MAHAMAYA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCE, NUAPADA

BRANCH: ELETRICAL ENGINEERIG

LESSON PLAN

SEMESTER: 4TH SUBJECT: ENERGY CONVERSION-1 ASSIGNED FACULTY: ER. ARUN KUMAR PRADHAN

SL.NO.	CHAPTER	SUBJECT	PERIOD	DATE	SIGN	REMARKS
1	1	**D.C Generator**	19			
	1.1	Explain principle of operation	2			
	1.2	Explain Constructional feature	2			
	1.3	Armature winding, back pitch, Front pitch, Resultant pitch and commutator- pitch	2			
	1.4	Simple Lap and wave winding (problems on winding diagram)	2			
	1.5	Explain Different types of D.C. machines Shunt, Series and Compound machine with problem solving methods.	2			
	1.6	Derive EMF equation of DC generators. (Solve problems)	1			
	1.7	Explain Armature reaction in D.C. machine & commutation	1			
	1.8	Explain Methods of improving commutation (Resistance and emf commutation)	1			
	1.9	Explain role of inter poles and compensating winding. (solve problems)	1			
	1.10	Characteristics of D.C. Generators with problem solving methods	1			
	1.11	State application of different types of D.C. Generators.	1			
	1.12	Concept of critical resistance causes of failure of development of emf	1			
	1.13	Explain losses and efficiency of D.C. machines, condition for maximum efficiency and numerical problems.	1			
	1.14	. Explain parallel operation of D.C. Generators.	1			
2		**D. C. MOTORS**	19			
	2.1	Explain basic working principle of DC motor	2			
	2.2	State Significance of back emf in D.C. Motor.	2			
	2.3	Derive voltage equation of Motor	2			
	2.4	Derive torque (Equation of Armature Torque and shaft Torque) (solve problems)	2			
	2.5	Explain performance characteristics of shunt, series and compound motors and their application. (Solve problems)	2			
	2.6	Explain methods of starting shunt, series and compound motors, (solve problems)	2			
	2.7	Explain speed control of D.C shunt motors	2			
	2.8	Explain speed control of series motors by Flux control method and series parallel method.	2			
	2.9	Explain determination of efficiency of D.C. Machine by break test method	1			

	2.10	Explain determination of efficiency of D.C. Machine by Swinburne's Test method	1			
	2.11	Explain Losses & efficiency and condition for maximum power and solve numerical problems.	1			
3		**SINGLE PHASE TRANSFORMER**	**22**			
	3.1	Explain working principle of transformer	2			
	3.2	Explains Transformer Construction – Arrangement of core & winding in different types of transformer – Brief ideas about transformer accessories such as conservator, tank, breather explosion vent etc.	2			
	3.3	Explain types of cooling methods	2			
	3.4	State the procedures for Care and maintenance	1			
	3.5	Derive EMF equation	1			
	3.6	Ideal transformer voltage transformation ratio	1			
	3.7	Explain Transformer on no load and on load phasor diagrams.	1			
	3.8	Explain Equivalent Resistance. Reactance and Impedance	1			
	3.9	Explain phasor diagram of transformer with winding Resistance and Magnetic leakage. Phasor diagram on load using upf, leading pf and lagging pf.	1			
	3.10	Explain Equivalent circuit and solve numerical problems.	1			
	3.11	Calculate Approximate & exact voltage drop of a Transformer	1			
	3.12	Calculate Regulation of various loads and power factor.	1			
	3.13	Explain Different types of losses in a Transformer. (solve problems)	1			
	3.14	Explain Open circuit test.	1			
	3.15	Explain Short circuit test.	1			
	3.16	Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)	1			
	3.17	Explain All Day Efficiency (solve problems)	1			
	3.18	Explain determination of load corresponding to Maximum efficiency	1			
	3.19	Explain parallel operation of single phase transformer	1			
4		**AUTO TRANSFORMER**	**5**			
	4.1	Explain constructional features.	1			
	4.2	Explain Working principle of single phase Auto Transformer.	1			
	4.3	State Comparison of Auto transformer with an two winding transformer	1			
	4.4	State Uses of Auto transformer	1			
	4.5	Explain Tap changer with transformer (on load and off load condition)	1			
5		**INSTRUMENT TRANSFORMER**	**5**			
	5.1	Explain current transformer & potential transformer.	2			
	5.2	Define ratio error, phase angle error, Burden.	2			
	5.3	Uses of CT &PT	1			