



TEACHING-CUM-LESSON PLAN

- 1) Subject Code: TH-1
- 2) Subject Title: EIE
- 3) Semester: 6TH
- 4) Branch: Electrical Engg
- 5) No. of Classes / Week: 06
- 6) Pre Requisite for the Subject: NIL
- 7) Text Book to be referred by students:

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	Surjit Singh	Dhanpatrai and sons	Electrical Installation and Estimating	2013	YES
ii	J B Gupta	S K Kataria and Sons	A course in Electrical Installation, Estimating and costing	2016	YES

8) Course Coverage Schedule:

Sl No.	Week No.	Ch. No	No. of classes planed	Topic to be covered	Article		Expected Date of Completion	Remark
					From	To		
i	1	1	06	IE Rules	1.1	1001	26.03.22	
ii	2	2	06	Electrical Installations	2.1	2.2	-	
iii	3	2	06	Electrical Installations	2.2	1002	11.04.22	
iv	4	3	06	Internal wiring	3.1	3.2	-	
v	5	3	06	Internal wiring	3.3	3.4	-	
vi	6	3	06	Internal wiring	3.5	1003	03.05.22	
vii	7	4	06	Over head installation	4.1	4.2	-	
viii	8	4	06	Over head installation	4.3	1004	20.05.22	
ix	9	5	06	Over head service line	5.1	1005	27.05.22	
x	10	6	06	Estimating for distribution substation	6.1	6.1.2	03.06.22	
Total:		6	60					

9) Detail Class wise Plan:

Detailed Topic Plan:

Chapter No: 01

Chapter Name: IE Rules

- 1.1 Definitions, Ampere, Apparatus, Accessible, Bare, cable, circuit, circuit breaker, conductor voltage (low, medium, high, EH), live, dead, cut-out, conduit, system, danger, Installation, earthing system, span, volt, switch gear, etc.
 1.2 General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.
 1.3 General conditions relating to supply and use of energy : rule 47, 48, 49, 50, 51, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70.
 1.4 OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	1	1	Definitions, Ampere, Apparatus, Accessible, Bare, cable, circuit, circuit breaker, conductor voltage (low, medium, high, EH), live, dead, cut-out, conduit, system, danger, Installation,	1.1		
2		2	General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.	1.2		
3		3	General conditions relating to supply and use of energy : rule 47, 48, 49, 50, 51, 54, 55, 56, 57, 58	1.3		
4		4	General conditions relating to supply and use of energy : rule 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70.	1.3		
5		5	OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91	1.4		
6		6(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1001		

REVIEW:-

Detailed Topic Plan:

Chapter No: 02

Chapter Name: Electrical Installations

2. 1 Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy. Methods of wiring, systems of wiring, wire and cable, conductor materials used in cables, insulating materials mechanical protection. Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables.
 2. 2 ACCESSORIES: Main switch and distribution boards, conduits, conduit accessories and fittings, lighting accessories and fittings, fuses, important definitions, determination of size of fuse – wire, fuse units. Earthing conductor, earthing, IS

specifications regarding earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing.

2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes, design of lighting schemes, factory lighting, public lighting installations, street lighting, general rules for wiring, determination of number of points (light, fan, socket, outlets), determination of total load, determination of Number of sub-circuits.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	02	7	Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy.	2.1		
2		8	Methods of wiring, systems of wiring	2.1		
3		9	wire and cable, conductor materials used in cables, insulating materials mechanical protection. Types of cables used in internal wiring	2.1		
4		10	Multi-stranded cables, voltage grading of cables, general specifications of cables.	2.1		
5		11	ACCESSORIES: Main switch and distribution boards, conduits, conduit accessories and fittings,	2.2		
6		12	lighting accessories and fittings, fuses, important definitions, determination of size of fuse – wire, fuse units.	2.2		
7	03	13	Earthing conductor, earthing, IS specifications regarding earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and	2.2		
8		14	Industrial installations. Material required for GI pipe earthing.	2.2		
9		15	LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes,	2.3		
10		16	Design of lighting schemes, factory lighting, public lighting installations, street lighting	2.3		
11		17	General rules for wiring, determination of number of points (light, fan, socket, outlets), determination of total load, determination of Number of sub-circuits	2.3		
12		18(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1002		

REVIEW:-**Detailed Topic Plan:****Chapter No: 03****Chapter Name: Internal wiring**

3. 1 Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping, metal sheathed wiring, conduit wiring, their advantage and disadvantages comparison and applications.

3. 2 Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 m² with given light, fan & plug points.

3. 3 Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandha within 25 m² with given light, fan & plug points.

3. 4 Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m² with given light, fan & plug points.

3. 5 Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m² and load within 10 KW.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1.	04	19	Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping, metal sheathed wiring,	3.1		
2.		20	conduit wiring, their advantage and disadvantages comparison and applications	3.1		
3.		21	Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 m ² with given light, fan & plug points.	3.2		
4.		22	Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 m ² with given light, fan & plug points.	3.2		
5.		23	Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 m ² with given light, fan & plug points.	3.2		
6.		24	Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandha within 25 m ² with given light, fan & plug points	3.3		
7.	05	25	Prepare one estimate of materials required for conduit wiring for small	3.3		

			domestic installation of one room and one verandha within 25 m2 with given light, fan & plug points			
8.		26	Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandha within 25 m2 with given light, fan & plug points	3.3		
9.		27	Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandha within 25 m2 with given light, fan & plug points	3.3		
10.		28	Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m2 with given light, fan & plug points.	3.4		
11.		29	Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m2 with given light, fan & plug points.	3.4		
12.		30	Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m2 with given light, fan & plug points.	3.4		
13.	06	31	Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m2 with given light, fan & plug points.	3.4		
14.		32	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.	3.5		
15.		33	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.	3.5		
16.		34	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.	3.5		
17.		35	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.	3.5		
18		36(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1003		

REVIEW:-**Detailed Topic Plan:****Chapter No: 04****Chapter Name: Over head installation**

4.1. Main components of overhead lines, line supports, factors Governing Height of pole, conductor materials, determination of size of conductor for overhead transmission line, cross arms, pole brackets and clamps, guys and stays, conductors configurations, spacing and clearances, span lengths, overhead line insulators, types of insulators, lighting arresters, danger plates, anti-climbing devices, bird guards, beads of jumpers, jumpers, tee-offs, guarding of overhead lines.

4.2. Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.

4.3. Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.

4.4. Prepare an estimate of materials required for HT distribution line (11 KV) within 2 km and load of 2000 KVA maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consider action using ACSR.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	07	37	Main components of overhead lines, line supports, factors Governing Height of pole, conductor materials	4.1		
2		38	Determination of size of conductor for overhead transmission line, cross arms, pole brackets and clamps, guys and stays, conductors configurations, spacing and clearances, span lengths	4.1		
3		39	overhead line insulators, types of insulators, lighting arresters, danger plates, anti-climbing devices, bird guards, beads of jumpers, jumpers, tee-offs, guarding of overhead lines.	4.1		
4		40	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.	4.2		
5		41	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and	4.2		

			standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.			
6		42	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.	4.2		
7	08	43	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.	4.3		
8		44	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.	4.3		
9		45	Prepare an estimate of materials required for HT distribution line (11 KV) within 2 km and load of 2000 KVA maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consider action using ACSR.	4.4		
10		46	Prepare an estimate of materials required for HT distribution line (11 KV) within 2 km and load of 2000 KVA maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consider action using ACSR.	4.4		
11		47	Prepare an estimate of materials required for HT distribution line (11 KV) within 2 km and load of 2000 KVA maximum and standard spans	4.4		

			involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consider action using ACSR.			
12		48(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1004		

REVIEW:-

Detailed Topic Plan:

Chapter No: 05

Chapter Name: Over head service line

5. 1 Components of service lines, service line (cables and conductors), bearer wire, lacing rod. Ariel fuse, service support, energy box and meters etc.
5. 2 Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building.
5. 3 Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter.
5. 4 Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.
5. 5 Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using bare conductor and insulated wire combined.

SI No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	09	49	Components of service lines, service line (cables and conductors), bearer wire, lacing rod. Ariel fuse, service support, energy box and meters etc.	5.1		
2		50	Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building	5.2		
3		51	Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter.	5.3		
4		52	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.	5.4		

5		53	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using bare conductor and insulated wire combined	5.5	
6		54(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1005	

REVIEW:-

Detailed Topic Plan:

Chapter No: 06

Chapter Name: Estimating for distribution substation

6. 1 Prepare one materials estimate for following types of transformer substations.

6.1.1 Pole mounted substation.

6.1.2 Plinth Mounted substation

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	10	55	Prepare one materials estimate for following types of transformer substations.	6.1		
2		56	Pole mounted substation.	6.1.1		
3		57	Pole mounted substation.	6.1.1		
4		58	Plinth Mounted substation	6.1.2		
5		59	Plinth Mounted substation	6.1.2		
6		60(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1006		

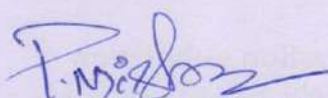
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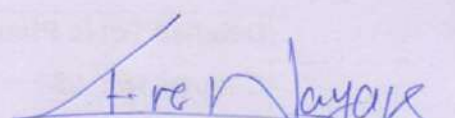
10) Examination Schedule:

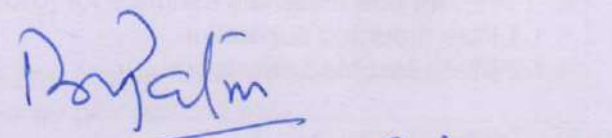
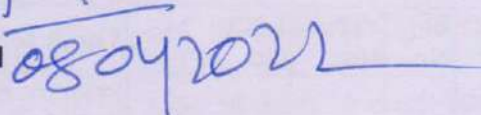
Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2 nd Week onwards)	Wednesday (4 th Sem.) & Thursday (6 th sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4 th Week	30 Marks (Long Questions)
3	Internal Exam.-2	8 th Week	30 Marks (Long Questions)

11) Assignment Collection/ Evaluation:

Sl No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3 rd Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6 th Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9 th Week
4	Assignment-4	VST 100 Marks	10 th /11 th Week


Signature of Faculty


Signature of HOD


Principal 

TEACHING-CUM-LESSON PLAN

- 1) Subject Code: TH-1
- 2) Subject Title:SGPD
- 3) Semester: 6TH
- 4) Branch: Electrical Engg
- 5) No. of Classes / Week: 06
- 6) Pre Requisite for the Subject: NIL
- 7) Text Book to be referred by students:

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	Principle of power system	V. K. Mehta	S Chand	2010	YES
ii	Electrical power	Soni, Gupta and Bhatnagar	Dhanpat Rai & Sons	2010	YES

8) Course Coverage Schedule:

Sl No.	Week No.	Ch. No	No. of classes planed	Topic to be covered	Article		Expected Date of Completion	Remark
					From	To		
i	1	01	06	INTRODUCTION TO SWITCHGEAR	1.1	1.7,1001	26.03.22	
ii	2	02	05	FAULT CALCULATION	2.1	2.9,1002	01.04.22	
iii	3	03	03	FUSES	3.1	3.6	05.04.22	
iv	4	04	12	CIRCUIT BREAKERS	4.1	4.8	12.04.22	
v	5				4.9	4.17,1004	19.04.22	
vi	6	05	11	PROTECTIVE RELAYS	5.1	5.6	23.04.22	
vii	7				5.7	5.11,1005	30.04.22	
viii	8	06	09	PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES	6.1	6.6	07.05.22	
					6.7	6.9,1006	11.05.22	
ix		07	10	PROTECTION AGAINST OVER VOLTAGE AND LIGHTING	7.1	7.3	14.05.22	
x	9	07	10	PROTECTION AGAINST OVER VOLTAGE AND LIGHTING	7.4	7.8,1007	23.05.22	
x	10	08	06	STATIC RELAY	8.1	8.3,1008	30.05.22	
Total:		6	60					

9) Detail Class wise Plan :

Detailed Topic Plan:

Chapter No: 01

Chapter Name:INTRODUCTION TO SWITCH GEAR

Fault calculation
Fuses
Circuit breakers
Protective relays
Protection of electrical power equipment and lines
Protection against over voltage and lighting

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	1	1	Essential Features of switchgear	1.1		
2		2	Switchgear Equipment. Bus-Bar Arrangement	1.2,1.3		
3		3	Switchgear Accommodation	1.3		
4		4	Switchgear Accommodation. Short Circuit.	1.3,1.4		
5		5	Short circuit Faults in a power system	1.5,1.6 1.7		
6		6(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1001		

REVIEW:-

Detailed Topic Plan:

Chapter No: 02

Chapter Name:Fault calculation

Symmetrical faults on 3-phase system. Limitation of fault current
Percentage Reactance. Percentage Reactance and Base KVA.
Short – circuit KVA. Reactor control of short circuit currents.
Location of reactors. Steps for symmetrical Fault calculations

SL NO	WEEK No	Lecture No	Topic to be covered	Article no	Date of Completion	Signature
1	02	07	Symmetrical faults on 3-phase system Limitation of fault current. Percentage Reactance. .	2.1 2.2 2.3		
2		08	Percentage Reactance and Base KVA.	2.4		
3		09	Short – circuit KVA. Reactor control of short circuit currents. Location of reactors	2.5 2.6 2.7		
4		10	Steps for symmetrical Fault calculations Solve numerical problems on symmetrical fault	2.8,2.9		
5		11 (Last Class)	Teachers Exam./ Doubt Clear/Revision:	1002		

REVIEW:-**Detailed Topic Plan:****Chapter No: 03****Chapter Name: FUSES**

Desirable characteristics of fuse element. Fuse Element materials.

Types of Fuses and important terms used for fuses. Low and High voltage fuses. Current carrying capacity of fuse element. Difference Between a Fuse and Circuit Breaker.

SINo	Week No	Lect No	Topic to be covered	Article no	Date of Completion	Signature
1	02	12	Desirable characteristics of fuse element. Fuse materials. Types of Fuses and important terms used for fuse	3.1 3.2,3.3		
2		13	Low and High voltage fuses. Current carrying capacity of fuse element	3.4,3.5		
3	03	14 Last Class	Difference Between a Fuse and Circuit Breaker. Teachers Exam./ Doubt Clear/Revision	3.6 1003		

REVIEW:-**Detailed Topic Plan:****Chapter No: 04****Chapter Name: CIRCUIT BREAKERS**

Definition and principle of Circuit Breaker.

Arc phenomenon and principle of Arc Extinction. Methods of Arc Extinction.

Definitions of Arc voltage, Re-striking voltage and Recovery voltage. Classification of circuit Breakers.

Oil circuit Breaker and its classification. Plain break oil circuit breaker. Arc control oil circuit breaker. Low oil circuit breaker. Maintenance of oil circuit breaker. Air-Blast circuit breaker and its classification. Sulphur Hexa-fluoride (SF₆) circuit breaker. Vacuum circuit breakers. Switchgear component. Problems of circuit interruption. Resistance switching. Circuit Breaker Rating.

Sl No	Week No	Lect No	Topic to be covered	Article no	Date of Completion	Signature
1	03	15	Definition and principle of Circuit Breaker. Arc phenomenon and principle of Arc Extinction.	4.1,4.2		

2		16	Methods of Arc Extinction. Definitions of Arc	4.3 4.4		
3		17	voltage, Re-striking voltage and Recovery voltage.			
4		18	Classification of circuit Breakers. Oil circuit Breaker and its classification.	4.5 4.6		
5		19	Plain brake oil circuit breaker.	4.7		
6		20	Arc control oil circuit breaker. Low oil circuit breaker.	4.8 4.9		
7		21	Maintenance of oil circuit breaker.	4.10		
8	04	22	Air-Blast circuit breaker and its classification.	4.11		
9		23	Sulphur Hexa-fluoride (SF6) circuit breaker Vacuum circuit breakers.	4.12 4.13		
10		24	Switchgear component. Problems of circuit interruption.	4.14 4.15		
11		25	Resistance switching. Circuit Breaker Rating	4.16 4.17		
12	05	26 (Last Class)	Teachers Exam./ Doubt Clear/Revision	1004		

REVIEW:-

Sl No	Week No	Lect No	Topic to be covered	Article no	Date of Completion	Signature
1		27	Definition of Protective Relay.	5.1		
2	05	28	Requirement of protective relay.	5.2		
3		29	Basic Relay operation	5.3		
4		30	Electromagnetic Attraction type . Induction type	5.4		

5		31	Definition of following important terms	5.5		
6		32	Classification of functional relays	5.6 5.7		
7		33	Induction type over current relay (Non-directional)	5.8		
8		34	Induction type directional power relay	5.9		
9	06	35	Induction type directional over	5.10		
10		36	current relay. Differential relay Types of protection	5.11		
11		37(Last Class)	Teachers Exam./ Doubt Clear/Revision	1005		

REVIEW:-

Sl No	Week No	Lect No	Topic to be covered	Article no	Date of completion	Signature
1		38	Protection of alternator.	6.1		
2		39	Differential protection of alternators	6.2		
3	07	40	Balanced earth fault protection.	6.3		
4		41	Protection systems for transformer.	6.4		
5		42	Euchholz relay. Protection of Bus bar.	6.5 6.6		
6		47	Protection of Transmission line.	6.7		

7	08	48	Different pilot wire protection (Merz-price voltage Balance system)	6.8		
8		49	Explain protection of feeder by over current and earth fault relay.	6.9		
9		50 (Last Class)	Teachers Exam./ Doubt Clear/Revision	1006		

REVIEW:-

Detailed Topic Plan:

Chapter No: 07

Chapter Name: Protection against over voltage

Voltage surge and causes of over voltage. Internal cause of over voltage. External cause of over voltage (lightning). Mechanism of lightning discharge. Types of lightning strokes. Harmful effect of lightning. Lightning arresters and Type of lightning Arresters. Rod-gap lightning arrester. Horn-gap arrester. Valve type arrester. Surge Absorber

Sl No	Week No	Lect No	Topic to becovered	Article no	Date of completion	Signature
1	08	51	Voltage surge and causes of over voltage.	7.1 7.2 7.3		
2		52	Internal cause of over voltage.	7.2		
		53	External cause of over voltage (lighting)	7.3		
1	09	54	Mechanism of lightning discharge.	7.4 7.5		
2		55	Types of lightning strokes. Harmful effect of lightning.	7.6		
3		54	Lightning arresters and Type of lightning Arresters.	7.7 7.1.1 7.1.2		
4		55	Rod-gap lightning arrester. Horn-gap arrester	7.1.3		
5		56	Valve type arrester. Surge Absorber	7.8		

6		57 Last Class s	Teachers Exam./ Doubt Clear/Revision	1007		
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REVIEW:-

Detailed Topic Plan:

Chapter No: 08

Chapter Name: STATIC RELAY

Advantage of static relay. Instantaneous over current relay. Principle of IDMT relay.

Sl No	Week No	Lect No	Topic to be covered	Article no	Date of completion	Signature
19	10	58	Advantage of static relay.	8.1		
		59	Instantaneous over current relay. Principle of IDMT relay.	8.2,8.3		
		60 60 Last Class s)	Teachers Exam./ Doubt Clear/Revision	1008		

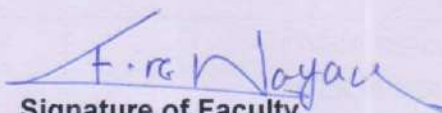
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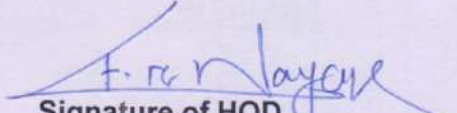
10) Examination Schedule:

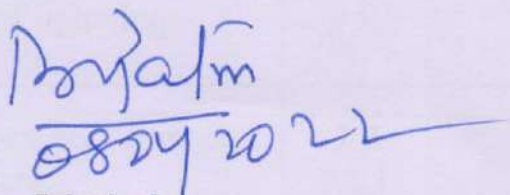
Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2 nd Week onwards)	Wednesday (4 th Sem.) & Thursday (6 th sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4 th Week	30 Marks (Long Questions)
3	Internal Exam.-2	8 th Week	30 Marks (Long Questions)

11) Assignment Collection / Evaluation:

Sl No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3 rd Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6 th Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9 th Week
4	Assignment-4	VST 100 Marks	10 th /11 th Week


Signature of Faculty


Signature of HOD


Principal

TEACHING-CUM-LESSON PLAN

- 1) Subject Code: TH-III
- 2) Subject Title: CSE
- 3) Semester: 6TH
- 4) Branch: Electrical Engg.
- 5) No. of Classes / Week: 06
- 6) Pre Requisite for the Subject: NIL
- 7) Text Book to be referred by students:

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	Control System	A. Ananda Kumar	PHI	2012	YES
ii	Control system Engineering	I. J. Nagarath, M. Gopal	WEN	2010	YES

8) Course Coverage Schedule:

Sl No.	Week No.	Ch. No	No. of classes planned	Topic to be covered	Article		Expected Date of Completion	Remark
					From	To		
i	1	1	06	FUNDAMENTAL OF CONTROL SYSTEM	1.1	1001	26.03.2022	
ii	2	2	06	MATHEMATICAL MODEL OF A SYSTEM	2.1	2.3	-	
iii	3	2	06	MATHEMATICAL MODEL OF A SYSTEM	2.3	1002	05.04.22	
iv	4	3	06	CONTROL SYSTEM COMPONENTS	3.1	1003	12.04.2022-	
v	5	4	03	BLOCK DIAGRAM ALGEBRA & SIGNAL FLOW GRAPHS	4.1	4.3	-	
v	5	4	03	BLOCK DIAGRAM ALGEBRA & SIGNAL FLOW GRAPHS	4.3	1004	23.4.2022-	
vi	6	5	06	TIME RESPONSE ANALYSIS.	5.1	5.4	-	
vii	7	5	06	TIME RESPONSE ANALYSIS.	5.4	1005	07.05.2022	
viii	8	6	06	ANALYSIS OF STABILITY BY ROOT LOCUS TECHNIQUE.	6.1	1006	16.05.2022	
ix	9	7	06	FREQUENCY RESPONSE ANALYSIS	7.1	1007	24.05.22	
x	10	8	06	NYQUIST PLOT	8.1	1008	01.06.2022	
Total			60					

9) Detail Class wise Plan:

Detailed Topic Plan:

Chapter No: 01

Chapter Name: FUNDAMENTAL OF CONTROL SYSTEM

1.1. Classification of Control system 1.2. Open loop system & Closed loop system and its comparison 1.3. Effects of Feed back 1.4. Standard test Signals(Step, Ramp, Parabolic, Impulse Functions) 1.5. Servomechanism

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	1	1	1.1. Classification of Control system	1.1		
			1.2. Open loop system & Closed loop system and its comparison	1.2		
2		2	1.3. Effects of Feed back	1.3		
3		3	1.4. Standard test Signals(Step, Ramp, Parabolic, Impulse Functions)	1.3		
4		4	1.5. Servomechanism	1.4		
5		5(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1001		

REVIEW:-

10)

Detailed Topic Plan:

Chapter No: 02

Chapter Name: MATHEMATICAL MODEL OF A SYSTEM

2.1. Transfer Function & Impulse response, 2.2. Properties, Advantages & Disadvantages of Transfer Function 2.3. Poles & Zeroes of transfer Function 2.4. Simple problems of transfer function of network. 2.5. Mathematical modeling of Electrical Systems(R, L, C, Analogous systems)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1		6	2.1. Transfer Function & Impulse response	2.1		
			2.2. Properties, Advantages & Disadvantages of Transfer Function	2.2		
2	02	7	2.3. Poles & Zeroes of transfer Function	2.3		
3		8	2.4. Simple problems of transfer function of network	2.4		
4		9	2.5. Mathematical modeling of Electrical Systems(R, L, C, Analogous systems)	2.5		

5		10(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1002		
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REVIEW:-

11)

Detailed Topic Plan:

Chapter No: 03 Chapter Name: CONTROL SYSTEM COMPONENTS
3.1. Components of Control System 3.2. Gyroscope, Synchros, Tachometer, DC servomotors, Ac Servomotors.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	03	11	3.1. Components of Control System	3.1		
			3.2. Gyroscope	3.2		
2		12	3.2 Synchros, 3.2 Tachometer,	3.2		
3		13	3.2 DC servomotors	3.2		
4		14	3.2 DC servomotors	3.2		
5		15(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1003		

12)

Detailed Topic Plan:

Chapter No: 04 Chapter Name: BLOCK DIAGRAM ALGEBRA & SIGNAL FLOW GRAPHS

4.1. Definition: Basic Elements of Block Diagram 4.2. Canonical Form of Closed loop Systems 4.3. Rules for Block diagram reduction 4.4. Procedure for of Reduction of Block Diagram 4.5. Simple Problem for equivalent transfer function 4.6. Basic Definition in Signal Flow Graph & properties 4.7. Construction of Signal Flow graph from Block diagram 4.8. Mason's Gain formula 4.9. Simple problems in Signal flow graph for network

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1		16	4.1. Definition: Basic Elements of Block Diagram 4.2. Canonical Form of Closed loop Systems	4.1,		
2		17	4.2. Canonical Form of Closed loop Systems	4.2		
3		18	4.3. Rules for Block diagram reduction 4.4. Procedure for of Reduction of Block Diagram	4.3		
4	04	19	4.4. Procedure for of Reduction of Block Diagram	4.4		
5		20	4.5. Simple Problem for equivalent transfer function	4.5		

6		21	4.6. Basic Definition in Signal Flow Graph & properties	4.6		
7		22	4.7. Construction of Signal Flow graph from Block diagram	4.7		
8		23	4.8. Mason's Gain formula	4.8		
9		24	4.9. Simple problems in Signal flow graph for network	4.9		
10	05	25(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1004		
REVIEW:-						

13)

Detailed Topic Plan:

Chapter No: 05

Chapter Name: TIME RESPONSE ANALYSIS.

5 . 1 Time response of control system. 5 . 2 Standard Test signal. 5.2.1. Step signal, 5.2.2. Ramp Signal 5.2.3. Parabolic Signal 5.2.4. Impulse Signal 5 . 3 Time Response of first order system with: 5.3.1. Unit step response 5.3.2. Unit impulse response. 5 . 4 Time response of second order system to the unit step input. 5.4.1. Time response specification. 5.4.2. Derivation of expression for rise time, peak time, peak overshoot, settling time and steady state error. 5.4.3. Steady state error and error constants. 5 . 5 Types of control system.[Steady state errors in Type-0, Type-1, Type-2 system] 5 . 6 Effect of adding poles and zero to transfer function. 5 . 7 Response with P, PI, PD and PID controller

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1		26	5 . 1 Time response of control system	5.1		
			5 . 2 Standard Test signal.	5.2		
2		27	5.2.1. Step signal,	5.2.1		
3		28	5.2.2. Ramp Signal	5.2.2		
4		29	5.2.3. Parabolic Signal	5.2.3		
5		30	5.2.4. Impulse Signal	5.2.4		
6	06	32	5 . 3 Time Response of first order system with	5.3		
7						
8		33	5.3.1. Unit step response	5.3.1		
9		34	5.3.2. Unit impulse response	5.3.2		
10		35	5 . 4 Time response of second order	5.4		
11		36	system to the unit step input			

12		37	5.4.1. Time response specification	5.4.1		
	07					
13		38	5.4.2. Derivation of expression for rise time, peak time, peak overshoot, settling time and steady state error.	5.4.2		
14		39	.. 5.4.3. Steady state error and error constants	5.4.3		
15		40	5 . 5 Types of control system.[Steady state errors in Type-0, Type-1, Type-2 system]	5.5		
16		41	5 . 6 Effect of adding poles and zero to transfer function	5.6		
17		42	5 . 7 Response with P, PI, PD and PID controller	5.7		
18	08	43(Last Class)	Teachers Exam./ Doubt Clear/Revision	1005		

REVIEW:-

14)

Detailed Topic Plan:

Chapter No: 06

Chapter Name: ANALYSIS OF STABILITY BY ROOT LOCUS TECHNIQUE.

6 . 1 Root locus concept. 6 . 2 Construction of root loci. 6 . 3 Rules for construction of the root locus. 6 . 4 Effect of adding poles and zeros to $G(s)$ and $H(s)$.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1		44	6 . 1 Root locus concept	6.1		
			6 . 2 Construction of root loci.	6.2		
2		45	6 . 3 Rules for construction of the root locus.	6.3		
3		46	6 . 4 Effect of adding poles and zeros to $G(s)$ and $H(s)$	6.4		
4		47(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1006		

REVIEW:-

15)

Detailed Topic Plan:

Chapter No: 07

Chapter Name: FREQUENCY RESPONSE ANALYSIS.

7.1 Correlation between time response and frequency response. 7.2 Polar plots. 7.3 Bode plots. 7.4 and minimum phase system. 7.5 Computation of Gain margin and phase margin. 7.6 Log magnitude phase plot. 7.7 Closed loop frequency response.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1		48	7.1 Correlation between time response and frequency response	7.1		
2	09	49	7.2 Polar plots.	7.2		
3		50	7.3 Bode plots.	7.3		
4		51	7.4 All pass and minimum phase system.	7.4		
5		52	7.5 Computation of Gain margin and phase margin	7.5		
			7.6 Log magnitude versus phase plot.	7.6		
6		53	7.7 Closed loop frequency response	7.7		
7		54(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1007		

REVIEW:-

16)

Detailed Topic Plan:

Chapter No: 08

Chapter Name: NYQUIST PLOT.

8.1 Principle of argument. 8.2 Nyquist stability criterion. 8.3 Niquist stability criterion applied to inverse polar plot. 8.4 Effect of addition of poles and zeros to $G(S)$ $H(S)$ on the shape of Niquist plot. 8.5 Assessment of relative stability. 8.6 Constant M and N circle 8.7 Nicholas chart.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	10	55	8.1 Principle of argument	8.1		
			8.2 Nyquist stability criterion.	8.2		
2		56	8.3 Niquist stability criterion applied to inverse polar plot.	8.3		
3		57	8.4 Effect of addition of poles and zeros to $G(S)$ $H(S)$ on the shape of Niquist plot	8.4		
4		58	8.5 Assessment of relative stability.	8.5		
5		59	8.6 Constant M and N circle 8.7 Nicholas chart.	8.6, 8.7		
6		60(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1008		

REVIEW:-**17) Examination Schedule:**

Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2 nd Week onwards)	Wednesday (4 th Sem.) & Thursday (6 th sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4 th Week	30 Marks (Long Questions)
3	Internal Exam.-2	8 th Week	30 Marks (Long Questions)

18) Assignment Collection / Evaluation:

Sl No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3 rd Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6 th Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9 th Week
4	Assignment-4	VST 100 Marks	10 th /11 th Week

N. N. Nayak
5/3/22
Signature of Faculty

F. re N. Nayak
Signature of HOD

Pr. Palini
08/04/2022
Principal

TEACHING-CUM-LESSON PLAN

- 1) Subject Code: (EET 604) 2) Subject Title: TMEM
 3) Semester: 6TH 4) Branch: ELECT. ENGG.
 5) No. of Classes / Week: 06
 6) Pre Requisite for the Subject: NIL / YES, If YES, give details:

i. Knowledge on basics of electrical machines.

ii. Knowledge on maintenance of electrical machines and tools

iii. Basic idea on electrical protective devices

- 7) Text Book to be referred by students:

SI No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	Installation Commissioning & Maintenance of Electrical Equipments	Tarlok Singh	S. K. Kataria & Sons	2013	YES

- 8) Course Coverage Schedule:

SI No.	Week No.	Ch. No	No. of classes planned	Topic to be covered	Article		Expected Date of Completion	Remark
					From	To		
i	1	1	06	Installation, Commissioning and Testing of Machine	1.1	1.2		
ii	2	1	06	Installation, Commissioning and Testing of Machine	1.3	1.4		
iii	3	1	06	Installation, Commissioning and Testing of Machine	1.5	1.6		
iv	4	1	04	Installation, Commissioning and Testing of Machine	1.6	1001	18.04.22	
		2	02	Installation, Commissioning and Testing of Transformer.	2.1	2.6		
v	5	2	06	Installation, Commissioning and Testing of	2.7	1002	27.04.22	

				Transformer.				
vi	6	3	06	Installation, Commissioning & Testing of Sub-station.	3.1	3.4		
vii	7	3	06	Installation, Commissioning & Testing of Sub-station.	3.4	3.5		
viii	8	4	06	Installation, Commissioning & Testing of Sub-station.	3.6	1003	20.05.22	
ix	9	4	06	Maintenance	4.1	4.3		
x	10	4	06	Maintenance	4.4	1005	03.06.22	
Total:		4	60					

9) Detail Class wise Plan:

Detailed Topic Plan:

Chapter No:1 Chapter Name:

Installation, Commissioning and Testing of Machine:

- 1.1. Inspection of arrival of machine and inspection procedure before its installation.
- 1.2. Generalized procedure of installation of Electrical machines.
- 1.3. Electric wiring for motors and switch gears.
- 1.4. General requirement for Electric Installation according to Indian Electricity rules.
- 1.5. Necessity of starters and relays for both DC and AC machines.
- 1.6. Testing before giving supply and testing report.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	1	1	Inspection of arrival of machine and inspection procedure before its installation.	1.1		
2		2	Inspection of arrival of machine and inspection procedure before its installation.	1.1		
3		3	Inspection of arrival of machine and inspection procedure before its installation.	1.1		
4		4	Inspection of arrival of machine and inspection procedure before its installation.	1.1		
5		5	Generalized procedure of installation of Electrical machines.	1.2		
6		6	Generalized procedure of installation of Electrical machines.	1.2		
7	2	7	Generalized procedure of installation of Electrical machines.	1.2		
8		8	Electric wiring for motors and switch gears.	1.3		

		9	Electric wiring for motors and switch gears.	1.3		
		10	Electric wiring for motors and switch gears.	1.3		
11		11	Electric wiring for motors and switch gears.	1.3		
12		12	General requirement for Electric Installation according to Indian Electricity rules.	1.4		
13	3	13	General requirement for Electric Installation according to Indian Electricity rules.	1.4		
14		14	General requirement for Electric Installation according to Indian Electricity rules.	1.4		
15		15	Necessity of starters and relays for both DC and AC machines.	1.5		
16		16	Necessity of starters and relays for both DC and AC machines.	1.5		
17		17	Necessity of starters and relays for both DC and AC machines.	1.5		
18		18	Necessity of starters and relays for both DC and AC machines.	1.5		
19	4	19	Testing before giving supply and testing report.	1.6		
20		20	Testing before giving supply and testing report.	1.6		
21		21	Testing before giving supply and testing report.	1.6		
22		22(last class)	Teachers Exam./ Doubt Clear/Revision:	1006		

REVIEW:

Detailed Topic Plan:

Chapter No: 02 Chapter Name: Installation, Commissioning and Testing of Transformer

2. 1 Basic idea on dispatch, inspection, storage and handling of transformer.
2. 2 Civil construction feature regarding connection like ventilation, noise level, space for free movement.
2. 3 Foundation and drainage of oil.
2. 4 Cabling and cable box for transformer.
2. 5 Provision for fire protection
2. 6 Provision for bushing support location of switch gear.
2. 7 Steps for commissioning fitting of all accessories.
2. 8 Filling of oil, drying out.
2. 9 Charging the breather with fresh silica gel.
2. 10 Cleaning of bushing, fixing of conductor & cables, earthing of tank and cover, neutral earthing.
2. 11 Fixing of protection circuits and setting of relays.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Sl
1	4	23	Basic idea on dispatch, inspection, storage and handling of transformer. Civil construction feature regarding connection like ventilation, noise level, space for free movement. Foundation and drainage of oil.	2.1 2.2 2.3		
2		24	Cabling and cable box for transformer. Provision for fire protection. Provision for bushing support location of switch gear.	2.4 2.5 2.6		
3	5	25	Steps for commissioning fitting of all accessories.	2.7		
4		26	Filling of oil, drying out.	2.8		
5		27	Charging the breather with fresh silica gel.	2.9		
6		28	Cleaning of bushing, fixing of conductor & cables, earthing of tank and cover, neutral earthing.	2.10		
7		29	Fixing of protection circuits and setting of relays.	2.11		
8		30(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1002		

REVIEW:

Detailed Topic Plan:

Chapter No: 03 Chapter Name: Installation, Commissioning & Testing of Sub-station.

- 3.1 Design and planning of indoor substation.
- 3.2 General requirement of layout of indoor substation with key diagram.
- 3.3 Consideration of safe operation of substation
- 3.4 Installation of outdoor substation:
 - 3.4.1 Selection of site, transport & receipt of transformer, checking of insulation resistance of the winding, testing of transformer oil, protection fittings, construction of mounting, earthing arrangement and final commissioning.
- 3.5 Testing and commissioning of substation.
 - 3.5.1. Installation of control and relay panels.
 - 3.5.2. Preliminary preparation.
 - 3.5.3. Sequence card for erection of switch gear equipments.
 - 3.5.4. Location of place
 - 3.5.5. Unpacking
 - 3.5.6. Foundation

ection

Relays

Bus-bar earthing connection, Earthing.

1. Connection to main cable.

6.2. Safety precaution

3. 7 Installation of outdoor circuit breaker:

3.7.1. Receipt and storage.

3.7.2. Civil works.

3.7.3. Various steps for installation.

3. 8 Pre-commissioning tests.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	6	31	Design and planning of indoor substation.	3.1		
2		32	Design and planning of indoor substation.	3.1		
3		33	General requirement of layout of indoor substation with key diagram.	3.2		
4		34	General requirement of layout of indoor substation with key diagram.	3.2		
5		35	Consideration of safe operation of substation	3.3		
6		36	Installation of outdoor substation:	3.4		
7	7	37	Selection of site, transport & receipt of transformer, checking of insulation resistance of the winding, testing of transformer oil, protection fittings, construction of mounting, earthing arrangement and final commissioning.	3.4.1		
8		38	Testing and commissioning of substation. Installation of control and relay panels. Preliminary preparation.	3.5 3.5.1. 3.5.2		
9		39	Sequence card for erection of switch gear equipments. Location of place Unpacking	3.5.3 3.5.4 3.5.5		
10		40	Foundation Erection Relays	3.5.6 3.5.7 3.5.8		
11		41	Bus-bar earthing connection	3.6		
12		42	Earthing. Connection to main cable.	3.6.1 3.6.2		

			Safety precaution		
13	8	43	Installation of outdoor circuit breaker.	3.7	
14		44	Receipt and storage.	3.7.1	
15		45	Civil works. Various steps for installation	3.7.2 3.7.3	
16		46	Pre-commissioning tests.	3.8	
17		47	Pre-commissioning tests.	3.8	
18		48(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1004	

REVIEW:

Detailed Topic Plan:

Chapter No: 04 Chapter Name: Maintenance

4.1 Fundamental of maintenance.

4.2 Preventive maintenance and planning.

[Daily, Weekly, Monthly, Half-yearly and Yearly maintenance.]

4.3 Advantages of Preventive maintenance:

4.4 Breakdown maintenance: List of tools / instruments and materials used for maintenance.

4.5 Making or Preparing Maintenance schedule of DC machines, Induction machines, Synchronous machines, Transformer, Transmission line, Distribution lines, Underground cables, Circuit breakers, Switch gear and protective relays and substations, SF-6 circuit breakers, Batteries in substation.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	09	49	Fundamental of maintenance.	4.1		
2		50	Fundamental of maintenance.	4.1		
3		51	Preventive maintenance and planning. [Daily, Weekly, Monthly, Half-yearly and Yearly maintenance.]	4.2		
4		52	Preventive maintenance and planning. [Daily, Weekly, Monthly, Half-yearly and Yearly maintenance.]	4.2		
5		53	Advantages of Preventive maintenance	4.3		
6		54	Advantages of Preventive maintenance	4.3		
7	10	55	Breakdown maintenance: List of tools / instruments and materials used for maintenance.	4.4		
8		56	Breakdown maintenance: List of tools / instruments and materials used for maintenance.	4.4		

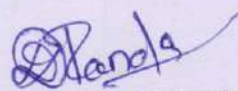
10	57	Making or Preparing Maintenance schedule of DC machines, Induction machines, Synchronous machines.	4.5		
	58	Transformer, Transmission line, Distribution lines, Underground cables, Circuit breakers, Switch gear and protective relays and substations, SF-6 circuit breakers, Batteries in substation.	4.5		
	59	Making or Preparing Maintenance schedule of DC machines, Induction machines, Synchronous machines, Transformer, Transmission line, Distribution lines, Underground cables, Circuit breakers, Switch gear and protective relays and substations, SF-6 circuit breakers, Batteries in substation.	4.5		
12	60(Last Class)	Teachers Exam./ Doubt Clear/Revision:	1004		

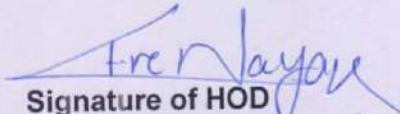
10) Examination Schedule:

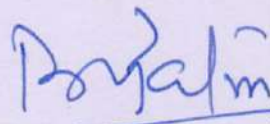
SI No.	Particulars of Test	Schedule	Type
1	Weekly Test (2 nd Week onwards)	Wednesday (4 th Sem.) & Thursday (6 th sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4 th Week	30 Marks (Long Questions)
3	Internal Exam.-2	8 th Week	30 Marks (Long Questions)

11) Assignment Collection/ Evaluation:

SI No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3 rd Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6 th Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9 th Week
4	Assignment-4	VST 100 Marks	10 th /11 th Week


Signature of Faculty


Signature of HOD


Principal 08/04/2022