LESSON PLAN

Name of the Institute:	C. V. RAMAN POLYTECHNIC
Department:	ELECTRICAL ENGINEERING
Semester/Division/Branch:	5th SEM/EE
Subject Name with code:	ENERGY CONVERSION-II(TH-2)
Total No. of Class (Required):	60
Faculty Name:	SUBHANKAR DASH

Class No.	*Brief description of the Topic/Chapter to be taught*	Remarks
1	Types of alternator and their constructional features.	
2	Basic working principle of alternator and the relation between speed and frequency.	
3	Basic working principle of alternator and the relation between speed and frequency.	
4	Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor).	
5	Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor).	
6	Explain harmonics, its causes and impact on winding factor.	
7	Explain Armature reaction and its effect on emf at different power factor of load.	
8	Explain Armature reaction and its effect on emf at different power factor of load.	
9	Explain Armature reaction and its effect on emf at different power factor of load.	
10	The vector diagram of loaded alternator. (Solve numerical problems)	
11	Testing of alternator (Solve numerical problems)	
12	Open circuit test.	
13	Short circuit test.	

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14	Determination of voltage regulation of Alternator by direct loading and synchronous impedance method. (Solve numerical problems)	
15	Determination of voltage regulation of Alternator by direct loading and synchronous impedance method. (Solve numerical problems)	
16	Constructional feature of Synchronous Motor.	
17	Principles of operation, concept of load angle	
18	Derive torque, power developed.	
19	Effect of varying load with constant excitation.	
20	Effect of varying excitation with constant load.	
21	Power angle characteristics of cylindrical rotor motor.	
22	Explain effect of excitation on Armature current and power factor.	
23	Hunting in Synchronous Motor.	
24	Production of rotating magnetic field.	
25	Constructional feature of Squirrel cage and Slip ring induction motors.	
26	Working principles of operation of 3-phase Induction motor.	
27	Define slip speed, slip and establish the relation of slip with rotor quantities.	
28	Derive expression for torque during starting and running conditions and Derive condition for maximum torque.	
29	Torque-slip characteristics.	
30	Derive relation between full load torque and starting torque etc. (solve numerical problems)	
31	Derive relation between full load torque and starting torque etc. (solve numerical problems)	
32	Establish the relations between Rotor Copper loss, Rotor output and Gross Torque and relationship of slip with rotor copper loss. (solve numerical problems)	
33	Establish the relations between Rotor Copper loss, Rotor output and Gross Torque and relationship of slip with rotor copper loss.	

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	(solve numerical problems)	
34	Establish the relations between Rotor Copper loss, Rotor output and Gross Torque and relationship of slip with rotor copper loss. (solve numerical problems)	
35	Methods of starting and different types of starters used for three phase Induction motor.	
36	Methods of starting and different types of starters used for three phase Induction motor.	
37	Explain speed control by Voltage Control, Rotor resistance control, Plugging and induction generator.	
38	Explain Ferrari's principle.	
39	Explain double revolving field theory and Cross-field theory to analyze starting torque of 1-phase induction motor.	
40	Split phase motor.	
41	Capacitor Start motor.	
42	Capacitor start, capacitor run motor.	
43	Permanent capacitor type motor.	
44	Shaded pole motor.	
45	Explain the method to change the direction of rotation of above motors.	
46	Construction, working principle, running characteristic and application of single phase series motor.	
47	Construction, working principle, running characteristic and application of single phase series motor.	
48	Construction, working principle and application of Universal motors.	
49	Construction, working principle and application of Universal motors.	
50	Working principle of Repulsion start Motor, Repulsion start Induction run motor, Repulsion Induction motor.	
51	Working principle of Repulsion start Motor, Repulsion start Induction run motor, Repulsion Induction motor.	
52	Principle of Stepper motor.	

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53	Classification of Stepper motor.	
54	Principle of variable reluctant stepper motor.	
55	Principle of Permanent magnet stepper motor.	
56	Principle of hybrid stepper motor.	
57	Explain Grouping of winding, Advantages.	
58	Explain parallel operation of the three phase transformers.	
59	Explain tap changer (On/Off load tap changing)	
60	Maintenance Schedule of Power Transformers.	

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