICATIONS OF GAS TURBINE PLANTS.
	4 TH	QUIZ & ASSIGNMENT - VI

LEARNING RESOURCES:

POWER PLANT ENGINEERING, R.K RAJPUT, LAXMI PUBLICATION.
 POWER PLANT ENGINEERING, P.K NAG, TMH PUBLICATION.
 POWER PLANT ENGINEERING, G.R NAGPAL, KHANNA PUBLISHER.
 POWER PLANT ENGINEERING, P.C SHARMA, S.K KATARIA & SONS PUBLICATIONS.

Sign Of Faculty Concerned

Golara
13/2/23 (Laxman Golara)

A. B. M. W. S.
Sign. Of HOD /C

R. S.
Academic Coordinator

Principals
Principal
13/2/23