Energy Conversion - II

LESSON PLAN Degree/Diploma/+2 Science (Theory/Pract/Lab/Workshop)

Semester 5'th Branch Electrical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
		Alternator	
15.9.22	TH-2 EC-II	Introduction. Types of alternators, constructional features.	01
16.9.22	"	Basic working principle. Relation between speed and frequency	01
19.9.22	"	Pitch factor, Distribution factor, Armature winding	01
20.9.22	"	Harmonics, its causes and impact on winding factor.	01
21.9.22	"	EMF equation of Alternator. Solution to different problems	01
22.9.22	"	Armature reaction & its effect at different P.f of load.	01
23.9.22	"	vector diagram of loaded alternator and solution to different problems.	01
26.9.22	"	Open circuit test & short circuit test	01
27.9.22	"	Solution of different problems on OC & SC test.	01
28.9.22	"	Voltage regulation by direct loading method	01
29.9.22	"	Voltage regulation by Synchronous impedance method.	01
30.9.22	"	Parallel operation of alternators.	01
10.10.22	"	Distribution of load by parallel connected alternators.	01
11.10.22	"	Solution to different problems.	01
12.10.22	"	Synchronous motor Construction, principle of operation concept of lead angle	01

PROGRESS Degree/Diploma/+2 Science (Theory/Pract/Lab/Workshop)

Semester 5'th Branch electrical

Date	Course No. & Title	No. of Student Present	Mention the Topics covered	If not taken mention the reasons	Remarks/ Signature of HOD/Director
			Alternator		
15.9.22	TH-2 EC-2	9	Introduction Types of alternators, constructional features.		
16.9.22	EM-2	9	working principle. Relation between speed and frequency		
19.9.22	"	7	Pitch factor, Distribution factor Armature winding		
20.9.22	"	8	Harmonics its causes and impact on winding factor		
21.9.22	"	9	EMF equation of alternators. Solution of problems		
22.9.22	"	8	Armature reaction its effect of different P.f of load		
23.9.22	"	8	vector diagram of loaded alternator Solution to problems.		
26.9.22	"	9	oc and sc tests.		
27.9.22	"	9	Solution to problems.		
28.9.22	"	9	Voltage regulation by direct loading method.		
29.9.22	"	8	Voltage regulation by synchronous impedance method.		
30.9.22	"	7	Parallel operation of alternators.		
10.10.22	"	9	Distribution of load by " connected alternators		
11.10.22	"	9	Solution to problems		
12.10.22	"	9	Synchronous motor Construction, principle of operation concept of lead angle.		

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Degree/Diploma/+2 Science (Theory/Pract/Lab/Workshop)

Semester 5th Branch Electrical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
13.10.22	TH-2 EC-II	Derivation of torque developed & power developed.	01
14.10.22	"	Effect of varying load with const. ant excitation, Effect of varying excitation with constant load.	01
15.10.22	"	Power angle characteristics of cylindrical rotor.	01
17.10.22	"	Effect of excitation on armature current & power factor.	01
18.10.22	"	Hunting, function of damper bars. Methods of starting	01
19.10.22	"	Application of synchronous motor.	01
20.10.22	"	Solution to different problems	01
21.10.22	"	Three phase Induction motor. Construction, Squirrel cage & slipring IM, Production of rotating magnetic field.	01
22.10.22	"	Derivation of Torque and Power, working principle of 3-ϕ IM.	01
25.10.22	"	Effect of varying load with constant excitation, slop, Torque driven characteristics.	01
27.10.22	"	Relation between full-load torque and Starting torque.	01
28.10.22	"	Solution to different problems.	01
29.10.22	"	Relation between rotor copper loss, rotor out put and gross torque	01
31.10.22	"	Solution to different problems.	01
01.11.22	"	Different types of starters used for starting 3-ϕ IM.	01

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Degree/Diploma/+2 Science (Theory/Pract/Lab/Workshop)

Semester 5th Branch Electrical

Date	Course No. & Title	No. of Student Present	Mention the Topics covered	If not taken mention the reasons	Remarks/ Signature of HOD/Director
13.10.22	TH-2 EC-II	9	Derivation of torque and power developed		
14.10.22	"	8	Effect of varying load with constant excitation Effect of varying excitation with constant load		
15.10.22	"	6	Power angle characteristics of cylindrical rotor.		
17.10.22	"	7	Effect of excitation of armature current and power factor.		
18.10.22	"	6	Hunting, function of damper bars, methods of starting		
19.10.22	"	9	Application of Synchronous motor.		
20.10.22	"	9	Solution of problems		
21.10.22	"	9	3-ϕ IM construction, different types, production of rotating magnetic field.		
22.10.22	"	8	Derivation of torque & power, principle of working of 3-ϕ IM		
26.10.22	"	8	Torque - Slip Characteristics		
27.10.22	"	9	Relation between full-load torque and starting torque.		
28.10.22	"	9	solution to problems		
29.10.22	"	9	Relation between rotor copper loss, rotor output and gross torque.		
31.10.22	"	8	Solution to problems.		
01.11.22	"	9	Different types of starters used for starting of 3-ϕ IM.		

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Degree/Diploma/+2 Science (Theory/Pract/Lab/Workshop)

Semester 5th Branch Electrical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
02.11.22	TH-2 EC-II	Speed control of IM by voltage control, rotor resistance control pole changing method	01
03.11.22	"	Frequency control method for speed control of IM.	01
04.11.22	"	Plugging applied to 3-ϕ IM	01
05.11.22	"	Different types of motor excitations. Induction generator and its applications.	01
07.11.22	"	Solution to problems.	01
10.11.22	"	Solution to Problems.	01
11.11.22	"	Single phase IM Ferrari's principle construction of single phase IM	01
12.11.22	"	Double field theory & cross field theory	01
14.11.22	"	working principle. Torque speed characteristics.	01
15.11.22	"	Split phase motors	01
17.11.22	"	Capacitor start motors	01
18.11.22	"	Capacitor start, capacitor run motor, permanent capacitor type motor	01
19.11.22	"	Shaded pole motor	01
21.11.22	"	Revision & Solution to problems.	01.
22.11.22	"	Commutator Motor construction, working principle	01

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Degree/Diploma/+2 Science (Theory/Pract/Lab/Workshop)

Semester 5th Branch Electrical

Date	Course No. & Title	No. of Student Present	Mention the Topics covered	If not taken mention the reasons	Remarks/ Signature of HOD/Director
02.11.22	TH-2 EC-II	9	Speed control of IM by voltage control, rotor resistance control & pole changing method		
03.11.22	"	7	Frequency control method method for speed control		
04.11.22	"	8	plugging applied to 3-ϕ IM		
05.11.22	"	9	Different types of excitation. Induction generator & its applications.		
07.11.22	"	7	Solution to problems		
10.11.22	"	8	Solution to problems.		
11.11.22	"	9	1-ϕ IM Ferrari's principle construction of 1-ϕ IM.		
12.11.22	"	7	Double field theory & Cross field theory.		
14.11.22	"	9	working principle, Torque - Speed Characteristics.		
15.11.22	"	8	Split phase motors		
17.11.22	"	8	Capacitor Start motors		
18.11.22	"	7	Capacity Start capacitor run motor permanent capacitor type motor		
19.11.22	"	9	Shaded pole motor		
21.11.22	"	9	Revision & Solution to problems.		
22.11.22	"	8	Commutator motor Construction, working principle.		

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Semester 5th Branch Electrical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
23.11.22	TH-2 EC-2	Running Characteristics, applications of 3Φ Series motor	01
24.11.22	"	construction working principle and application of universal motor	01
25.11.22	"	Repulsion start motor working principle.	01
26.11.22	"	Repulsion start induction run motors.	01
28.11.22	"	Revision.	01
29.11.22	"	Special Electrical Machine Principle of stepper motor characteristics of stepper motor	01
30.11.22	"	Variable reluctant stepper motor	01
01.12.22	"	Permanent magnet stepper motor	01
02.12.22	"	Hybrid Stepper motor Application of stepper motor	01
03.12.22	"	Revision.	01
05.12.22	"	Three phase transformers Construction, Grouping of windings	01
06.12.22	"	Advantages, parallel operation of 3-Φ transformers.	01
07.12.22	"	ON/OFF load tap Changing method	01
08.12.22	"	Maintainance method of power transformers.	01
09.12.22	"	solution to different problems.	01

PROGRESS Degree/Diploma/+2 Science (Theory/Pract/Lab/Workshop)

Semester 5th Branch Electrical

Date	Course No. & Title	No. of Student Present	Mention the Topics covered	If not taken mention the reasons	Remarks/ Signature of HOD/Director
23.11.22	TH-2 EC-2	9	Running characteristics, Application of 1-Φ Series motor		
24.11.22	"	9	Universal motor		
25.11.22	"	9	Repulsion start motor		
26.11.22	"	9	Repulsion start induction run motors		
28.11.22	"	9	Revision		
29.11.22	"	8	Special types electrical Machine stepper motor		
30.11.22	"	9	variable reluctant stepper motor		
01.12.22	"	9	Permanent magnet stepper motor		
02.12.22	"	9	Hybrid Stepper motor etc application		
03.12.22	"	9	Revision		
05.12.22	"	8	Three phase transformers Construction, grouping of windings		
06.12.22	"	9	Advantages, Parallel operation of 3-Φ transformers.		
07.12.22	"	9	On/off load tap changing method		
08.12.22	"	9	Maintenance method of power transformers.		
09.12.22	"	9	Solution to problems		