

Shree Ramkrishna Institute of Science & Technology

Lesson Plan

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 Designation: Asst Professor, Lecturer, Lecturer,

Dept : Electrical Engg                      Academic Year :2014-2015

Target Student: 3<sup>rd</sup> Sem EE

Subject: Electrical Machine-1

SL No	Subject	Period
	<b>GENERAL INTRODUCTION OF ROTATING MACHINE</b>	
1	Mechanism of Electro-Mechanical energy conversion for generator & motor mode.	2
	<b>D.C. Generator</b>	
2	Working principles, Construction & Types of dc generator. Function of Interpole & Compensating winding	3
3	Armature winding types – Concept of Lap & Wave winding. E.m.f equation, Methods of building up of e.m.f, Significance of Critical resistance and Critical speed (Numerical).	2
4	Concept of flux distribution in DC machine. Armature reaction in DC machine (Concept only).	3
5	Commutation method, Concept of reactance voltage. Applications of different types of D.C. generator	2
	<b>D.C. Motor</b>	
6	Working principles, Back e.m.f., Speed and Torque equation. (Numerical) Characteristics of Series, Shunt & Compound motors.	2
7	Methods of speed control of DC motors. (Numerical) Starting methods of DC motor – 3-point & 4-point starter.	3
8	Losses and Efficiency (Numerical)	1
9	Braking methods of DC motor – Regenerative braking, Counter current braking, Dynamic braking	2
10	Applications of different types of DC motor	1
	<b>Single phase Transformer</b>	
11	Principle of operation. E.m.f. equation, Transformation ratio, KVA rating.	2
12	Types of transformer, Core construction & different parts	1
13	Concept of ideal transformer.	3

	Different types of cooling methods (in brief)	
14	Performance under no-load condition with phasor diagram. (Numerical) Performance under load condition with phasor diagram. (Numerical)	2
15	Equivalent circuit. (Numerical) Per unit representation of impedance. Voltage Regulation at upf, lagging pf & leading pf. (Numerical)	3
16	Polarity test of transformer. O.C. and S.C. tests – Estimation of losses & Equivalent circuit parameters. (Numerical) Losses, Efficiency, Maximum efficiency, All-day efficiency. (Numerical)	2
17	Parallel operation of single phase transformers. (Numerical) Tap-changing methods, Tap changers – Off load & On-load type.	2
18	Principles of single-phase Auto transformer – step-up & step-down, Comparison of weight, copper loss with 2-winding transformer. (Numerical) Applications of 2-winding transformer & Auto transformer	2
	<b>Three phase Transformer</b>	
19	Types of three phase transformer. Construction of 3-phase transformer – Core & different types of Winding	1
20	Connections of 3-phase transformer – Vector grouping (classification & necessity)	2
21	Concept of Tertiary winding and its utility, Three-phase Auto transformer – working principle, connection diagram, Step-up & Step-down autotransformer.	1
22	Comparison of Autotransformer with two-winding, transformer, practical application of autotransformer	1
23	Scott-connected transformer – working principle, connection diagram, practical application	1
24	Open delta connection – working principle, connection diagram, practical application	1
25	Applications of 3-phase transformer	1

Total= 46 class

Signature of The faculty & date

Signature of The Respective HOD & date

Reviewed by principal & date