EM-II
II YEAR II SEM

Sl. No.	Name of the Topic	No. of Classes required	Cumulative No. of periods	Teaching Aid
	Unit – I : POLY PHASE INDUCTION MOTORS			
1	Introduction to Polyphase induction motors	01	1	Chalk and Talk
2	construction details of cage and wound rotor machines	01	2	Chalk and Talk
3	production of a rotating magnetic field	01	3	Chalk and Talk
4	principle of operation	01	4	Chalk and Talk
5	rotor emf and rotor frequency – rotor reactance	01	5	Chalk and Talk
6	rotor current and pf at standstill and during operation	01	6	Chalk and Talk
7	Problems	01	7	Chalk and Talk
	UNIT –II.Characteristics of Induction motors			
8	Rotor power input, rotor copper loss and mechanical power developed and their inter relation and problems	02	9	Chalk and Talk
9	Derivation of torque equation, expressions for maximum torque and starting torque and related problems	01	10	Chalk and Talk
10	torque slip characteristic and different modes of operation of induction motor	01	11	Chalk and Talk
11	equivalent circuit and Phasor diagram of induction motor	01	12	Chalk and Talk
12	**Special Descriptive Test-I**	01	13	
13	double cage and deep bar rotors	01	14	Chalk and Talk
14	crawling and cogging	01	15	Chalk and Talk
15	**Remedial Class (Gap in the Syllabus)-** Applications of Induction motors in industries and agriculture	01	16	Chalk and Talk
16	**Tutorial Classes**	01	17	Chalk and Talk
17	**Tutorial Classes**	01	18	Chalk and Talk
18	Circle diagram of 3-phase Induction motor	01	19	Chalk and Talk

19	no load and blocked rotor tests on a 3-phase induction motor	01	20	Chalk and Talk
20	predetermination of performance of 3-phase induction motor from the circle diagram and related problems	01	21	Chalk and Talk
21	Necessity of starter , Types of starter	01	22	Chalk and Talk
22	DOL starter, Stator resistance starter, Autotransformer starter	01	23	Chalk and Talk
23	Star-Delta starter, Rotor resistance starter and related problems	01	24	Chalk and Talk
24	Introduction to different speed control methods of induction motor	01	25	Chalk and Talk
	Speed Control Methods			
24	Speed control of induction motor using stator voltage and change of frequency	01	26	Chalk and Talk
26	Speed control of induction motor using change of poles	01	27	Chalk and Talk
27	Speed control of induction motor using cascade connection.	01	28	Chalk and Talk
28	Speed control of induction motor using injection of an emf into rotor circuit	01	29	Chalk and Talk
29	induction generator and its principle of operation	01	30	Chalk and Talk
30	**Tutorial Classes**	01	31	Chalk and Talk
31	**Tutorial Classes**	01	32	Chalk and Talk
32	**Lecture Beyond Syllabus-** Advanced techniques on speed control of induction motors using power electronic devices	01	33	Chalk and Talk
33	**Lecture Beyond Syllabus-** Realization of an Asynchronous Six-Phase Induction Motor	01	34	Chalk and Talk
	UNIT – III : SYNCHRONOUS MACHINE AND CHARACTERISTICS&REGULATION OF SYNCHRONOUS GENERATOR			
34	Constructional Features of round rotor and salient pole machines	1	35	Chalk and Talk ,
35	Armature windings – Integral slot and fractional slot windings; Distributed and concentrated windings	2	37	Chalk and Talk
36	Distribution, pitch and winding factors	2	39	Chalk and Talk
37	E.M.F Equation	1	40	Chalk and Talk
38	Numericals	2	42	Chalk and Talk
39	Harmonics in generated e.m.f.	1	43	Chalk and Talk

40	Suppression of harmonics	1	44	Chalk and Talk
41	Armature reaction - leakage reactance – synchronous reactance and impedance	2	45	Chalk and Talk
42	Experimental determination - phasor diagram	1	46	Chalk and Talk
43	Load characteristics	1	47	Chalk and Talk
44	Regulation by synchronous impedance method,	1	48	Chalk and Talk
45	M.M.F. method, Z.P.F. method	1	49	Chalk and Talk
46	Z.P.F. methods and problems	1	50	Chalk and Talk
47	A.S.A. methods ,Problems	2	52	Chalk and Talk
48	Salient pole alternators – two reaction analysis	1	53	Chalk and Talk
49	Experimental determination of X_d and X_q (Slip test)	1	54	Chalk and Talk
50	Phasor diagrams – Regulation of salient pole alternators	1	55	Chalk and Talk
51	Numericals	2	57	Chalk and Talk
	UNIT – IV : PARALLEL OPERATION OF SYNCHRONOUS GENERATOR			
52	Synchronizing alternators with infinite bus bars	2	59	Chalk and Talk
53	Synchronizing power torque	2	61	Chalk and Talk
54	parallel operation and load sharing - Effect of change of excitation and mechanical power input.	2	63	Chalk and Talk
55	Analysis of short circuit current wave form	2	65	Chalk and Talk
56	Determination of sub-transient, transient and steady state reactances	2	67	Chalk and Talk
57	**Short circuit Ratio (SCR), SCR relation with synchronous reactance**	1	68	Chalk and Talk
	SYNCHRONOUS MOTORS – PRINCIPLE OF OPERATION			
58	Theory of operation – phasor diagram	1	69	Chalk and Talk
59	Variation of current and power factor with excitation synchronous condenser	3	72	Chalk and Talk
60	Mathematical analysis for power developed	1	73	Chalk and Talk
61	Numericals	2	75	Chalk and Talk
62	Hunting and its suppression	1	76	Chalk and Talk
63	Methods of starting.	1	77	Chalk and Talk

64	Synchronous induction motor	1	78	Chalk and Talk
65	Synchronous induction motor	1	79	Chalk and Talk
UNIT – V : SINGLE PHASE MOTORS AND SPECIAL MOTORS				
66	Single phase induction motor – Constructional features	2	81	Chalk and Talk
67	Double revolving field theory	2	82	Chalk and Talk
68	Elementary idea of cross-field theory	1	83	Chalk and Talk
69	Split-phase motors , Shaded pole motor.	2	85	Chalk and Talk