

You Choose, We Do It

St. JOSEPH'S COLLEGE OF ENGINEERING

(An Autonomous Institution)

St. Joseph's Group of Institutions Jeppiaar Educational Trust

OMR, Chennai - 119.



SUMMARY OF CLASS WORK RECORD OF ATTENDANCE AND ASSESSMENT

Name of the staff: Venkatesh kumar C

Department of the Staff: EEE

Semester From: July 2022 To Oct 2022

Class & Branch: IV EEE 'A'

Code No. / Subject Name: <u>EE8701-HVE</u>

TIME TABLE

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LESSON PLAN

Unit:

From 18/3/22 To @5/2/22

No. of Hours: 12

SI. No.

TOPICS TO BE COVERED

BOOKS TO BE REFERRED

UNIT I - OVER VOLTAGES IN ELECTRICAL POWER SYSTEMS

Target Period: 9

Planned Periods: 12

S.NO		Course	Hours Required	Text /Reference Book	Teaching Aid	Knowledge Level
-	causes of over voltages and its effects on power system		-	TI	BB	R,U
7	Mechanism of Lightning,		_	TI	PPT	R,U
w.	Causes of Switching surges		_	T1	PPT	R,U
4.	Causes of Power frequency over voltages		_	Tı	PPT	R,U
.S	Controlling methods of switching and power frequency over voltages	C401.1	_	TI	PPT	R,U
9.	Protection against Over Voltages, expulsion gap, protector tube etc.		_	П	PPT	R,U
7.	Reflection and Refraction of Travelling waves		. 2	TI	PPT	R,U,An,A
∞.	Bewley's Lattice Diagram - cases		2	T1	BB	R.U
9.	Problems		2	II	a a	R.U.An A F
ssignn	Assignment submission:					
emina	Seminar/Tutorial:					
IAE 1 Test:	est: 29 8/22					

LESSON PLAN

LECTRIC BREAKDOWN

UNIT-II DIELECTRIC BREAKDOWN

Planned Periods: 12

Target Period: 9

	S.NO	Topics to be Covered	Соигѕе	Hours Required	Text /Reference Book	Teaching Aid	Knowledge Level
Townsends criterion of breakdown in gases (Primary/Secondary) Corona discharges and its effects Vacuum breakdown mechanisms Conduction and breakdown in pure liquids Conduction and breakdown in commercial liquids Maintenance of oil Quality Breakdown mechanisms in solid and composite dielectrics Applications of insulating materials in electrical equipment's.	-:	Gaseous breakdown in uniform and non uniform fields		_	T	PPT	R, U
Corona discharges and its effects Vacuum breakdown mechanisms Conduction and breakdown in pure liquids Conduction and breakdown in commercial liquids Maintenance of oil Quality Breakdown mechanisms in solid and composite dielectrics Applications of insulating materials in electrical equipment's.		Townsends criterion of breakdown in gases (Primary/Secondary)		2	I	PPT	R, U,A & An
Vacuum breakdown mechanisms Conduction and breakdown in pure liquids Conduction and breakdown in commercial liquids Maintenance of oil Quality Breakdown mechanisms in solid and composite dielectrics Applications of insulating materials in electrical equipment's.		Corona discharges and its effects		_	11	PPT	R, U,A & An
Conduction and breakdown in pure liquids Conduction and breakdown in commercial liquids Maintenance of oil Quality Breakdown mechanisms in solid and composite dielectrics Applications of insulating materials in electrical equipment's.		Vacuum breakdown mechanisms	•	1	TI	PPT	R, U,A & An
Conduction and breakdown in commercial liquids Maintenance of oil Quality Breakdown mechanisms in solid and composite dielectrics Applications of insulating materials in electrical equipment's.		tion and		_	II	PPT	R, U,A & An
Maintenance of oil Quality Breakdown mechanisms in solid and composite dielectrics Applications of insulating materials in electrical equipment's.		breakdown		_	TI	PPT	R, U,A & An
Breakdown mechanisms in solid and composite dielectrics Applications of insulating materials in electrical equipment's.	7. N	Maintenance of oil Quality		_	TI	PPT	R.U
Applications of insulating materials in electrical equipment's.		Breakdown mechanisms in solid and composite dielectrics			TI	PPT	R, U,A & An
				_	П	BB	R, U,A & An
_	10.	Problems		2	TI	BB	R. U.A & An
Assignment submission:	ignmen	t submission:					

IAE 2 Test:

27/8/22 - 15/9/22

UNIT-III GENERATION OF HIGH VOLTAGES AND HIGH CURRENTS Target Period: 9 Planned Periods: 12

S.NO	Topics to be Covered	Course	Hours Required	Text /Referenc e Book	Teaching Aid	Knowledg e Level
-i	Generation of High DC voltages, Rectifier, Voltage doubler circuits		2	T2	PPT	R, U,A
2.	multiplier		2	T2	PPT	R, U,A,
	Electrostatic machines – Vande graff generator, Electrostatic generator		_	T2	PPT	R, U,A,
4.	Generation of High AC voltages, cascaded transformer		_	T2	BB	R, U,A,
· .	, 2	2	_	T2	PPT	R, U,A,
9.	Generation of High frequency AC using Tesla coil - derivation	C401.3	_	T2	PPT,	R, U,A
7.	Generation of impulse waves and Marx circuit	×	-	T2	PPT,	R, U,A
∞.	Generation of switching surges and impulse currents	4	_	T2	PPT,	R, U,A
9.	Triggering and control of impulse generators		_	T2	PPT,	R, U,A
10.	10. Problems		_	T2	PPT,	R, U,A,E
Assign	Assignment submission:					3
Semina	Seminar/Tutorial:					
IAE 3 Test:	Test.					

LESSON PLAN

UNIT-IV MEASUREMENT OF HIGH VOLTAGES AND HIGH CURRENTS

Target Period: 12

Planned Periods: 12

Book Phyt T1,R2 PPT T1,R2 PPT T1,R2 BB T1,R2 PPT T1,R2 PPT T1,R2 PPT T1,R2 PPT T1,R2 PPT T1,R2 BB T1,R2 BB T1,R2 BB T1,R2 BB T1,R2 BB T1,R2 BB	S.NO	Topics to be Covered	Course	Hours Required	Text/ Reference	Teaching Aid	Knowledge Level
S. Resistance, Capacitance and dividers for voltage ment In T1,R2 PPT Ing Voltmeters – construction, merits and demerits In T1,R2 PPT Ing Voltmeters – construction, merits and demerits Gap Measurements – Factors - construction, working - c	.1	Introduction to Resistance with		-	B00k T1,R2	PPT	R, U,A,
ing Voltmeter - measurement ing Voltmeters - construction, merits and demerits unce Voltage Transformers C401.4	2	Dividers, Resistance, Capacitar Mixed dividers for measurement		_	T1,R2	PPT	An & E R, U, A,
ing Voltmeters – construction, merits and demerits unce Voltage Transformers C401.4	ب	Peak Voltmeter - measurement		1	T1,R2	PPT	R, U, A,
tatic Voltage Transformers Cap Measurements – Factors - construction, working rent shunts measurements techniques in high voltage nent ission: C401.4 1 T1,R2 PPT PPT PPT BB 1 T1,R2 BB 1 T1,R2 BB 1 T1,R2 BB	1 .	Generating Voltmeters – construction, working, merits and demerits		_	T1,R2	BB	R, U,A &
merits and demerits Gap Measurements – Factors - construction, working rent shunts measurements techniques in high voltage nent 1	۸.	Capacitance Voltage Transformers	C401.4	1	T1,R2	PPT	R, U,A &
Cap Measurements – Factors1T1,R2PPT, BB- construction, working1T1,R2BBrent shunts measurements1T1,R2BBtechniques in high voltage1T1,R2BBnent2T1,R2BBission:2T1,R2BB	0 1	Electrostatic Voltmeters- construction, working, merits and demerits		1	T1,R2	PPT	R, U,A &
techniques in high voltage nent shunts measurements 1 T1,R2 BB 1 T	.	Sphere Gap Measurements – Factors affecting - construction, working		_	T1,R2	PPT, BB	R, U,A &
nent nigh voltage 1 T1,R2 BB nent 2 T1,R2 BB ission:	, o	=	•		T1,R2	BB	R, U,A &
ission:		Digital techniques measurement		_	T1,R2	BB	R, U,A &
ISSION:	10.	Problems		2	T1,R2	BB	R, U,A &
and a second sec	emina	r/Tutorial:					

Books: Text/Reference:

UNIT-V HIGH VOLTAGE TESTING & INSULATION COORDINATION
Planned Periods: 12 Target Period: 9

S.NO	Topics to be Covered	Course	Hours Required	Text /Reference Book	Teaching Aid	Knowledge Level
-	Standard Definitions and Necessity of Testing		-	T1, R2	PPT	R, U&
7.	High voltage testing of electrical power apparatus as per International and Indian standards		-	T1, R2	PPT	R, U &
e.	Power frequency and impulse testing of Insulators		2	T1, R2	PPT	R, U &
4	Power frequency and impulse testing of circuit breakers	C401.5	2	T1, R2	BB	R, U&
.5.	Power frequency and impulse testing of bushing	_	2	T1, R2	PPT	R, U&
.9	Power frequency and impulse testing of Isolators		-	T1, R2	PPT	R, U&
7.	Power frequency and impulse testing of transformers		2	T1, R2	PPT	R, U&
∞.	Testing of Cables - Insulation Coordination		_	T1, R2	PPT	R, U&
Assign	Assignment submission:					All
Semina	Seminar/Tutorial:					
Model exam:	exam:					

STAFF SIGNATURE

HOD SIGNATURE

PRINCIPAL

Month & Year: 3 dy & Argust 2022

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* Holidays / CL and OD days to be mentioned against the corresponding dates

Signature of HOD:

Month & Yenr: Avgvs 1 & September 2002

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8/66	Monday	_	4	Me-1 Exam
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* Holldays / C.L. and O.D days to be mentioned against the corresponding dates

Signature of HOD:

Month & Year: October & November.

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* Holidays / CL and OD days to be mentioned against the corresponding dates

Signature of HOD:

ATTENDANCE

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19EE 211	5003	ABINA . S	1.	1	1	1/			
19EE 250	5004	ABINA YA. M	1	1	1	1			
19EE 134		ABINAYA. V. J	1	1	1	1			
MEE 135	5006	ABINAYAA SRI.T	1	a	1	a			
19EE 156		ABISHEK. T	1	1	,	,			
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19EE 263	5016	ARAVINDHRAJ. S	-	1					
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19EE 220		ASHWIN.S	1	1	1	1			
19EE 257	501		a	- 1	1	1			
19EE 284	502	BALAJI.S	1	/	1	1			
19EE 280			a	a	1	1			
19EE 146	502	BERTINA.S	1	1	/	1			
b 19EE 127	502		1	a	a	a			
19EE 207	502	BIVIN JOE. A	1	1	1	1			
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ATTENDANCE

		ALIENDANOL				
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Roll No.	Reg.No.	Name	Re	por	Pe	riod
			12/1	19/7	20/1	21/1
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19EE 119	5026	CHRIS AUSTIN. A	1	1	1	1
19EE 114	5027	CHRIS KEVIN. A	1	1	1	1
19EE 265	5028	CHRISTEL PEERIS. R	1	1	1	1
19EE 286	5029	DEEPANA. E	1	1	1	1
19EE 150.	5030	DENORA. S	1	1	1	1
19EE 107	5031	DHANALAKSHMI. R	1	1	1	1
19EE 262	5032	DHANRAAJ. GI	/	1	1	1
19EE 248	5033	DHARANI BALAN G	a	a	1	1
19EE 273	5035	DHIYANESH. P	1	1	1	1
19EE 283	5036	DIVYALAKSHMI. G	1	1	1	1
19EE 215	5037	ELANCHEZHIYAN. R.J	1	1	1	1
19EE 155	5038	EUREAK S SINGH	1	/	1	1
19EE 753	5039	EVANGIELENE. M	a	a	a	a
19EE 152	504.0	GODSON S V NOBLE	1	1	1	1
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19EE 275	5042	GIOPINATH M	1	1	1	1
19EE 104	504.3	GIOWTHAM R	a	a	a	a
19EE 278	5044	HARIHARAN N	1	a	a	a
19EE 220	5045	HARISHKUMAR K	,	1	1	1
19EE 201	5046	HEMA ARAKA.A	1	a	a	a
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ATTENDANCE

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INT MARKS

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CONTINUOUS ASSESSMENT MARKS m-11 LAE2 ASSESSMENT TYPE IRE) 29/8 1319 11/10 DATE 40 34 35 37 37 70 36 41 10 5

SOMMART OF CEASO WORK
DATE: 8 7 PERIOD: TOTAL NO. OF CLASS UNIT:
Introduction to everyottages in power System
Subject Introduction.
DATE: 1917 PERIOD: 9,10 TOTAL NO. OF CLASS 3 UNIT: 1
-) External Causer of Overmitage.
DATE: 2017 PERIOD: 3 TOTAL NO. OF CLASS LE UNIT : 1
Various theories of charge formshirm in Claids.

SUMMARY OF CLASS WORK
DATE: 16 8 PERIOD: 9110 TOTAL NO. OF CLASS 9 UNIT: \
-) courses of switchings surge -) power bregaring over voltages.
- ?
DATE: 17/8 PERIOD: 3 TOTAL NO. OF CLASS (O UNIT:)
-> Commol memocls of smitching and
power beginn over witages. -> Travelling waves.
DATE: 1818 PERIOD: 7 TOTAL NO. OF CLASS UNIT : 1
-) Protection devices of overhead
Poner lines.
-> Bewley's lattre digoans.

DATE: 1918	PERIOD: 9 TOTAL NO. OF CLASS 12 UNIT : 1	
ゥ	Reflection and Refractions of Travelling problems on Bewley's (ethre diag	waves.
19		
DATE: 20 18	PERIOD: 7 TOTAL NO. OF CLASS 13 UNIT: 2	
\mathcal{D}	Vielecture Break down in poner systems Wint - D Inmobilemen. -) Garrens Breakdown.	
	TOTAL NO DE CLASS LA LINIT :	
	Townsend's Breakdown Mechanism. Swrient growth equation. Sign of HOD with Date	

	O DIVINITION IN	OF CLASS WORK	
DATE: 23 8	PERIOD: 9,10	TOTAL NO. OF CLASS 16	UNIT: 2
7	Toursend's	promary and Seuc	ondery
	Fon	ration process	*
DATE: 24/8	PERIOD: 3	TOTAL NO. OF CLASS 17	UNIT: 2
		rge and its effect	
DATE: 25/8	PERIOD: 7	TOTAL NO. OF CLASS 18	UNIT: 2_
V		r theory of Brea	edown in genes.

DATE: 26 8	PERIOD: 9	TOTAL NO. OF CLA	ss 19	UNIT: 2
->	particle e	Achange med	ron J	m
-) Freld en	risson than	F	
-3.0) Chimp me	ehanton	- 4	
DATE: 27/8	PERIOD: 9	TOTAL NO. OF CLA	ss 20	UNIT: 2
_) Breakdus	am in hig	nd	dreiserry
	1	am in htg		
	1	TOTAL NO. OF CLAS		
DATE: 39/8 -> Cav	PERIOD: 9,10 Italian and 1 versed oil he		6S 22	

SOMMARI OF CLASS WORK
DATE: 31/8 PERIOD: 3 TOTAL NO. OF CLASS 23 UNIT: 2
Brechdam in solid dielectrus. Stifferend solid Breakdam mechanisms.
DATE: 1 9 22 PERIOD: 7 TOTAL NO. OF CLASS 24 UNIT: 2
Electro Chemical Breakdown Electro mechanical Breakdown Electronical & Inhance Breakdown
DATE: 2/9 PERIOD: 9 TOTAL NO. OF CLASS 25 UNIT: 2
Breakdown due to Treeting & Torreting Breakdown due to internal discharge.

SOMMART OF CLASS WORK	
DATE: 519 PERIOD: \ TOTAL NO. OF CLASS 26 UNIT : 2	
Breckelon in Composite Dietectices. Short term breakdows.	
-) Long berm breekdam.	
DATE: 6 9 PERIOD: 9,10 TOTAL NO. OF CLASS 28 UNIT: 3	
Introduction to unit - 10 - Generators of high witeger and high currents. Problems of wit - 10	
DATE: 7/9 PERIOD: 3 TOTAL NO. OF CLASS 29 UNIT: 3	
Different Corews to generate HV and High and -> meshods. Sign of HOD with Date	well

DATE: 8/9 PERIOD: 7 TOTAL NO. OF CLASS 30 UNIT: 3

Rectifier events - Half were and full wave.

Voltage doubler

DATE: 9/9 PERIOD: 9 TOTAL NO. OF CLASS 3) UNIT: 3

Cockeroff walton voltage mulhipher

DATE: 13 9 PERIOD: 9,10 TOTAL NO. OF CLASS 33 UNIT: 3

Cockeroft Ripple derivation, regulation,
optimum number of Stages.

		JUMMAR	OF CLASS WORK	
DAT	E: Ufla	PERIOD: 3	TOTAL NO. OF CLASS 34	UNIT: 3
	Elec	hostaliz mach	ne - Vande grapp	Generator
	») Q	→ P	maple working.	79
DATI	=: 15/9	PERIOD: 7	TOTAL NO. OF CLASS 35	UNIT: 3
	- = 1 >	-> cascado	Argh Ac voltages and Transformer	Head
DAT		PERIOD: 9 sonant Tran Serves & khong Surger	somer working a	rd yes,

DATE: 1711 PERIOD: 910 TOTAL NO. OF CLASS 3 & UNIT : 3 Empilse voltage Generation - Marso correction -> Tropping and control of Impulse Generation. DATE: 19 9 PERIOD: TOTAL NO. OF CLASS 39 UNIT : 1 Introduction to High holtage meansements - Methods. Series resistance ammeter DATE: 20 9 PERIOD: 9110 TOTAL NO. OF CLASS 41 UNIT: Dividers, Rensistèrer, capacitance dividers. for voltage meanments.

DATE: 21 1	PERIOD: 3	TOTAL NO. OF CLASS	42 UNIT: A
	Peak Vollmete	or memer	<i>t</i> .
#8; i). }		in A
DATE: 2219	PERIOD: 7	TOTAL NO. OF CLASS	43 UNIT: 2
	U	rits & dements	sometiple and working
DATE: 23 9	PERIOD: 9	TOTAL NO. OF CLASS	44 UNIT: A
	Capacitance holter	*	-) norting

DATE: 17/1 PERIOD: 9/10 TOTAL NO. OF CLASS 38 UNIT: 3

Date: 17/1 PERIOD: 9/10 TOTAL NO. OF CLASS 38 UNIT: 3

Date: 19/9 PERIOD: 1 TOTAL NO. OF CLASS 39 UNIT: 4

Date: 19/9 PERIOD: 1 TOTAL NO. OF CLASS 39 UNIT: 4

Date: 20/9 PERIOD: 9/10 TOTAL NO. OF CLASS 4/1 UNIT: 4

Dividers, Rentisterer, capacition ce dividers.

for voltage meanments.

DATE: 21 7	PERIOD: 3 TOTAL	NO. OF CLASS 42 UNIT	4
	Peak voltmeter is	reamement.	
	9.	XV.	7
DATE: 2219	PERIOD: 7 TOTAL	NO OF CLASS 43 UNIT	: 4
	Generating bottmet	for -> prometple	and norking.
DATE: 23 5	PERIOD: 9 TOTAL	NO. OF CLASS 44 UNIT	4
	Capacitance holtage to	0 1	Jan Jan

SUMMARY OF CLASS WORK

DATE: 26 9 PERIOD: 1 TOTAL NO. OF CLASS 45 UNIT: A

Electrostate voltmeter -> constructors
and norking.

DATE: 27 9 PERIOD: 9,10 TOTAL NO. OF CLASS 47 UNIT: A

Sphere hap measurement -> Horizontal and

Vertical Configuration.

DATE: 28 9 PERIOD: 3 TOTAL NO. OF CLASS 48 UNIT: A

High correct should measurement

DATE: 2919	PERIOD: 7	TOTAL NO. OF CLASS 49 UNIT :
'		
D:	smil Took	\- 1 h/
2)	yiraci recom	gres In HV measurements.
* 9	DIRO	
DATE: 30/9	PERIOD: 9	TOTAL NO. OF CLASS 50 UNIT: 4
	Problems	on HV meanments.
		5
DATE: 1 16	PERIOD: 3	TOTAL NO. OF CLASS 51 UNIT : 4
	Problems.	
:		Sign of HOD with Date

TOTAL NO. OF CLASS 52 UNIT: 5 DATE: 3 10 PERIOD: Standard Defining and Need for terting. TOTAL NO. OF CLASS 54 UNIT : 5 DATE: 4/10 PERIOD: 9,10 High holtage Teshing Stundards Indrand & British Standard. DATE: 510 TOTAL NO. OF CLASS 55 UNIT : 5 PERIOD: 3 Testing of Probletons -) power frequency and implie Fort

DATE: 6 /w	PERIOD: 7 TOTAL NO. OF CLASS 5% UNIT : 5
	Type test and Routine Test
E . 5	Testing of creat Breaker & Isolator
DATE: 7 10	PERIOD: 9 TOTAL NO. OF CLASS 57 UNIT: 5
1	Testing of Busings.
DATE: 8/10	PERIOD: 7 TOTAL NO. OF CLASS 58 UNIT : 5
	Testing of Isolators Sign of HOD with Date

SUMMART OF CLASS WORK			
DATE: 17/10	PERIOD: TOTAL NO. OF CLASS 59 UNIT : 5		
	Testing of Cables		
DATE: 18/10	PERIOD: 9,16 TOTAL NO. OF CLASS 6/ UNIT: 5		
	Testing of Transformer		
1	, J.		
DATE: [9/to	PERIOD: 3 TOTAL NO. OF CLASS 62 UNIT: 5		
	Insulation Co-ordination,		

DATE: 20/co	PERIOD: 7	TOTAL NO. OF CLASS 63 UNIT : 5
	Revision	- Important Overmons.
DATE: 21/10	PERIOD: 9	TOTAL NO. OF CLASS 64 UNIT: RENJOON
	Revi	isnon of all five units.
DATE:	PERIOD:	TOTAL NO. OF CLASS UNIT:
		Sign of HOD with Date

RESULT ANALYSIS

TERM - I

S.No	Description		IAE - I	IAE - II
1	Date of Exam	;	29/8/2022	13 9 22
2	Total No. of Students	:	54	54
3	No of Students Attended	:	54	52
4	No of Students Passed	;	53	50
5	Percentage of Pass	:	98.15	96.15
	e of the Staff	:	Overt	great
Name of	the Staff	:	C. VENILATESH	(VENLOTESA)
Concern	e of the HOD of the ed Department with Date stributing the answer scripts)	:	Kumars	James James

Ran	ge of Marks	0 - 22	23 - 30	31 - 38	3 6 - 4 5	41 45	16.50
No. of Students	IAE - I	1	7	27	14	41 - 45	46 - 50
	IAE - II	2	8	26	1)		5

Range of Marks	0 - 44	45 - 60	61 - 70	71 00	T	
No. of Students (IAE I & II Combined)			01-70	71 - 80	81 - 90	91 - 100

Signature of the HOD of the Concerned Department

RESULT ANALYSIS

TERM - II

			Model all	pagagizh)
S.No	Description		IAE - III	IAE - IV
1	Date of Exam	:	11/10/22	
2	Total No. of Students	:	54	
3	No of Students Attended	:	45	
4	No of Students Passed	:	38	
5	Percentage of Pass	:	84.4.1.	
Signature	Signature of the Staff		Der	
Name of	the Staff	·	C. VENLOSESTS	•
Concerne	of the HOD of the d Department with Date tributing the answer scripts)	:	latur 2	

		0-44	45-60	61-75	76-90	91100	
Ran	ge of Marks	0 - 22	23 - 30	31 - 35	36 - 40	41 - 45	46 - 50
o. of idents	IAE - III 9	フ	16	14	7	1	
No.	IAE - IV						

Range of Marks	0 - 44	45 - 60	61 - 70	71 - 80	81 - 90	91 - 100
No. of Students (IAE III & IV Combined)						

Signature of the HOD of the

Concerned Department

RESULT ANALYSIS

MODEL EXAMINATION

1 Date of Exam : 1 11/22

2 Total No. of Students : 54

No of Students Attended : 54

4 No of Students Passed : 42

5 Percentage of Pass : 88-8-/

RESULT ANALYSIS

Range of Marks	0 - 44	45 - 60	61 - 70	71 - 80	81 - 90	91 - 100
No. of Students	6	16	26	4	<u></u>	1

Signature of the Staff

Name of the Staff

C. verkonest kumon

Signature of the HOD of the Concerned

Department with Date

(After distributing the answer scripts)

SYLLABUS COVERAGE

Sign of HOD with Date		200	The many	all land	2/1/2	
Sign of staff with Date	- New yorkh	Oren Stalm	Mouly 1	The 2th	1/2 m	
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Started on	18/1/22	20/8/22	69/22	19/5/m	3/10/2	
Unit No.	_	2	M	t	7	

REMARKS

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You Choose, We Do It

St. JOSEPH'S COLLEGE OF ENGINEERING (An Autonomous Institution)

St. Joseph's Group of Institutions Jeppiaar Educational Trust

OMR, Chennal - 119



MODEL EXAM III - November - 2022

Subject : High Voltage Engineering

Branch: EEE

DURATION: 3 hours

Code : EE8701

Sem: VII

MAX MARKS: 100

PART - A (10 X 2 = 20 Marks)

1.	What is back flashover?			
	The state of the s	(2)	BL1, BL2	C401.1
2.	What are the Protective devices used to protect power system equipments against lightning?	(2)	BL1, BL2	C401.1
3.	What do you mean by 'Intrinsic strength' of a solid dielectric?	(2)	BL1, BL2	C401.2
4.	What are the factors which affect the breakdown in gaseous dielectrics?	(2)	BL1, BL2	C401.2
5.	What are the disadvantages of half wave rectifier circuit?	(2)	BL1, BL2	C401.3
6.	Give some merits of vande Graff generator.	(2)	BL1, BL2	C401.3
7.	Mention the techniques used in impulse current measurements.	(2)	BL1, BL2	C401.4
8.	List some advantages of Faraday generator.	(2)	BL1, BL2	C401.4
9.	What is the necessity of high voltage testing?	(2)	BL1, BL2	
10.	What is meant by standards of testing?	(2)	BL1, BL2	
11.a	PART - B (5 X 13 = 65 Marks) What are the mechanisms by which lightning strokes develop and induce over voltages on overhead power lines? Give the mathematical models for lightning discharges and lightning discharges and lightning discharges and lightning discharges and lightning discharges and lightning discharges and lightning discharges and lightning discharges and lightning discharges and lightning discharges are lightning discharges and lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges and lightning discharges are lightning discharges are lightning discharges are lightning discharges are lightning discharges are lightning discharges are lightning discharges are lightning discharges are lightning discharges are lightning discharges are lightning discharges are lightning discharges are lightning discharges are lightning discharges are	(13)	BL1, BL2	C401.1
	mathematical models for lightning discharges and explain them. OR			-
11.b	Discuss the step by step procedure for constructing Bewley's Lattice diagram with an example.	(13)	BL4, BL5	C401.1
12.a	Explain the phenomenon of corona discharge and breakdown mechanism in non-uniform fields.	(13)	BL1, BL2	C401.2
	OR			
12.ь	State the criteria for sparking potential and hence obtain the relation between sparking potential and (pd) values (Paschen's Law). Discuss on the nature of variations of sparking potential with (pd) values.	1	BL1, BL2	C401.2

	multiplier circuits? Explain its working with a schematic diagram when it is unloaded and loaded. Derive an expression for total voltage drop and total ripple voltage of n-stage voltage multiplier circuit and hence deduce the condition for optimum number of stages.			
	OR			
13. 1	Explain the different methods of producing switching impulses in test laboratories. Draw the typical impulse current generator circuit and explain its operation and applications.	10000	BL1, BL2	2 C401.3
14.a	Explain with neat diagram the principle of operation of an electrostatic voltmeter. Discuss its advantages and limitations for high voltage measurements.		BL1, BL2	2 C401.4
•	OR	-	-	
14.b	(i) Give the schematic arrangement of an impulse potential divider with an oscilloscope connected for measuring impulse voltages. Explain the arrangement used to minimize the errors. (ii) What are the requirements of a digital storage oscilloscope for impulse and high frequency measurement in HV test circuits?	(13)	BL1, BL2	2 C401.4
15.a	Explain in detail the various test conducted on circuit breakers and isolators.	(13)	BL1, BL	2 C401.5
15.b	OR Exploin insulation			
13.0	Explain insulation coordination in detail.	(13)	BL1, BL2	C401.5
	PART - C (1 X 15 = 15 Marks)			
16.a	A coaxial shunt is to be designed to measure an impulse current of 50 kA. If the bandwidth of the shunt is to be at least 10 MHz and if the voltage drop across the shunt should not exceed 50 V, find the ohmic value of the shunt and its dimensions. OR	(15)	BL1, BL2, BL5	C401.4
1/1	•	(15)	Dr 1	C401.2
16.b	A Cockcroft-Walton type voltage multiplier has twelve stages with capacitances, all equal to 0.05 μF. The supply transformer secondary voltage is 150 kV at a frequency of 125 Hz. If the load current to be supplied is 4.5 mA, find (a) the percentage ripple, (b) the regulation, and (c) the optimum number of stages for minimum regulation or voltage drop.	(13)	BL1, BL2, BL5	C401.3

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St. JOSEPH'S COLLEGE OF ENGINEERING (An Autonomous Institution)

St. Joseph's Group of Institutions Jeppiaar Educational Trust OMR, Chennai - 119.



MODEL EXAM II - October - 2022

Subject: High Voltage Engineering

Code: EE8701

Branch: EEE

Sem: VII

DURATION: 3 hours

MAX MARKS: 100

PART - A (10 X 2 = 20 Marks)

1.	What are the disadvantages of half wave rectifier circuit?	(2)	BL2	C401.
2.	What is a cascaded transformer?	(2)	BL2	C401.
3.	Give any two methods of switching surge generation in laboratory.	(2)	BL2	C401.
4.	What are the advantages of cascaded transformer over two winding transformer for generating high AC voltage?	(2)	BL2	C401.
5.	What are the advantages of series resonant circuit?	(2)	BL2	C401.
6.	What is the effect of nearby earthed objects on the measurements using sphere gaps?	(2)	BL2	C401.
7.	List some advantages of Faraday generator.	(2)	BL2	C401.4
8.	Give the advantages of electrostatic voltmeter.	(2)	BL2	C401.4
9.	What are the drawbacks of series resistance micro ammeter	(2)	BL2	C401.4
10.	Why are the capacitive voltage dividers preferred for high AC voltage measurements?	(2)	BL2	C401.
				1
	PART - B (5 X 13 = 65 Marks)	(13)	BL3	C401.
1.a	Explain the Cock croft -Walton voltage multiplier circuit with a schematic diagram when it is unloaded and loaded. Derive an expression for total voltage drop and total ripple voltage of n-stage voltage multiplier circuit and hence deduce the condition for		BL3	C401
1.a	Explain the Cock croft -Walton voltage multiplier circuit with a schematic diagram when it is unloaded and loaded. Derive an expression for total voltage drop and total ripple voltage of n-stage voltage multiplier circuit and hence deduce the condition for optimum number of stages. OR			
1.a	Explain the Cock croft -Walton voltage multiplier circuit with a schematic diagram when it is unloaded and loaded. Derive an expression for total voltage drop and total ripple voltage of n-stage voltage multiplier circuit and hence deduce the condition for optimum number of stages.		BL3	C401.3

explain the different methods of producing switching impulses in	(1	3)	BLZ	C401
test laboratories. Draw the typical impulse current generator circuit	t			
and explain its operation and applications.				
'xplain tripping and control of impulse generators with Trigatron	(1	3)	BL2	C40
and augements. How are the wavefront and wavefail time				
controlled in impulse generator circuits?				-
OR	+			
What is CVT? Explain how CVT can be used for high voltage ac	(1	3)	BL2	C401
	1			
- serior the construction, principle of operation of a Congretion	(1	3)	BL2	C401
	+	-		
	(1:	2)	Dra	C401
voltages. What are the parameters and factors that in Grand and	(1.	(د	BLZ	C401
voltage measurement?				
	1			
current measurements.	(1.	3)	BL2	C401.
OR	-	1		
.(i) Write short notes on Mixed R-C potential dividers.	(1	3)	BL2	C401
(ii) Explain the operation of Peak Reading Voltmeters for impulse		,		Cior
voltages.				
	+	-		-
	1	- 1		
PART - C $(1 \times 15 = 15 \text{ Marks})$				
	(15) 1	BL5	C401.4
PART - C (1 X 15 = 15 Marks) A six stage impulse generator designed to generate the standard waveform (1.2/50 μ s) has a per stage capacitance of 0.06 μ F to be	(15) 1	BL5	C401.4
A six stage impulse generator designed to generate the standard	(15)) 1	BL5	C401.4
A six stage impulse generator designed to generate the standard waveform (1.2/50 μ s) has a per stage capacitance of 0.06 μ F to be	(15)) 1	BL5	C401.4
A six stage impulse generator designed to generate the standard waveform (1.2/50 μ s) has a per stage capacitance of 0.06 μ F to be used to test transformers with an equivalent winding to earth	(15)) 1	BL5	C401.4
A six stage impulse generator designed to generate the standard waveform (1.2/50 μ s) has a per stage capacitance of 0.06 μ F to be used to test transformers with an equivalent winding to earth capacitance of 1nF. A peak output voltage of 550kV is required for	(15)) / 1	BL5	C401.4
A six stage impulse generator designed to generate the standard waveform (1.2/50 μ s) has a per stage capacitance of 0.06 μ F to be used to test transformers with an equivalent winding to earth capacitance of 1nF. A peak output voltage of 550kV is required for testing the transformer. The wavefront time is to be defined based	(15)		BL5	C401.4
A six stage impulse generator designed to generate the standard waveform (1.2/50 μ s) has a per stage capacitance of 0.06 μ F to be used to test transformers with an equivalent winding to earth capacitance of 1nF. A peak output voltage of 550kV is required for testing the transformer. The wavefront time is to be defined based on 30% and 90% values. With the aid of appropriate calculations	(15)) 1	BL5	C401.4
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A six stage impulse generator designed to generate the standard waveform (1.2/50 μ s) has a per stage capacitance of 0.06 μ F to be used to test transformers with an equivalent winding to earth capacitance of 1nF. A peak output voltage of 550kV is required for testing the transformer. The wavefront time is to be defined based on 30% and 90% values. With the aid of appropriate calculations select the values of the resistive elements in the circuit to produce the required waveform. State any assumptions made.				C401.4
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St. JOSEPH'S COLLEGE OF ENGINEERING An Autonomous Institution)

St. Jo ph's Group of Institutions J piaar Educational Trust OMR, Chennai - 119.



INTERNA ASSESSMENT EXAM II - September - 2022

Subject: High Voltage Engineering

Branch: EEE

DURATION: 1 hour 30 Minutes

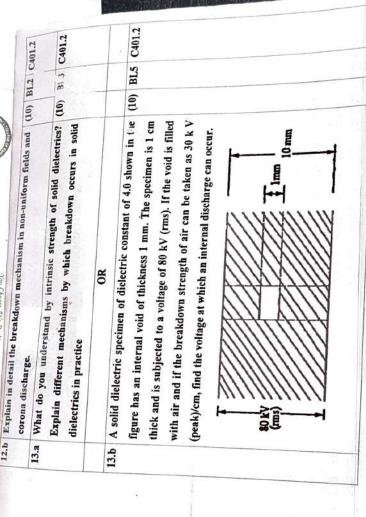
Code : EE87

Sem: VII

MAX MARKS: 50

PART - A (10 X 2 = 20 Marks)

1.	What is a Townsend's first ionization coefficient?	(2)	BL	2 C401.2
2.	State Paschen's law.	(2)	BL	2 C401.2
3.	Define treeing and tracking.	(2)	BL2	2 C401.2
4.	What is meant by corona discharges?	(2)	BL2	C401.2
5.	What is meant by "Penning effect"?	(2)	BL2	C401.2
6.	What is the Townsend's condition for breakdown?	(2)	BL2	
7.	What do you mean by tracking index?	(2)	BL2	C401.2
8.	What is ionization by collision?	(2)	BL2	C401.2
9.	List the various properties of composite dielectrics.	(2)	BL2	C401.2
10.	Mention the gases used as the insulating medium in electrical apparatus?	(2)	BL5	C401.2
	PART - B (3 X 10 = 30 Marks)	/10	DI	2 (401.2
11.a	(i)What is meant by Electro negative gases? Why is the break down strength higher in these gases compared to that in other gases? (ii)Explain the streamer theory of break down in air at atmospheric) BL	2 C401.2
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	(i)What is meant by Electro negative gases? Why is the break down strength higher in these gases compared to that in other gases? (ii)Explain the streamer theory of break down in air at atmospheric pressure. OR From the fundamental principles, derive Townsend's criteria for the	2)) BL	.2 C401.2
11.a 11.b	(i)What is meant by Electro negative gases? Why is the break down strength higher in these gases compared to that in other gases? (ii)Explain the streamer theory of break down in air at atmospheric pressure.	2)) BL	.2 C401.2



St. JOSEPH'S COLLEGE OF ENGINEERING (An Autonomous Institution)

St. Joseph's Group of Institutions
Jeppiaar Educational Trust
OMR, Chennal - 119.

INTERNAL ASSESSMENT EXAM I - August - 2022 Code : EE8701

Sem : VII

DURATION: 1 hour 30 Minutes

Branch : EE

Subject: High Voltage Engineering

MAX MARKS: 50

PART - A (10 X 2 = 20 Marks)

		11.a					10.	9.	00		7.	6.	, in	4.		2.		7
17-C-)Barra Port Port Reme	clouds.	n Wilson and Simpson's theory of charge formation in	PART - B (3 X 10 = 30 Marks)	voltage build at the junction	of 400 kV travels along the line to the junction point, find the	cable of surge impedance of 50 ohms at the other end, if the surge		+	mation in clouds.		What are the Protective devices used to protect power system (Define Isokeraunic level.	State the parameters and the characteristics of lightning strokes.	What is meant by Bewley's Lattice diagram?	Define induced stroke.	Define Lightning phenomenon.		What are the different types of over voltages? Mention the internal
		(10)					(2)	9 3	3 6	9	3		-	-	(2)	3	1	(2)
		PL2	2					RIS	BI 2	RI 2	BL2		-	BL2	BL2	BL2		BL2
		(401.1	261						-	C401.1	7	C401.1	C401.1	C401.1	C401.1	C401.1		BL2 C401.1

11.2

1

_	induce over voltages on Overhead power lines?		BL2	C401.1
12.a	Explain with suitable figures the principles and functioning of (a) Expulsion gaps, (b) Protector tubes along with its advantages and disadvantages.	(10)	BL3	C401.1
	OR			
12.Ь	What are the causes for switching and power frequency over voltages? How are they controlled in power system?	(10)	BL2	C401.1
13.a	underground cable of industance 0.100			
	capacitance 0.3 μF/km is connected to an overhead line having an inductance of 1.26 mH/km and capacitance of 0.009 μF/km. Calculate the transmitted and reflected voltage and current waves at the junction, if a surge of 200 kV travels to the junction, (i) along the cable, and (ii) along the overhead line.		BL5	C401.1
	OD	-		
	i)Describe the various steps to draw the Bewley-Lattice diagram of successive reflections.) BL	5 C401.
1	ii) A long transmission line is energized by a unit step voltage 1.0 V at the sending end and is open circuited at the receiving end. Construct the Bewley's lattice diagram and obtain the value of the voltage at the receiving end after a long time. Take the attenuation factor $\alpha=0.7$			