TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 5 for UEE501 (Group2)

	Average Score	WEIGHT
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	3.12	5
CLO1 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.13	5
CLO1 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	3.20	5
CLO1 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	3.10	5
CLO1 *(READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)*	3.11	5
CLO1 *(READ & FILL VALUE FROM CLO6 SHEET CELL P14-->)*		
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P14-->)*		
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)*		
Weighted average score	3.13	

<--TO BE FILLED BY COURSE COORDINATOR

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 5 for UEE501 (Group 2)

	Average Score	WEIGHT
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)*	3.10	5
CLO1 *(READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)*	3.21	5
CLO1 *(READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)*	3.00	5
CLO1 *(READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)*	2.89	5
CLO1 *(READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)*	3.00	5
CLO1 *(READ & FILL VALUE FROM CLO6 SHEET CELL P25-->)*		
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P25-->)*		
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)*		
Weighted average score	3.04	

<--TO BE FILLED BY COURSE COORDINATOR

TABLE 6: Overall weighted average score of course UEE501 (Group 2)

Assessment tools	Average weighted score	Assessment tool Weight
Weighted average student class performance	3.13	5
Weighted average student course survey	3.04	5

The overall score for attainment of CLO's in UEE501 is thus **3.086** on a scale of 1 to 5.

UEE501-GENERALIZED THEORY OF ELECTRICAL MACHINES

CLO 1: Express the revolving field and reference frame theory

Tool used:EST question no. 2(c)

Obtain identical transformations for current and votages froma rotating balanced 3-phase (a,b,c) winding to sataionary 2-phase (d,q) winding)

S.No.	Rollno.	Name	EST Q. 2 c) (15Marks)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								DIRECT MESUREMENT AVERAGE SCORE
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101304051	Kritika Singla	2	1				14	4	9	5	16	48	
2	101304061	Nazuk Aggarwal	1.5	1	Range of marks	LIMIT	Score							
3	101304063	Nishtha Raheja	0	0	>10 UP TO 15	10	5							
4	101304064	Paras Bawa	0	0	>7 UP TO 10	7	4	1%	2%	3%	4%	5%	CHECK	
5	101304065	Parth Ahuja	11	5	> 4 UP TO 7	4	3	29.2	8.3	18.8	10.4	33.3	100.0	3.10
6	101304066	Parushi	2	1	>2 UP TO 4	2	2							
7	101304068	Piyush Jindal	4.5	3	>=1 UP TO 2	1	1							
8	101304069	Piyush Tripathi	1	1										
9	101304070	Prachi Garg	1.5	1										
10	101304071	Prashant Kataria	1	1										

Toatl number of students = 48

For marks detail of all students refer to course file.

CLO 2: Develop mathematical model of three-phase AC machines and parameters in different reference frame

Tool used: EST

Q. 2 b) Explain with mathematical expressions in Kron's primitive machine that electrical power input is equivalent to summation of power lost, power stored and mechanical power output.

S.No.	Rollno.	Name	EST Q. 2 b) 10 Marks	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101304051	Kritika Singla	6	4	Range of marks	LIMIT	Score							
2	101304061	Nazuk Aggarwal	3.5	2				11	9	1	15	11	47	
3	101304063	Nishtha Raheja	1.5	1	>6 UP TO 10	6	5							DIRECT MESUREMENT AVERAGE SCORE
4	101304064	Paras Bawa	0	0	>4.5 UP TO 6	4.5	4	1%	2%	3%	4%	5%	CHECK	
5	101304065	Parth Ahuja	6	4	> 3.5 UP TO 4.5	3.5	3	23.4	19.1	2.1	31.9	23.4	100.0	3.13
6	101304066	Parushi	5.5	4	>2 UP TO 3.5	2	2							
7	101304068	Piyush Jindal	5.5	4	>=1 UP TO 2	1	1							
8	101304069	Piyush Tripathi	0	0		0								
9	101304070	Prachi Garg	5.5	4	Toatl number of students = 47									
10	101304071	Prashant Kataria	0	0	For marks detail of all students refer to course file.									

UEE501-GENERALIZED THEORY OF ELECTRICAL MACHINES

CLO 3: Simulate the transient performance of three phase AC machines in different reference frames.

Tool used: EST

Q. 5 a) and b)

(Q 5 a) A separately excited DC motor is running at steady state speed with (8) moment of inertia J_1. How armature current and rotor speed changes when moment of inertia is suddenly changed to J_2? Justify your answers by driving suitable expressions.

b) A 220 V DC series motor, running at 140 radians per second takes 15 A (7) from supply mains. The armature and field resistance are $r_a + r_f = 1\ \Omega$. Total $J = 5\ kgm^2$ and $D = 0.015$ Nm-sec/rad.

   i) Calculate the rotational mutual inductance M_d and the load torque.

   ii) If the supply voltage is suddenly reduced to 205 V with the load torque remaining constant, find speed as a function of time.

S.No.	Rollno.	Name	Q. 5 Marks 15	SCORE (15)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
					SCALE TO BE DEFINED BY COORDINATOR			1S	2S	3S	4S	5S	TOTAL	
1	101304051	Kritika Singla	9	4										
2	101304061	Nazuk Aggarwal	13	5	Range of marks	LIMIT	Score	8	1	12	13	6	40	
3	101304063	Nishtha Raheja	6.5	4	>9 UP TO 15	9	5							DIRECT MESUREMENT AVERAGE SCORE
4	101304064	Paras Bawa	1.5	1	>5.5 UP TO 9	5.5	4	1%	2%	3%	4%	5%	CHECK	
5	101304065	Parth Ahuja	4	3	>2.5 UP TO 5.5	2.5	3	20.0	2.5	30.0	32.5	15.0	100.0	3.20
6	101304066	Parushi	11	5	>2 UP TO 2.5	2	2							
7	101304068	Piyush Jindal	0	0	>=1 UP TO 2	1	1							
8	101304069	Piyush Tripathi	0	0			0							
9	101304070	Prachi Garg	3.5	3					Toatl number of students = 40						
10	101304071	Prashant Kataria	0	0					For marks detail of all students refer to course file.						

8	101304069	Piyush Tripathi	11.5	2
9	101304070	Prachi Garg	18	3
10	101304071	Prashant Kataria	0	0

0

Toatl number of students = 63

For marks detail of all students refer to course file.

CLO 4: Investigate the transient performance of different DC machines

Tool used: EST

Q. 1 a) and b), Q. 2 a), Q. 3 a) and b)

Q1 a) Write down the voltage equations for the mathematical model of a *(10)* polyphase induction machine and hence obtain an expression for the steady-state torque when balanced polyphase supply is impressed on the stator.

Q 2 a) Sketch a typical torque-speed characteristic of a polyphase induction under *(8)* rated voltage and frequency conditions. On the same diagram sketch how this torque-speed characteristic gets modified with the following changes:

    i)   With rated supply frequency when supply voltage is increased/ decreased

    ii) With rated supply voltage when supply frequency is increased/ decreased

Q 3 a) A 44 MVA, 10.5 kV, 50 Hz, star connected three phase salient pole *(10)* synchronous generator has $X_d = 1.83\ \Omega$ and $X_q = 1.21\ \Omega$. It delivers rated load at 0.8 lagging power factor. The armature resistance is negligible.

Determine the power developed by generator and percentage voltage regulation.

    b) Derive electromechanical equation for synchronous machine dynamics *(15)* and do linearized analysis of electromechanical equation if damping ratio lies between 0 and 1. Also prove that the natural frequency of oscillations for a cylindrical rotor synchronous machine operating at no load, is given by:

$$t_n = 9.10n \sqrt{\frac{J}{fl_a V_t}} \ . \text{ where the symbols have their usual meanings.}$$

S.No.	Rollno.	Name	EST Q.1, Q.2 a), Q.3 Marks 50	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1 S	2 S	3 S	4 S	5 S	TOTAL	
1	101304051	Kritika Singla	31	5	Range of marks	LIMIT	Score							
2	101304061	Nazuk Aggarwal	22.5	4				5	14	21	16	7	63	
3	101304063	Nishtha Raheja	23.5	4	>30 UP TO 50	30	5							
4	101304064	Paras Bawa	21	3	>22 UP TO 30	22	4	1%	2%	3%	4%	5%	CHECK	DIRECT MESUREMENT AVERAGE SCORE
5	101304065	Parth Ahuja	10.5	2	> 12 UP TO 22	12	3	7.9	22.2	33.3	25.4	11.1	100.0	3.10
6	101304066	Parushi	23.5	4	>5 UP TO 12	5	2							
7	101304068	Piyush Jindal	20	3	>=1 UP TO 7	1	1							

CLO 3: EST_Select special purpose small machines for different applications

Tool used:

Q. 4 a) and b)

Q 4 a) Explain construction and working of motor which is most suitable for (5) electric clocks and other timing devices.

b) Explain the construction and working of three phase 6/4 switched (5) reluctance motor.

S.No.	Rollno.	Name	EST Q. 4 Marks 10	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101304051	Kritika Singla	9.5	5										
2	101304061	Nazuk Aggarwal	8.5	5	Range of marks	LIMIT	Score	8	12	11	10	12	53	
3	101304063	Nishtha Raheja	3.5	2	>7 UP TO 10	7	5							DIRECT MESUREMENT AVERAGE SCORE
4	101304064	Paras Bawa	6	4	>5.5 UP TO 7	5.5	4	1%	2%	3%	4%	5%	CHECK	
5	101304065	Parth Ahuja	9	5	>3.5 UP TO 5.5	3.5	3	15.1	22.6	20.8	18.9	22.6	100.0	3.11
6	101304066	Parushi	9	5	>2 UP TO 3.5	2	2							
7	101304068	Piyush Jindal	0	0	>=1 UP TO 2	1	1							
8	101304069	Piyush Tripathi	2	1				0						
9	101304070	Prachi Garg	4	3										
10	101304071	Prashant Kataria	1	1										

Toatl number of students = 53

For marks detail of all students refer to course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 5 for UEE501 (Group1)	Average Score	WEIGHT
CLO1 (READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)	3.43	5
CLO1 (READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)	3.30	5
CLO1 (READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)	2.79	5
CLO1 (READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)	3.15	5
CLO1 (READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)	3.03	5
CLO1 (READ & FILL VALUE FROM CLO6 SHEET CELL P14-->)		
CLO1 (READ & FILL VALUE FROM CLO7 SHEET CELL P14-->)		
CLO1 (READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)		
Weighted average score	3.14	

← TO BE FILLED BY COURSE COORDINATOR

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 5 for UEE501 (Group 1)	Average Score	WEIGHT
CLO1 (READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)	2.72	5
CLO1 (READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)	2.92	5
CLO1 (READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)	2.78	5
CLO1 (READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)	2.72	5
CLO1 (READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)	2.83	5
CLO1 (READ & FILL VALUE FROM CLO6 SHEET CELL P25-->)		
CLO1 (READ & FILL VALUE FROM CLO7 SHEET CELL P25-->)		
CLO1 (READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)		
Weighted average score	2.79	

← TO BE FILLED BY COURSE COORDINATOR

TABLE 6:Overall weighted average score of course UEE501 (Group 1)		
Assessment tools	Average weighted score	Assessment tool Weight
Weighted average student class performance	3.14	5
Weighted average student course survey	2.79	5

The overall score for attainment of CLO's in UEE501 is thus **2.967** on a scale of 1 to 5.

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CLO 1: Express the revolving field and reference frame theory

Tool used: EST question no. 2(c)

Obtain identical transformations for current and votages froma rotating balanced 3-phase (a,b,c) winding to satalonary 2-phase (d,q) winding

S.No.	Rollno.	Name	EST Q. 2 c) (15Marks)	SCORE (1-5)	SCALE TO BE DEFINED BY COORDINATOR			DIRECT MESUREMENT (USING STUDENT PERFORMNACE)						
					Range of marks	LIMIT	Score	1 S	2 S	3 S	4 S	5 S	TOTAL	
1	101304001	Aarushi Bajaj	7.0	3				5	10	4	11	14	44	
2	101304002	Abhey Arora	0.0	0										DIRECT MESUREMENT AVERAGE SCORE
3	101304003	Abhishek Taksali	10.5	5	>10 UP TO 15	10	5							
4	101304004	Adhikaansh Tayal		0	>7 UP TO 10	7	4	1%	2%	3%	4%	5%	CHECK	
5	101304005	Aditi Narang	4.0	2	> 4 UP TO 7	4	3	11.4	22.7	9.1	25.0	31.8	100.0	3.43
6	101304006	Aditya	11.0	5	>2 UP TO 4	2	2							
7	101304007	Akshat	9.0	4	>=1 UP TO 2	1	1							
8	101304008	Akshay Kapoor	7.5	4										
9	101304009	Akshay Kumar	1.0	1										
10	101304010	Akshay Kumar Chaudhary	0.0	0										

Toatl number of students = 44

For marks detail of all students refer to course file.

CLO 2: Develop mathematical model of three phase a.c. Machines and transform in different reference frame.

Tool used: EST

Q. 2 b) Explain with mathematical expressions in Kron's primitive machine that electrical power input is equivalent to summation of power lost, power stored and mechanical power output.

S.No.	Rollno.	Name	EST Q. 2 b) 10 Marks	SCORE (1-5)	SCALE TO BE DEFINED BY COORDINATOR			DIRECT MESUREMENT (USING STUDENT PERFORMNACE)						
					Range of marks	LIMIT	Score	1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101304001	Aarushi Bajaj	3.5	2										
2	101304002	Abhey Arora	3.5	2				8	8	2	8	14	40	
3	101304003	Abhishek Taksali	6.0	4	>6 UP TO 10	6	5							DIRECT MESUREMENT AVERAGE SCORE
4	101304004	Adhikaansh Tayal		0	>4.5 UP TO 6	4.5	4	1%	2%	3%	4%	5%	CHECK	
5	101304005	Aditi Narang	6.0	4	> 3.5 UP TO 4.5	3.5	3	20.0	20.0	5.0	20.0	35.0	100.0	3.30
6	101304006	Aditya	8.0	5	>2 UP TO 3.5	2	2							
7	101304007	Akshat	7.0	5	>=1 UP TO 2	1	1							
8	101304008	Akshay Kapoor	9.0	5				0						
9	101304009	Akshay Kumar	7.0	5				Toatl number of students = 44						
10	101304010	Akshay Kumar Chaudhary	0.0	0				For marks detail of all students refer to course file.						

Tool used: EST

Q. 5 a) and b)

Q 5 a) A separately excited DC motor is running at steady state speed with (8) moment of inertia J_1. How armature current and rotor speed changes when moment of inertia is suddenly changed to J_2? Justify your answers by driving suitable expressions.

b) A 220 V DC series motor. running at 140 radians per second takes 15 A (7) from supply mains. The armature and field resistance are $r_a + r_f = 1\ \Omega$. Total $J = 5\ kgm^2$ and $D = 0.015$ Nm-sec/rad.

    i) Calculate the rotational mutual inductance M_d and the load torque.

    ii) If the supply voltage is suddenly reduced to 205 V with the load torque remaining constant. find speed as a function of time.

S.No.	Rollno.	Name	Q. 5 Marks 15	SCORE (15)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101304001	Aarushi Bajaj	6.0	4										
2	101304002	Abhey Arora	9.0	4	Range of marks	LIMIT	Score	11	3	12	9	4	39	
3	101304003	Abhishek Taksali	0.0	0	>9 UP TO 15	9	5							DIRECT MESUREMENT AVERAGE SCORE
4	101304004	Adhikaansh Tayal		0	>5.5 UP TO 9	5.5	4	1%	2%	3%	4%	5%	CHECK	
5	101304005	Aditi Narang	7.0	4	>2.5 UP TO 5.5	2.5	3	28.2	7.7	30.8	23.1	10.3	100.0	2.79
6	101304006	Aditya	4.0	3	>2 UP TO 2.5	2	2							
7	101304007	Akshat	0.0	0	>=1 UP TO 2	1	1							
8	101304008	Akshay Kapoor	2.0	1			0							
9	101304009	Akshay Kumar	1.0	1		Toatl number of students = 39								
10	101304010	Akshay Kumar Chaudhary	0.0	0		For marks detail of all students refer to course file.								

CLO 4: Investigate the transient performance of different of machines

Tool used: EST

Q. 1 a) and b), Q. 2 a), Q. 3 a) and b)

Q 1 a) Write down the voltage equations for the mathematical model of a *(10)* polyphase induction machine and hence obtain an expression for the steady-state torque when balanced polyphase supply is impressed on the stator.

Q 2 a) Sketch a typical torque-speed characteristic of a polyphase induction under *(8)* rated voltage and frequency conditions. On the same diagram sketch how this torque-speed characteristic gets modified with the following changes:

    i)   With rated supply frequency when supply voltage is increased/ decreased

    ii)   With rated supply voltage when supply frequency is increased/ decreased

Q 3 a) A 44 MVA, 10.5 kV, 50 Hz, star connected three phase salient pole *(10)* synchronous generator has $X_d = 1.83 \, \Omega$ and $X_q = 1.21 \, \Omega$. It delivers rated load at 0.8 lagging power factor. The armature resistance is negligible.

    Determine the power developed by generator and percentage voltage regulation.

    b) Derive electromechanical equation for synchronous machine dynamics *(15)* and do linearized analysis of electromechanical equation if damping ratio lies between 0 and 1. Also prove that the natural frequency of oscillations for a cylindrical rotor synchronous machine operating at no load, is given by:

$$t_o = 9.10 n \sqrt{\frac{J}{\Pi_u V_t}}$$, where the symbols have their usual meanings.

S.No.	Rollno.	Name	EST Q.1, Q.2 a), Q.3 Marks 50	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101304001	Aarushi Bajaj	29.5	4	Range of marks	LIMIT	Score	9	6	21	17	8	61	
2	101304002	Abhey Arora	25.5	4										
3	101304003	Abhishek Taksali	6.0	2	>30 UP TO 50	30	5							
4	101304004	Adhikaansh Tayal	0.0	0	>22 UP TO 30	22	4	1%	2%	3%	4%	5%	CHECK	DIRECT MESUREMENT AVERAGE SCORE
5	101304005	Aditi Narang	28.0	4	> 12 UP TO 22	12	3	14.8	9.8	34.4	27.9	13.1	100.0	3.15
6	101304006	Aditya	19.0	3	>5 UP TO 12	5	2							
7	101304007	Akshat	19.5	3	>=1 UP TO 7	1	1							

8	101304008	Akshay Kapoor	39.0	5
9	101304009	Akshay Kumar	5.5	2
10	101304010	Kumar Chaudhary	6.0	2

0

Toatl number of students = 61

For marks detail of all students refer to course file.

CLO 5: EST Select special purpose small machines for different applications

Tool used:

Q. 4 a) and b)

Q 4 a) Explain construction and working of motor which is most suitable for *(5)* electric clocks and other timing devices.

b) Explain the construction and working of three phase 6/4 switched *(5)* reluctance motor.

S.No.	Rollno.	Name	EST Q. 4 Marks 10	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101304001	Aarushi Bajaj	4.0	3										
2	101304002	Abhey Arora	3.0	2	Range of marks	LIMIT	Score	9	12	21	4	14	60	
3	101304003	Abhishek Taksali	4.0	3	>7 UP TO 10	7	5							DIRECT MESUREMENT AVERAGE SCORE
4	101304004	Adhikaansh Tayal		0	>5.5 UP TO 7	5.5	4	1%	2%	3%	4%	5%	CHECK	
5	101304005	Aditi Narang	4.0	3	>3.5 UP TO 5.5	3.5	3	15.0	20.0	35.0	6.7	23.3	100.0	3.03
6	101304006	Aditya	5.0	3	>2 UP TO 3.5	2	2							
7	101304007	Akshat	7.5	5	>=1 UP TO 2	1	1							
8	101304008	Akshay Kapoor	9.0	5				0						
9	101304009	Akshay Kumar	5.0	3				Toatl number of students = 60						
10	101304010	Akshay Kumar Chaudhary	4.5	3				For marks detail of all students refer to course file.						

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 5 for UEE804 - 4ELE-1,2,3		
	Average Score	**WEIGHT**
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	2.98	5
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.89	5
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	3.64	5
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	2.89	5
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)*	3.22	5
CLO1 *(READ & FILL VALUE FROM CLO6 SHEET CELL P14-->)*		
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P14-->)*		
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)*		
Weighted average score	3.32	

← TO BE FILLED BY COURSE COORDINATOR

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 5 for UEE804 - 4ELE-1,2,3		
	Average Score	**WEIGHT**
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)*	3.87	5
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)*	3.80	5
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)*	3.75	5
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)*	3.73	5
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)*	3.82	5
CLO1 *(READ & FILL VALUE FROM CLO6 SHEET CELL P25-->)*		
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P25-->)*		
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)*		
Weighted average score	3.79	

← TO BE FILLED BY COURSE COORDINATOR

TABLE 6:Overall weighted average score of course UEE804 - 4ELE-1,2,3		
Assessment tools	**Average weighted**	**Assessment tool**
Weighted average student class performance	3.32	5
Weighted average student course survey	3.79	5

The overall score for attainment of CLO's in UEE804 is thus [3.559] on a scale of 1 to 5.

CLO 1: Decide the scheduling of thermal units and hydro-thermal units for overall economy.

Tool used: EST (Q. 1)

Q. 1. A two-plant system having a steam plant near the load centre and a hydro-plant at a remote location is shown in Fig. 1. The load is 500MW for 16hr a day and 350MW, for 8hr a day.

The characteristics of the units are

$C_1 = 120 + 45P_{GT} + 0.075P_{GT}^2$ ₹/hr.

$w_2 = 0.6P_{GH} + 0.00283P_{GH}^2$ m³/s.

Loss coefficient, $B_{22} = 0.001$ per MW. Find the generation schedule, daily water used by the hydro-plant and daily operating cost of the thermal plant for $\gamma_j = 85.5$ ₹/m³-hr.

S.No.	Rollno.	Name	EST-Q.1-20 Marks	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	1.01E+08	Aarushi Bajaj	7	3	Range of marks	LIMIT	Score	2	18	14	9	8	51	
2	1.01E+08	Abhey Arora	12	5	>11.25 UP TO 15	11.25	5							DIRECT MESUREMENT AVERAGE SCORE
3	1.01E+08	Aditi Narang	10	4	>9 UP TO 11.25	9	4	1%	2%	3%	4%	5%	CHECK	
4	1.01E+08	Aditya	11	4	> 6 UP TO 9	6	3	3.9	35.3	27.5	17.6	15.7	100.0	3.06
5	1.01E+08	Akshat	11	4	>3 UP TO 6	3	2							
6	1.01E+08	Akshay Kapoor	7	3	>=0 UP TO 3	0	1							
7	1.01E+08	Akshay Kumar	4	2										
8	1.01E+08	Akshay Kumar Chaudhary	4	2										
9	1.01E+08	Akshay Sharma	10	4										
10	1.01E+08	Amandeep Kaur	5	2										

Total number of students = 51

For marks detail of all students refer to course file.

CLO 2: Develop small scale model of alternator, excitation and governing systems.

Tool used: EST

Q. 2 Explain the simplified model of synchronous machine. Discuss the methods of providing excitation systems in generator with the help of suitable diagrams.

S.No.	Rollno.	Name	EST-Q.2-15 Marks	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101254015	Kuldeep Singh Deora	5	3	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL
2	101304001	Aarushi Bajaj	14	5	Range of marks	LIMIT	Score	11	1	4	15	32	63
3	101304002	Abhey Arora	0	1	>10UP TO 15	10	5						DIRECT MESUREMENT AVERAGE SCORE
4	101304003	Abhishek Taksali	2	1	>6 UP TO 10	6	4	1%	2%	3%	4%	5%	CHECK
5	101304004	Adhikaansh Tayal	0	1	> 4 UP TO 6	4	3	17.5	1.6	6.3	23.8	50.8	100.0	3.89
6	101304005	Aditi Narang	13	5	>2UP TO 4	2	2						
7	101304006	Aditya	10	4	>=0 UP TO 2	0	1						
8	101304007	Akshat	12	5									
9	101304008	Akshay Kapoor	13	5									
10	101304009	Akshay Kumar	11	5									

Total number of students = 63

For marks detail of all students refer to course file.

UEE804-OPERATION AND CONTROL OF POWER SYSTEMS

CLO 3: Design and apply control for frequency and voltage of power system represented by single or

Tool used: EST

Q. 3 (a). Two interconnected area-1 and area-2 have the capacity of 2000 and 500MW respectively. The incremental regulation and damping torque coefficient for each area on its own base are 0.2pu and 0.8pu respectively. Find the steady-state change in system frequency from a nominal frequency of 50Hz and the change in steady-state tie-line power following a 750MW change in the load of area-1.

Q. 3 (b). Draw the block diagram for a two-area LFC and explain the concept of each block.

S.No.	Rollno.	Name	EST-Q.3 (a,b)-20 Marks	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								DIRECT MESUREMENT AVERAGE SCORE
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
1	101254015	Kuldeep Singh Deora	10	4				3	10	8	18	17	56	
2	101304001	Aarushi Bajaj	5	3	Range of marks	LIMIT	Score							
3	101304002	Abhey Arora	8	4	>10 UP TO 20	10	5							
4	101304003	Abhishek Taksali	2	1	>6 UP TO 10	6	4	1%	2%	3%	4%	5%	CHECK	
5	101304004	Adhikaansh Tayal	0	0	> 4 UP TO 6	4	3	5.4	17.9	14.3	32.1	30.4	100.0	3.64
6	101304005	Aditi Narang	5	3	>2UP TO 4	2	2							
7	101304006	Aditya	6	3	>=0 UP TO 2	2	1							
8	101304007	Akshat	1	0										
9	101304008	Akshay Kapoor	11	5										
10	101304009	Akshay Kumar	4	2										

0

Total number of students = 56

For marks detail of all students refer to course file.

UEE804-OPERATION AND CONTROL OF POWER SYSTEMS

Tool used: EST

Q. 4 (a). Discuss the contingency analysis procedure using flow-chart to enhance the power system security.

Q. 4 (b). Explain and deduce the generation shift and line outage sensitivity factor based on DC load flow.

S.No.	Rollno.	Name	EST-Q.4 (a,b)-15 Marks	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	101254015	Kuldeep Singh Deora	4	3	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
2	101304001	Aarushi Bajaj	11	5	Range of marks	LIMIT	Score	16	3	29	2	13	63	
3	101304002	Abhey Arora	0	1	>5 UP TO 15	5	5							DIRECT MESUREMENT AVERAGE SCORE
4	101304003	Abhishek Taksali	4	3	>4 UP TO 5	4	4	1%	2%	3%	4%	5%	CHECK	
5	101304004	Adhikaansh Tayal	0	1	> 2 UP TO 4	2	3	25.4	4.8	46.0	3.2	20.6	100.0	2.89
6	101304005	Aditi Narang	4	3	>1 UP TO 2	1	2							
7	101304006	Aditya	4	3	UP TO1	0	1							
8	101304007	Akshat	4	3										
9	101304008	Akshay Kapoor	3	3										
10	101304009	Akshay Kumar	4	3										

Total number of students = 63

For marks detail of all students refer to course file.

UEE804-OPERATION AND CONTROL OF POWER SYSTEMS

CLO 5: Computation of small scale and voltage stability.

Tool used: EST

Q. 5 (a). Why is voltage control required in power systems? Mention the different methods of voltage control employed in power system. Explain one method of voltage control in detail giving a neat diagram.

Q. 5 (b). A three-phase feeder having a resistance of 3Ω and a reactance of 10Ω supplies a load of 2MW at 0.85 p.f. lag. The receiving-end voltage is maintained at 11kV by means of a static condenser drawing 2.1MVAr from the line (Fig. 2). Calculate the sending-end

Q. 5 (c). The right eigenvector modal matrix is given as

Obtain the participation matrix.

S.No.	Rollno.	Name	EST-Q.5 (a,b,c)-25 Marks	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)										
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL		
1	101254015	Kuldeep Singh Deora	7	3	Range of marks	LIMIT	Score	10	4	21	18	10	63		
2	101304001	Aarushi Bajaj	13	5										DIRECT MESUREMENT AVERAGE SCORE	
3	101304002	Abhey Arora	6	3	>11 UP TO 25	11	5								
4	101304003	Abhishek Taksali	2	1	>7 UP TO 11	7	4	1%	2%	3%	4%	5%	CHECK		
5	101304004	Adhikaansh Tayal	0	1	> 4 UP TO 7	4	3	15.9	6.3	33.3	28.6	15.9	100.0	3.22	
6	101304005	Aditi Narang	15	5	>2 UP TO 4	2	2								
7	101304006	Aditya	6	3	UP TO 2	0	1								
8	101304007	Akshat	2	1				0							
9	101304008	Akshay Kapoor	14	5											
10	101304009	Akshay Kumar	6	3											

Total number of students = 63

For marks detail of all students refer to course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for UEE603		
	Average Score	WEIGHT
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	3.49	5
CLO1 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.61	5
CLO1 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	3.69	5
CLO1 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	3.81	5
CLO1 *(READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)*		
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)*		
CLO1 *(READ & FILL VALUE FROM CLO9 SHEET CELL P14-->)*		
CLO1 *(READ & FILL VALUE FROM CLO10 SHEET CELL P14-->)*		
Weighted average score	3.65	

← TO BE FILLED BY COURSE COORDINATOR

TABLE 5: Weighted Average Student course survey (course portfolio) for UEE603		
	Average Score	WEIGHT
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)*	2.91	5
CLO1 *(READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)*	3.52	5
CLO1 *(READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)*	3.56	5
CLO1 *(READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)*	3.87	5
CLO1 *(READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)*		
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)*		
CLO1 *(READ & FILL VALUE FROM CLO9 SHEET CELL P25-->)*		
CLO1 *(READ & FILL VALUE FROM CLO10 SHEET CELL P25-->)*		
Weighted average score	3.47	

← TO BE FILLED BY COURSE COORDINATOR

TABLE 6:Overall weighted average score of course A		
Assessment tools	Average weighted	Assessment tool
Weighted average student class performance	3.65	5
Weighted average student course survey	3.47	5

The overall score for attainment of CLO's in UEE603 is thus   3.560   on a scale of 1 to 5.

CLO 1:Select the protection elements such as fuse, circuit breakers and relays etc. for a given configuration.

Tool used: EST Q1, Q2, Q3, Q4, Q7

Question 1:Discuss the arc phenomenon in a circuit breaker. Explain the various methods of arc extinction in a circuit breaker.

Question 2:Discuss the principle of operation of an air-blast circuit breaker. What are the advantages and disadvantages of using air as the arc quenching medium?

Question 3: Write short note on the following:

a. SF6 circuit breaker

b. Oil circuit breaker

Question 4:A 50 Hz, 7.5 kV, 3-phase alternator with earthed neutral has a reactance of 4 Ω per phase and is connected to a bus-bar through a circuit breaker. The distributed capacitance upto circuit breaker between phase and neutral is 0•01 μF. Determine

a. peak re-striking voltage across the contacts of the breaker

b. frequency of oscillations

c. the average rate of rise of re-striking voltage up to the first peak

Question 7:Describe the construction and working of a Buchholz relay.

S.No.	Rollno.	Name	Marks (48)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404062	Manjosh Singh Dhillon	42	5	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
2	101404063	Manpreet Singh Brar	33	3	Range of marks	LIMIT	Score	4	12	16	28	14	74	
3	101404064	Manvir Kaur	39	4	>40 UP TO 45	40	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404065	Mehak Bhatia	35	3	>35UP TO 40	35	4	1%	2%	3%	4%	5%	CHECK	
5	101404066	Mithilesh Kumar	26	2	> 30 UP TO 35	30	3	5.4	16.2	21.6	37.8	18.9	100.0	3.49
6	101404067	Mohit Goyal	40	4	>25 UP TO 30	25	2							
7	101404068	Mridul Marwaha	41	5	>10 UP TO 25	10	1							
8	101404069	Mudit Arora	41	5										
9	101404070	Naveen Parashar	32	3										
10	101404072	Nigam Wadhwa	38	4										

Total number of students = 74

For marks detail of all students refer course file.

CLO 2:Design the basic Earthing requirement for residential and other purposes.

Tool used: EST Q6, Q10

Question 6:A star-connected, 3-phase, 10 MVA, 6•6 kV alternator is protected by circulating current protection, the star point being earthed via a resistance r. Estimate the value of earthing resistor if 85% of the stator winding is protected against earth faults. Assume an earth fault setting of 20%. Neglect the impedance of the alternator winding.

Question 10: What is the requirement of grounding or earthing? What is resistance grounding? What are its advantages and disadvantages

S.No.	Rollno.	Name	Marks (18)	SCORE (1-5)	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	DIRECT MESUREMENT AVERAGE SCORE
					Range of marks	LIMIT	Score	21	1	5	6	41	74	
1	101404062	Manjosh Singh Dhillon	16	5										
2	101404063	Manpreet Singh Brar	17	5										
3	101404064	Manvir Kaur	17	5	>14 UP TO 18	14	5							
4	101404065	Mehak Bhatia	18	5	>12 UP TO 14	12	4	1%	2%	3%	4%	5%	CHECK	
5	101404066	Mithilesh Kumar	11	3	> 10 UP TO 12	10	3	28.4	1.4	6.8	8.1	55.4	100.0	3.61
6	101404067	Mohit Goyal	18	5	>8 UP TO 10	8	2							
7	101404068	Mridul Marwaha	17	5	>=4 UP TO 8	4	1							
8	101404069	Mudit Arora	17	5										
9	101404070	Naveen Parashar	7	1										
10	101404072	Nigam Wadhwa	15	5										

Total number oif students = 74

For marks detail of all students refer course file.

CLO 3:Select required protection measures against overcurrent, over voltage a ...

Tool used: EST Q8, Q9

Question 8: Describe distance protection scheme for the protection of transmission lines.

Question 9:Discuss the time-graded overcurrent protection for
a. Parallel feeders
b. Ring main system

S.No.	Rollno.	Name	Marks (16)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)										
					SCALE TO BE DEFINED BY COORDINATOR			1S	2S	3S	4S	5S	TOTAL		
1	101404062	Manjosh Singh Dhillon	16	5	Range of marks	LIMIT	Score	16	4	7	7	40	74		
2	101404063	Manpreet Singh Brar	13	5											
3	101404064	Manvir Kaur	16	5	>10 UP TO 14	10	5							DIRECT MESUREMENT AVERAGE SCORE	
4	101404065	Mehak Bhatia	14	5	>8 UP TO 10	8	4	1%	2%	3%	4%	5%	CHECK		
5	101404066	Mithilesh Kumar	0	1	> 6 UP TO 8	6	3	21.6	5.4	9.5	9.5	54.1	100.0	3.69	
6	101404067	Mohit Goyal	16	5	>4 UP TO 6	4	2								
7	101404068	Mridul Marwaha	16	5	>=1 UP TO 4	1	1								
8	101404069	Mudit Arora	13	5											
9	101404070	Naveen Parashar	6	2											
10	101404072	Nigam Wadhwa	8	3											

Total number of students = 74

For marks detail of all students refer course file.

CLO 4:Select suitable protection scheme for different power system equipment.

Tools used: EST Q5

Question 5: Explain with a neat diagram the application of modified Merz-Price circulating current principle for the protection of alternator.

S.No.	Rollno.	Name	Marks (10)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)										
1	101404062	Manjosh Singh Dhillon	8	4	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
2	101404063	Manpreet Singh Brar	8	4	Range of marks	LIMIT	Score	2	2	6	62	2	74	
3	101404064	Manvir Kaur	8	4	>8 UP TO 10	8	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404065	Mehak Bhatia	8	4	>6 UP TO 8	6	4	1%	2%	3%	4%	5%	CHECK	
5	101404066	Mithilesh Kumar	0	1	> 4 UP TO 6	4	3	2.7	2.7	8.1	83.8	2.7	100.0	3.81
6	101404067	Mohit Goyal	8	4	>2 UP TO 4	2	2							
7	101404068	Mridul Marwaha	8	4	>=1 UP TO 2	1	1							
8	101404069	Mudit Arora	7	4										
9	101404070	Naveen Parashar	6	3										
10	101404072	Nigam Wadhwa	8	4										

Total number of students = 74

For marks detail of all students refer course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for UEE603		
	Average Score	WEIGHT
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	3.19	5
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.57	5
CLO1 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	3.06	5
CLO1 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	3.87	5
CLO1 *(READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)*		
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)*		
CLO1 *(READ & FILL VALUE FROM CLO9 SHEET CELL P14-->)*		
CLO1 *(READ & FILL VALUE FROM CLO10 SHEET CELL P14-->)*		
Weighted average score	3.42	

<--TO BE FILLED BY COURSE COORDINATOR

TABLE 5: Weighted Average Student course survey (course portfolio) for UEE603		
	Average Score	WEIGHT
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)*	2.91	5
CLO1 *(READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)*	3.52	5
CLO1 *(READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)*	3.56	5
CLO1 *(READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)*	3.87	5
CLO1 *(READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)*		
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)*		
CLO1 *(READ & FILL VALUE FROM CLO9 SHEET CELL P25-->)*		
CLO1 *(READ & FILL VALUE FROM CLO10 SHEET CELL P25-->)*		
Weighted average score	3.47	

<--TO BE FILLED BY COURSE COORDINATOR

TABLE 6:Overall weighted average score of course A		
Assessment tools	rage weighted score	essment tool Weight
Weighted average student class performance	3.63	5
Weighted average student course survey	3.47	5

The overall score for attainment of CLO's in UEE603 is thus   3.548   on a scale of 1 to 5.

CLO 1:Select the protection elements such as fuse, circuit breakers and relays etc. for a given configuration.

Tool used:

Question 1:Discuss the arc phenomenon in a circuit breaker. Explain the various methods of arc extinction in a circuit breaker.

Question 2:Discuss the principle of operation of an air-blast circuit breaker. What are the advantages and disadvantages of using air as the arc quenching medium?

Question 3: Write short note on the following:
a. SF6 circuit breaker
b. Oil circuit breaker

Question 4:A 50 Hz, 7.5 kV, 3-phase alternator with earthed neutral has a reactance of 4 Ω per phase and is connected to a bus-bar through a circuit breaker. The distributed capacitance upto circuit breaker between phase and neutral is 0•01 μF. Determine
a. peak re-striking voltage across the contacts of the breaker
b. frequency of oscillations
c. the average rate of rise of re-striking voltage up to the first peak

Question 7:Describe the construction and working of a Buchholz relay.

S.No.	Rollno.	Name	Marks (48)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404001	Abhay Mahipal	40	4	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL
2	101404002	Abhijeet Singh Sankhla	33	3	Range of marks	LIMIT	Score	7	10	20	25	6	68
3	101404004	Abhinav Arora	22	1	>40 UP TO 45	40	5						DIRECT MESUREMENT AVERAGE SCORE
4	101404006	Abhishek Sharma	39	4	>35UP TO 40	35	4	1%	2%	3%	4%	5%	CHECK
5	101404007	Ajay Singh	33	3	> 30 UP TO 35	30	3	10.3	14.7	29.4	36.8	8.8	100.0
6	101404009	Alka Thakur	35	3	>25 UP TO 30	25	2						
7	101404012	Ankush Goyal	34	3	>10 UP TO 25	10	1						
8	101404013	Anmol Arjun Bharaj	30	2									
9	101404014	Anmol Goyat	33	3									
10	101404015	Anmol Rattan Kaur	40	4									

DIRECT MESUREMENT AVERAGE SCORE: 3.19

Total number of students = 68

For marks detail of all students refer course file.

CLO 2:Design the basic Earthing requirement for residential and office complex

Tool used:

Question 6:A star-connected, 3-phase, 10 MVA, 6•6 kV alternator is protected by circulating current protection, the star point being earthed via a resistance r. Estimate the value of earthing resistor if 85% of the stator winding is protected against earth faults. Assume an earth fault setting of 20%. Neglect the impedance of the alternator winding.

Question 10: What is the requirement of grounding or earthing? What is resistance grounding? What are its advantages and disadvantages

S.No.	Rollno.	Name	Marks (18)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404001	Abhay Mahipal	16	5	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL
2	101404002	Abhijeet Singh Sankhla	16	5	Range of marks	LIMIT	Score	16	5	4	10	33	68
3	101404004	Abhinav Arora	2	0	>14 UP TO 16	14	5						
4	101404006	Abhishek Sharma	15	5	>12 UP TO 14	12	4	1%	2%	3%	4%	5%	CHECK
5	101404007	Ajay Singh	0	0	> 10 UP TO 12	10	3	23.5	7.4	5.9	14.7	48.5	100.0
6	101404009	Alka Thakur	14	4	>8 UP TO 10	8	2						
7	101404012	Ankush Goyal	17	5	>=4 UP TO 8	4	1						
8	101404013	Anmol Arjun Bharaj	5	1									
9	101404014	Anmol Goyat	7	1									
10	101404015	Anmol Rattan Kaur	10	2									

DIRECT MESUREMENT AVERAGE SCORE: 3.57

Total number of students = 68

For marks detail of all students refer course file.

CLO 3:Select required protection measures against overcurrent, over voltage and earth fault

Tool used:

Question 8: Describe distance protection scheme for the protection of transmission lines.

Question 9:Discuss the time-graded overcurrent protection for
a. Parallel feeders
b. Ring main system

S.No.	Rollno.	Name	Marks (16)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)							
1	101404001	Abhay Mahipal	9	4	SCALE TO BE DEFINED BY COORDINATOR			1S	2S	3S	4S	5S	TOTAL
2	101404002	Abhijeet Singh Sankhla	2	1	Range of marks	LIMIT	Score	23	9	4	5	27	68
3	101404004	Abhinav Arora	7	3	>10 UP TO 14	10	5						
4	101404006	Abhishek Sharma	6	2	>8 UP TO 10	8	4	1%	2%	3%	4%	5%	CHECK
5	101404007	Ajay Singh	0	0	> 6 UP TO 8	6	3	33.8	13.2	5.9	7.4	39.7	100.0
6	101404009	Alka Thakur	4	1	>4 UP TO 6	4	2						
7	101404012	Ankush Goyal	15	5	>=1 UP TO 4	1	1						
8	101404013	Anmol Arjun Bharaj	11	5									
9	101404014	Anmol Goyat	14	5									
10	101404015	Anmol Rattan Kaur	15	5									

DIRECT MESUREMENT AVERAGE SCORE

3.06

Total number of students = 68

For marks detail of all students refer course file.

CLO 4:Select suitable protection scheme for different power system equipments

Question 5: Explain with a neat diagram the application of modified Merz-Price circulating current principle for the protection of alternator.

S.No.	Rollno.	Name	Marks (10)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404001	Abhay Mahipal	1	1	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL
2	101404002	Abhijeet Singh Sankhla	8	4	Range of marks	LIMIT	Score	3	0	2	61	2	68
3	101404004	Abhinav Arora	7	4	>8 UP TO 10	8	5						
4	101404006	Abhishek Sharma	8	4	>6 UP TO 8	6	4	1%	2%	3%	4%	5%	CHECK
5	101404007	Ajay Singh	8	4	> 4 UP TO 6	4	3	4.4	0.0	2.9	89.7	2.9	100.0
6	101404009	Alka Thakur	8	4	>2 UP TO 4	2	2						
7	101404012	Ankush Goyal	8	4	>=1 UP TO 2	1	1						
8	101404013	Anmol Arjun Bharaj	8	4									
9	101404014	Anmol Goyat	8	4									
10	101404015	Anmol Rattan Kaur	8	4									

DIRECT MESUREMENT AVERAGE SCORE

3.87

0

Total number of students = 68

For marks detail of all students refer course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 5 for UEE402		
	Average Score	**WEIGHT**
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	3.51	5
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.36	5
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	3.13	5
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	2.07	5
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)*	4.15	5
\		
Weighted average score	3.24	

<--TO BE FILLED BY COURSE COORDINATOR

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 3 for UEE402		
	Average Score	**WEIGHT**
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	2.55	5
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	2.44	5
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	2.48	5
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	2.48	5
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)*	2.46	5
Weighted average score	2.48	

<--TO BE FILLED BY COURSE COORDINATOR

TABLE 6:Overall weighted average score of course A		
Assessment tools	Average	Assessment tool
Weighted average student class performance	3.24	5
Weighted average student course survey	2.48	5

The overall score for attainment of CLO's in UEE 402 is thus 2.863 on a scale of 1 to 5.

CLO 1: Understand the structure and growth of Power systems, concept of EHV and HVDC transmission and Distribution systems.

Tool used: EST question no 1

a) How voltage and frequency is selected for a transmission line?

b) Draw various types of HVDC links. Also write the advantages of HVDC over EHVAC transmission.

c) Draw and explain the various types of distribution systems.

S.No.	Rollno.	Name	EST Q1 (15)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)										
1	101304010	Akshay Kumar Chaudhary	5.5	3	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL		
2	101404062	Manjosh Singh Dhillon	5	3	Range of marks	LIMIT	Score	4	15	24	22	23	88		
3	101404063	Manpreet Singh Brar	5.5	3	=>9 UP TO 15	9	5								DIRECT MESUREMENT AVERAGE SCORE
4	101404064	Manvir Kaur	9.5	5	>6 TO 9	6	4	1%	2%	3%	4%	5%	CHECK		
5	101404065	Mehak Bhatia	3	2	> 4 UP TO 6	4	3	4.5	17.0	27.3	25.0	26.1	100.0		3.51
6	101404066	Mithilesh Kumar	1	1	>2 UP TO 4	2	2								
7	101404067	Mohit Goyal	12.5	5	>=0 UP TO 3	0	1								
8	101404068	Mridul Marwaha	12	5											
9	101404069	Mudit Arora	11	5											
10	101404070	Naveen Parashar	5	3											

Total number of students = 88

For marks detail of all students refer corse file.

CLO 2: To analyze the transmission line parameters.

Tool used: EST Q2

a) Determine the effective inductance of each conductor per km of a line consisting of three conductors each of diameter 3 cm placed at the corners of a triangle with sides of 3, 4 and 5 m. Explain the significance of complex number in the expression. Also calculate the inductance of the line if line is regularly transposed throughout its length. Take phase sequence as ABC for three phase currents

b) A two-conductor single-phase line operates at 50 Hz. The diameter of each conductor is 20 mm and the spacing between the conductors is 3 m. Calculate (i) the capacitance of each conductor w.r.t neutral and line (ii) calculate the capacitance of each conductor taking into account the effect of ground if the height of conductors above ground is 6 m.

S.No.	Rollno.	Name	EST Q2 MARKS (20)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101304010	Akshay Kumar Chaudhary	0	1										
2	101404062	Manjosh Singh Dhillon	13	5	Range of marks	LIMIT	Score	15	13	14	17	29	88	
3	101404063	Manpreet Singh Brar	11.5	5	>10 UP TO 20	10	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404064	Manvir Kaur	4	2	>8 UP TO 10	8	4	1%	2%	3%	4%	5%	CHECK	
5	101404065	Mehak Bhatia	14.5	5	> 5 UP TO8	5	3	17.0	14.8	15.9	19.3	33.0	100.0	3.36
6	101404066	Mithilesh Kumar	9	4	>2 UP TO 5	2	2							
7	101404067	Mohit Goyal	11.5	5	>=0 UP TO 2	0	1							
8	101404068	Mridul Marwaha	15	5										
9	101404069	Mudit Arora	15	5										
10	101404070	Naveen Parashar	5.5	3										

Total number of students = 88

For marks detail of all students refer corse file.

CLO 3: To design overhead transmission lines

Tool used: EST Q 3 & 4

3 a) An overhead transmission line supported by towers at the same level having a span of 250 meters. Calculate the sag (a) in still air condition with no ice covering (b) under a wind pressure of 350 N/m2 of projected are with

3(b) What is galloping? How is it eliminated?

4(a) Classify the insulators according to voltage level.

4(b) Determine the voltage across each disc of suspension insulator consisting of three discs as a percentage of

4(c) What is radio interference? Discuss the electrostatic effect of radio interference.

S.No.	Rollno.	Name	EST Q 3 & 4 MARKS (29)	SCORE (15)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)											
1	101304010	Akshay Kumar Chaudhary	6.5	2	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL			
2	101404062	Manjosh Singh Dhillon	9	3	Range of marks	LIMIT	Score	6	18	28	31	5	88			
3	101404063	Manpreet Singh Brar	10	3	>20 UP TO 29	20	5								DIRECT MESUREMENT AVERAGE SCORE	
4	101404064	Manvir Kaur	17.5	4	>11 UP TO 20	11	4	1%	2%	3%	4%	5%	CHECK			
5	101404065	Mehak Bhatia	5.5	2	> 7 UP TO 11	7	3	6.8	20.5	31.8	35.2	5.7	100.0		3.13	
6	101404066	Mithilesh Kumar	9.5	3	3 UP TO 7	3	2									
7	101404067	Mohit Goyal	19	4	>=0 UP TO 3	0	1									
8	101404068	Mridul Marwaha	18	4												
9	101404069	Mudit Arora	15.5	4												
10	101404070	Naveen Parashar	5.5	2												

Total number of students = 88

For marks detail of all students refer corse file.

UEE402- TRANSMISSION AND DISTRIBUTION OF POWER

CLO 4: To analyze the transmission line performance

Tool used: EST Q 5

a) Starting from the basic equation of complex power derive the expression for active and reactive power flow through a transmission line at receiving end. Also calculate the maximum active power transmitted.

b) A 3-phase, 50 Hz medium transmission line delivers 36 MW at 0.8 lagging power factor at 60 kV (phase). The line constants per phase are: R = 2.5 Ω, L = 0.1 H, C = 0.25 μF. Determine the voltage, current, power factor, active power and reactive power at sending end using nominal-T method. First draw the phasor diagram and evaluate the parameters with the help of phasor diagram.

S.No.	Rollno.	Name	MARKS (20)	SCORE (1-5)
1	101304010	Akshay Kumar Chaudhary	0	1
2	101404062	Manjosh Singh Dhillon	4	1
3	101404063	Manpreet Singh Brar	2.5	1
4	101404064	Manvir Kaur	3	1
5	101404065	Mehak Bhatia	1	1
6	101404066	Mithilesh Kumar	0.5	1
7	101404067	Mohit Goyal	15	4
8	101404068	Mridul Marwaha	12	3
9	101404069	Mudit Arora	20	5
10	101404070	Naveen Parashar	1	1

DIRECT MESUREMENT (USING STUDENT PERFORMNACE)

SCALE TO BE DEFINED BY COORDINATOR			1S	2S	3S	4S	5S	TOTAL
Range of marks	LIMIT	Score	53	5	10	11	9	88
>16 UP TO 20	16	5						
>12 UP TO 16	12	4						
> 8 UP TO 12	8	3						
>4 UP TO 8	4	2						
UP TO 4	0	1						

1%	2%	3%	4%	5%	CHECK	DIRECT MESUREMENT AVERAGE SCORE
60.2	5.7	11.4	12.5	10.2	100.0	2.07

Total number of students = 88

For marks detail of all students refer corse file.

CLO 5: Explain constructional features, parameters, laying procedures and fault detection

Tool used: EST Q 5

a) With the help of labeled diagram show various components of underground cable and discuss the

b) What are different types of faults in underground cables? How they are detected?

S.No.	Rollno.	Name	EST Q5 MARKS (16)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)							
1	101304010	Akshay Kumar Chaudhary	13	5	**SCALE TO BE DEFINED BY COORDINATOR**		1'S	2'S	3'S	4'S	5'S	TOTAL
2	101404062	Manjosh Singh Dhillon	12	4	Range of marks	LIMIT	Score	9	4	10	7	58	88
3	101404063	Manpreet Singh Brar	14.5	5	>12 UP TO 16	12	5						
4	101404064	Manvir Kaur	15	5	>9 UP TO 12	9	4	1%	2%	3%	4%	5%	CHECK
5	101404065	Mehak Bhatia	6.5	3	> 6 UP TO 9	6	3	10.2	4.5	11.4	8.0	65.9	100.0
6	101404066	Mithilesh Kumar	0.5	1	>3 UP TO 6	3	2						
7	101404067	Mohit Goyal	15	5	UP TO 3	0	1						
8	101404068	Mridul Marwaha	13.5	5									
9	101404069	Mudit Arora	14.5	5									
10	101404070	Naveen Parashar	12.5	5									

DIRECT MESUREMENT AVERAGE SCORE

4.15

Total number of students = 88

For marks detail of all students refer corse file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 5 for UEE402	Average Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.53	5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	2.97	5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	3.54	5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	1.97	5	<--TO BE FILLED BY
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)*	4.19	5	COURSE COORDINATOR
CLO1 *(READ & FILL VALUE FROM CLO6 SHEET CELL P14-->)*			
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P14-->)*			
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)*			
Weighted average score	3.24		

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 5 for UEE402	Average Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)*	4.15	5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)*	4.24	5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)*	4.22	5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)*	4.20	5	<--TO BE FILLED BY
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)*	4.18	5	COURSE COORDINATOR
CLO1 *(READ & FILL VALUE FROM CLO6 SHEET CELL P25-->)*			
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P25-->)*			
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)*			
Weighted average score	4.20		

TABLE 6:Overall weighted average score of course A		
Assessment tools	Average	Assessment tool
Weighted average student class performance	3.24	5
Weighted average student course survey	4.20	5

The overall score for attainment of CLO's in UEE402 is thus 3.719 on a scale of 1 to 5.

CLO 1: Understand the structure and growth of Power systems, concept of EHV

Tool used:EST question no 1

a) How voltage and frequency is selected for a transmission line?

b) Draw various types of HVDC links. Also write the advantages of HVDC over EHVAC transmission.

c) Draw and explain the various types of distribution systems.

S.No.	Rollno.	Name	EST Q1 Marks(15)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404001	Abhay Mahipal	5.5	3	**SCALE TO BE DEFINED BY COORDINATOR**			1`S	2`S	3`S	4`S	5`S	TOTAL	
2	101404002	Singh Sankhla	4.5	3	Range of marks	LIMIT	Score	3	9	13	22	12	59	
3	101404004	Abhinav Arora	8.5	4	>9 UP TO 15	9	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404006	Abhishek Sharma	11	5	>6 UP TO 9	6	4	1%	2%	3%	4%	5%	CHECK	
5	101404007	Ajay Singh	8	4	>4 UP TO 6	4	3	5.1	15.3	22.0	37.3	20.3	100.0	3.53
6	101404009	Alka Thakur	8.5	4	>2 UP TO 4	2	2							
7	101404012	Ankush Goyal	9.5	5	>=0 UP TO 2	0	1							
8	101404013	Anmol Arjun Bharaj	5	3										
9	101404014	Anmol Goyat	9.5	5										
10	101404015	Anmol Rattan Kaur	7.5	4										

Total number of students = 59

For marks detail of all students refer course file.

UEE402-TRANSMISSION AND DISTRIBUTION OF POWER

CLO 2: To analyze the transmission line parameters.

Tool used: EST Q2

a) Determine the effective inductance of each conductor per km of a line consisting of three conductors each of diameter 3 cm placed at the corners of a triangle with sides of 3, 4 and 5 m. Explain the significance of complex number in the expression. Also

b) A two-conductor single-phase line operates at 50 Hz. The diameter of each conductor is 20 mm and the spacing between the conductors is 3 m. Calculate (i) the capacitance of each conductor w.r.t neutral and line (ii) calculate the capacitance of each conductor taking into account the effect of ground if the height of conductors above ground is 6 m.

S.No.	Rollno.	Name	EST Q2(20)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)										
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL		
1	101404001	Abhay Mahipal	12	5											
2	101404002	Abhijeet Singh Sankhla	3	2	Range of marks	LIMIT	Score	10	10	19	12	8	59		
3	101404004	Abhinav Arora	0	1	>10 UP TO 20	10	5								DIRECT MESUREMENT AVERAGE SCORE
4	101404006	Abhishek Sharma	12	5	>8 UP TO 10	8	4	1%	2%	3%	4%	5%	CHECK		
5	101404007	Ajay Singh	7.5	3	>5 UP TO 8	5	3	16.9	16.9	32.2	20.3	13.6	100.0		2.97
6	101404009	Alka Thakur	9.5	4	>2 UP TO 5	2	2								
7	101404012	Ankush Goyal	11	5	>=0 UP TO 2	0	1								
8	101404013	Anmol Arjun Bharaj	0	1											
9	101404014	Anmol Goyat	7	3											
10	101404015	Anmol Rattan Kaur	2.5	2											

Total number of students = 59

For marks detail of all students refer course file.

CLO 3: To design overhead transmission lines.

Tool used: EST Q 3 & 4

3 a) An overhead transmission line supported by towers at the same level having a span of 250 meters. Calculate the sag (a) in still air condition with no ice covering (b) under a wind pressure of 350 N/m2 of projected are with no ice covering (c) under a wind pressure of 400 N/m2 and ice covering of 1 cm thickness. The conductor diameter and weight are 1.1 cm and 6.37 N/m respectively. The

3(b) What is galloping? How is it eliminated?

4(a) Classify the insulators according to voltage level.

4(b) Determine the voltage across each disc of suspension insulator consisting of three discs as a percentage of line to earth voltage. The self-capacitance and capacitance to ground of each disc is C and 0.25 C respectively. The capacitance between line pin and guard

4(c) What is radio interference? Discuss the electrostatic effect of radio interference.

S.No.	Rollno.	Name	EST Q 3& 4CLO(29)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
1	101404001	Abhay Mahipal	19	4										
2	101404002	Abhijeet Singh Sankhla	11.5	4	Range of marks	LIMIT	Score	1	7	15	31	5	59	
3	101404004	Abhinav Arora	5	2	>20 UP TO 29	20	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404006	Abhishek Sharma	6.5	2	>11 UP TO 20	11	4	1%	2%	3%	4%	5%	CHECK	
5	101404007	Ajay Singh	7	2	> 7 UP TO 11	7	3	1.7	11.9	25.4	52.5	8.5	100.0	3.54
6	101404009	Alka Thakur	20.5	5	>3 UP TO 7	3	2							
7	101404012	Ankush Goyal	18.5	4	>=0 UP TO 3	0	1							
8	101404013	Anmol Arjun Bharaj	8.5	3										
9	101404014	Anmol Goyat	7.5	3										
10	101404015	Anmol Rattan Kaur	9.5	3										

Total number of students = 59

For marks detail of all students refer course file.

CLO 4: To analyze the transmission line performance.

Tool used: EST Q 5

a) Starting from the basic equation of complex power derive the expression for active and reactive power flow through a transmission line at receiving end. Also calculate the maximum active power transmitted.

b) A 3-phase, 50 Hz medium transmission line delivers 36 MW at 0.8 lagging power factor at 60 kV (phase). The line constants per phase are: R = 2.5 Ω, L = 0.1 H, C = 0.25 μF. Determine the voltage, current, power factor, active power and reactive power at sending end using nominal-T method. First draw the phasor diagram and evaluate the parameters with the help of phasor diagram.

S.No.	Rollno.	Name	EST Q6(20)	SCORE (15)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)											
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL			
1	101404001	Abhay Mahipal	5	2				30	13	7	6	3	59			
2	101404002	Abhijeet Singh Sankhla	1	1	Range of marks	LIMIT	Score								DIRECT MESUREMENT AVERAGE SCORE
3	101404004	Abhinav Arora	5	2	>16 UP TO 20	16	5								
4	101404006	Abhishek Sharma	0	1	>12 UP TO 16	12	4	1%	2%	3%	4%	5%	CHECK	
5	101404007	Ajay Singh	0	1	> 8 UP TO 12	8	3	50.8	22.0	11.9	10.2	5.1	100.0	1.97
6	101404009	Alka Thakur	15.5	4	>4 UP TO 8	4	2							
7	101404012	Ankush Goyal	9.5	3	UP TO 4	0	1							
8	101404013	Anmol Arjun Bharaj	1.5	1										
9	101404014	Anmol Goyat	11	3			0							
10	101404015	Anmol Rattan Kaur	10.5	3										

Total number of students = 59

For marks detail of all students refer to course file.

CLO 5: Explain constructional features, parameters, laying procedures and fault detection of

Tool used: EST Q 5

a) With the help of labeled diagram show various components of underground cable and discuss the function of each component.

b) What are different types of faults in underground cables? How they are detected?

S.No.	Rollno.	Name	EST Q5(16)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)										
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
1	101404001	Abhay Mahipal	0	1										
2	101404002	Abhijeet Singh Sankhla	5.5	2	Range of marks	LIMIT	Score	2	5	9	7	36	59	
3	101404004	Abhinav Arora	6.5	3	>12 UP TO 16	12	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404006	Abhishek Sharma	15	5	>12 UP TO 9	9	4	1%	2%	3%	4%	5%	CHECK	
5	101404007	Ajay Singh	13	5	> 6 UP TO 9	6	3	3.4	8.5	15.3	11.9	61.0	100.0	4.19
6	101404009	Alka Thakur	12	4	>3 UP TO 6	3	2							
7	101404012	Ankush Goyal	14	5	UP TO 3	0	1							
8	101404013	Anmol Arjun Bharaj	0	1										
9	101404014	Anmol Goyat	12	4										
10	101404015	Anmol Rattan Kaur	5.5	2										

Total number of students = 59

For marks detail of all students refer course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 5 for UEI201

	Average Score	WEIGHT	
CLO1 (READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)	3.43	5	
CLO2 (READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)	3.88	5	
CLO3 (READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)	3.01	5	<--TO BE FILLED BY COURSE COORDINATOR
CLO4 (READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)	3.70	5	
CLO5 (READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)	3.56	5	
CLO1 (READ & FILL VALUE FROM CLO6 SHEET CELL P14-->)			
CLO1 (READ & FILL VALUE FROM CLO7 SHEET CELL P14-->)			
CLO1 (READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)			
Weighted average score	3.52		

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 5 for UEI201

	Average Score	WEIGHT	
CLO1 (READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)	3.86	5	
CLO1 (READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)	3.73	5	
CLO1 (READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)	2.73	5	<--TO BE FILLED BY COURSE COORDINATOR
CLO1 (READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)	3.30	5	
CLO1 (READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)	2.59	5	
CLO1 (READ & FILL VALUE FROM CLO6 SHEET CELL P25-->)			
CLO1 (READ & FILL VALUE FROM CLO7 SHEET CELL P25-->)			
CLO1 (READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)			
Weighted average score	3.24		

TABLE 6: Overall weighted average score of course A

Assessment tools	Average weighted	Assessment
Weighted average student class performance	3.52	6
Weighted average student course survey	3.24	4

UEI201

3.406 on a scale of 1 to 5.

UEI201- ANALOG ELECTRONICS DEVICES AND CIRCUITS

CLO 1: Understand the working and characteristics of a semiconductor diode.

Question 1(a) EST: How the width of the depletion region is affected when a p-n junction diode is forward biased and reverse biased? Write the expression for volt-ampere characteristic of the diode and explain it.

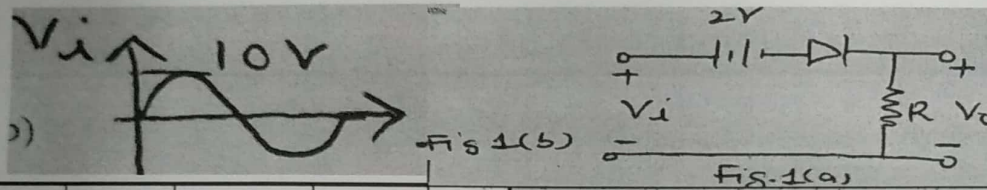| S.No.	Rollno.	Name	Q1a (10)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	101404001	Abhay Mahipal	7.0	4	COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
2	101404002	Abhijit	7.0	4	Range of marks	LIMIT	Score	14	5	4	48	10	81	
3	101404004	Abhinav Arora	7.0	4	>8 UP TO 10	8	5							DIRECT MESUREMENT
4	101404006	Abhishek Sharma	7.0	4	>6 UP TO 8	6	4	1%	2%	3%	4%	5%	CHECK	AVERAGE SCORE
5	101404007	Ajay Singh	7.0	4	> 4 UP TO 6	4	3	17.3	6.2	4.9	59.3	12.3	100.0	3.43
6	101404009	Alka Thakur	9.0	5	>2 UP TO 4	2	2							
7	101404012	Ankush Goyal	7.0	4	>=0 UP TO 2	0	1							
8	101404013	Anmol Arjun	7.0	4										
9	101404014	Anmol Goyat	7.0	4				**Total number of students = 81**						
10	101404015	Anmol Rattan kaur	3.0	2				**For marks detail of all students refer to course file.**						

UEI201- ANALOG ELECTRONICS DEVICES AND CIRCUITS

CLO 2: Design different type of circuits such as rectifiers, clippers, clampers and voltage regulators

MST 1 (b)Explain the working of a full wave bridge rectifier circuit. Also find out the value of ripple factor and rectification efficiency. How a full wave rectifier is different from a half wave rectifier?

What are clippers and clampers? Draw the output voltage waveform for the circuits shown in Fig. 1(a) and Fig. 1(b)

Explain the working of a full wave bridge rectifier circuit. Also find out the value of ripple factor and

MST (a):What are clippers and clampers? Draw the output voltage waveform for the circuits shown in Fig. 1(a) and Fig. 1(b)

Fig 1(b)

Fig-1(a)

S.No.	Rollno.	Name	MST Q-_1b_2a(20)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)												
1	101404001	Abhay Mahipal	12.0	4	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL		
2	101404002	Abhijit	13.0	5	Range of marks	LIMIT	Score	2	10	13	27	29	81		
3	101404004	Abhinav Arora	13.5	5	>12 UP TO 15	12	5								DIRECT MESUREMENT AVERAGE SCORE
4	101404006	Abhishek Sharma	10.5	4	>7UP TO 12	7	4	1%	2%	3%	4%	5%	CHECK	
5	101404007	Ajay Singh	6.5	3	> 5 UP TO 7	5	3	2.5	12.3	16.0	33.3	35.8	100.0		3.88
6	101404009	Alka Thakur	9.5	4	>2 UP TO 5	2	2								
7	101404012	Ankush Goyal	12.0	4	>=0 UP TO 2	0	1								
8	101404013	Anmol Arjun	6.0	3											
9	101404014	Anmol Goyat	7.0	3											
10	101404015	Anmol Rattan kaur	6.0	3											

Total number of students = 81

For marks detail of all students refer to course file.

CLO 3: Understand the working and characteristics of a bipolar junction transistor and its

MSTQ:4 Explain the working of a transistor as an amplifier.

MSTQ:7: Draw the hybrid equivalent model for CB and CE configuration of a Transistor

MSTQ:8 Explain Input and output characterstics of CB configuration

S.No.	Rollno.	Name	EST Q 4,7,8 MST	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404001	Abhay Mahipal	0.5	1	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL
2	101404002	Abhijit	0.5	1	Range of marks	LIMIT	Score	17	17	16	10	21	81
3	101404004	Abhinav Arora	2.5	4	>3 UP TO 9	3	5						
4	101404006	Abhishek Sharma	2.5	4	>2 UP TO 3	2	4	1%	2%	3%	4%	5%	CHECK
5	101404007	Ajay Singh	1.0	2	> 1 UP TO 2	1	3	21.0	21.0	19.8	12.3	25.9	100.0
6	101404009	Alka Thakur	1.0	2	>0.5 UP TO 1	0.5	2						
7	101404012	Ankush Goyal	1.0	2	>=0 UP TO 0.5	0	1						
8	101404013	Anmol Arjun	0.5	1									
9	101404014	Anmol Goyat	4.0	5									
10	101404015	Anmol Rattan kaur	1.5	3									

DIRECT MESUREMENT AVERAGE SCORE

3.01

Total number of students = 81

For marks detail of all students refer to course file.

UEI201- ANALOG ELECTRONICS DEVICES AND CIRCUITS

CLO 4: Understand the working, characteristics and applications of FET.

Q:3 Explain the construction and working of an n channel junction field-effecttransistor. Given IDSS= 8 mA and VP=-4V sketch the drain and transfer characteristics of the device.

Q4 (a):What is the significant difference between the construction of an enhancement type MOSFET and a depletion type MOSFET? Sketch the drain and transfer characteristics of an n channel enhancement type MOSFET given, ID(on)= 10mA , VGS(on)=8V and k=0.278x10-3A/V2.

S.No.	Rollno.	Name	Question 3_4a(30) EST	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
1	101404001	Abhay Mahipal	25.0	4	Range of marks	LIMIT	Score	0	12	25	19	25	81	
2	101404002	Abhijit	14.0	2										
3	101404004	Abhinav Arora	25.0	4	>25 UP TO 30	25	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404006	Abhishek Sharma	24.0	4	>22 UP TO 25	22	4	1%	2%	3%	4%	5%	CHECK	
5	101404007	Ajay Singh	16.0	3	> 15 UP TO 22	15	3	0.0	14.8	30.9	23.5	30.9	100.0	3.70
6	101404009	Alka Thakur	28.0	5	>5 UP TO 15	5	2							
7	101404012	Ankush Goyal	20.5	3	UP TO 5	0	1							
8	101404013	Anmol Arjun	19.5	3										
9	101404014	Anmol Goyat	23.5	4										
10	101404015	Anmol Rattan kaur	23.5	4										

Total number of students = 81

For marks detail of all students refer to course file.

UEI201- ANALOG ELECTRONICS DEVICES AND CIRCUITS

CLO 5: Explain the working of different power supply circuits, amplifiers and oscillators.

EST4(b)Draw the circuit diagram of a shunt voltage regulator and find out theregulated voltage and circuit currents. Given, Vi=22V, RS=120Ω, VZ=8.2V, VBE=0.7V and RL=100Ω.

EST 5 Draw the circuit diagram of an RC phase shift oscillator and give the expression for obtaining the frequency of oscillation. ii) For an FET Colpitts oscillator with circuit values: C1=750pF, C2=2500pF and L=40μH, determine the circuit oscillation frequency.

Discuss the characteristics of an ideal Op-Amp. Find out the output voltage for the Op-Amp circuit shown in Fig. 2.
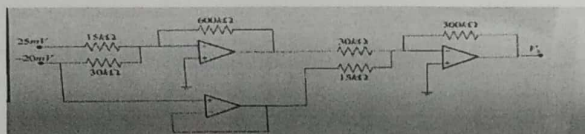
S.No.	Rollno.	Name	EST Question 4b_5(30)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR		1`S	2`S	3`S	4`S	5`S	TOTAL	
1	1.01E+08	Abhay Mahipal	16.0	3									
2	1.01E+08	Abhijit	10.5	3	Range of marks	LIMIT	Score	5	10	21	25	20	81
3	1.01E+08	Abhinav Arora	12.0	3	>24 UP TO 30	24	5						DIRECT MESUREMENT AVERAGE SCORE
4	1.01E+08	Abhishek Sharma	20.0	4	>16UP TO 24	16	4	1%	2%	3%	4%	5%	CHECK
5	1.01E+08	Ajay Singh	16.0	3	> 10 UP TO 16	10	3	6.2	12.3	25.9	30.9	24.7	100.0	3.56
6	1.01E+08	Alka Thakur	18.0	4	>6 UP TO 10	6	2						
7	1.01E+08	Ankush Goyal	27.5	5	UP TO 6	0	1						
8	1.01E+08	Anmol Arjun	12.5	3									
9	1.01E+08	Anmol Goyat	21.0	4									
10	1.01E+08	Anmol Rattan kaur	20.0	4									

Total number of students = 81

For marks detail of all students refer to course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 5 for UEE 401	Average Score	WEIGHT	
CLO1 (READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)	2.92	5	
CLO2 (READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)	3.25	5	
CLO3 (READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)	2.58	5	<--TO BE FILLED BY COURSE COORDINATOR
CLO4 (READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)	2.80	5	
CLO5 (READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)	2.37	5	
\			
	2.78		
Weighted average score			

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 3 for UEE401	Average Score	WEIGHT	
CLO1 (READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)	3.44	5	
CLO2 (READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)	3.46	5	
CLO3 (READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)	3.42	5	<--TO BE FILLED BY COURSE COORDINATOR
CLO4 (READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)	3.48	5	
CLO5 (READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)	3.44	5	
	3.45		
Weighted average score			

TABLE 6:Overall weighted average score of course UEE401	Average weighted	Assessment
Assessment tools		
Weighted average student class performance	2.78	5
Weighted average student course survey	3.45	5

The overall score for attainment of CLO's in UEE 401 is thus   3.116   on a scale of 1 to 5.

CLO 1: Explain the operation of three phase induction motor, single phase induction motor, three phase synchronous generator, synchronous motor and fractional kW motors.

Tool used:EST question no 1(a) 2(a) 4(c) 5(a)

1(a) Compare 3-phase induction motor and transformer by clearly stating similarities and differences.

2(a) A squirrel cage induction motor has a slip of 4% at full load. Its starting current is 5 times the full load current. The stator impedance and magnetizing current may be neglected; the rotor resistance is assumed to be constant.

4(c) Draw and explain phasor diagram of a cylindrical rotor alternator at leading power factor load.

5 (a) Draw and explain the phasor diagrams at lagging power factor for salient pole synchronous motor.

S.No.	Rollno.	Name	EST Q11(a) 2(a) 4(c) 5(a) (22)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)											
					SCALE TO BE DEFINED BY COORDINATOR		1`S	2`S	3`S	4`S	5`S	TOTAL				
1	101404001	Abhay Mahipal	10	3												
2	101404002	Abhijeet Singh Sankhla	11	4	Range of marks	LIMIT	Score	11	9	17	18	4	59			
3	101404004	Abhinav Arora	11	4	=>14 UP TO 22	14	5								DIRECT MESUREMENT AVERAGE SCORE	
4	101404006	Abhishek Sharma	13	4	>10 TO 14	10	4	1%	2%	3%	4%	5%	CHECK			
5	101404007	Ajay Singh	0	1	> 6 UP TO 10	6	3	18.6	15.3	28.8	30.5	6.8	100.0		2.92	
6	101404009	Alka Thakur	7	3	>3 UP TO 6	3	2									
7	101404012	Ankush Goyal	10.5	4	>=0 UP TO 3	0	1									
8	101404013	Anmol Arjun Bharaj	2	1												
9	101404014	Anmol Goyat	8	3												
10	101404015	Anmol Rattan Kaur	7.5	3												

Total number of students = 59

For marks detail of all students refer course file.

CLO 2: Analyze the performance characteristics of three phase induction

Tool used: EST Q 1(b,c) 4(b)

1(b) A 3-phase, delta connected, 4-pole, 50 Hz induction motor has a stator resistance of 0.4 Ω per phase at operating temperature. For a line current of 20 A, the stator input is 4000 watts. For negligible stator core

1(c) Explain the terms air gap power Pg, internal mechanical power developed Pm and shaft power Psh. How are these related to each other? Hence show that

S.No.	Rollno.	Name	4(b) MARKS (20)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)										
1	101404001	Abhay Mahipal	10	3	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL		
2	101404002	Abhijeet Singh Sankhla	9.5	3	Range of marks	LIMIT	Score	4	11	20	14	10	59		
3	101404004	Abhinav Arora	4	2	>14 UP TO 20	14	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404006	Abhishek Sharma	6.5	2	>10 UP TO 14	10	4	1%	2%	3%	4%	5%	CHECK	
5	101404007	Ajay Singh	0	1	> 7 UP TO 10	7	3	6.8	18.6	33.9	23.7	16.9	100.0	3.25
6	101404009	Alka Thakur	12.5	4	>3 UP TO 7	3	2							
7	101404012	Ankush Goyal	13	4	>=0 UP TO 3	0	1							
8	101404013	Anmol Arjun Bharaj	8	3										
9	101404014	Anmol Goyat	4.5	2										
10	101404015	Anmol Rattan Kaur	11	4										

Total number of students = 59

For marks detail of all students refer course file.

CLO 3: Determine the equivalent circuit parameters of three phase induction motor and single

Tool used: EST Q 2(b) & 3 (a)

2(b) A 400 V, 1450 rpm, 50 Hz wound rotor induction motor has the following circuit model parameters:
r_1= 0.3 Ω, r_2'=0.25 Ω, $x_1 = x_2$ = 0.6 Ω, X_m = 35 Ω, rotational loss = 1500 W
(i) Calculate the starting current and torque when motor is started on full load.
(ii) Calculate full load current, power factor and torque.

3(a) A 230 V, 380 W, 50 Hz, 4-pole, single phase induction motor gave the following test results:

No-load test: 230 V, 84 W, 2.8 A

Blocked-rotor test: 110 V, 460 W, 6.2 A

The stator winding resistance is 4.6 ohms and during the blocked rotor test, the auxiliary winding is open.

S.No.	Rollno.	Name	EST Q 2(b) & 3(a) MARKS (16)	SCORE (15)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)											
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL			
1	101404001	Abhay Mahipal	8	3												
2	101404002	Abhijeet Singh Sankhla	0	1	Range of marks	LIMIT	Score	17	6	25	7	4	59			
3	101404004	Abhinav Arora	3.5	2	>11 UP TO 16	11	5								DIRECT MESUREMENT AVERAGE SCORE	
4	101404006	Abhishek Sharma	2	1	>8 UP TO 11	8	4	1%	2%	3%	4%	5%	CHECK			
5	101404007	Ajay Singh	0	1	> 5 UP TO 8	5	3	28.8	10.2	42.4	11.9	6.8	100.0		2.58	
6	101404009	Alka Thakur	7.5	3	>2 UP TO 5	2	2									
7	101404012	Ankush Goyal	6.5	3	>=0 UP TO 2	0	1									
8	101404013	Anmol Arjun Bharaj	1	1												
9	101404014	Anmol Goyat	5	2												
10	101404015	Anmol Rattan Kaur	7	3												

Total number of students = 59

For marks detail of all students refer course file.

CLO 4: Elaborate the power flow equations of synchronous generator and synchronous motor

Tool used: EST Q 4(a) 5(b)

4 (a) A 400 V, 3 phase mesh connected synchronous motor runs at rated voltage with an excitation emf of 510 V. Its synchronous impedance per phase is 0.5 + j4 ohms and friction, windage and iron losses are 900 W. Calculate the shaft power output and line current for (i) maximum power output and (ii) maximum power input.

5(b) Derive the expressions of electromagnetic power, reluctance power and total output power of a salient pole synchronous generator based on its phasor diagram. Draw and explain the power-angle characteristic for this machine.

S.No.	Rollno.	Name	5(b) MARKS (20)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404001	Abhay Mahipal	0	1	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
2	101404002	Abhijeet Singh Sankhla	0	1	Range of marks	LIMIT	Score	16	11	16	1	15	59	
3	101404004	Abhinav Arora	0	1	>14 UP TO 20	14	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404006	Abhishek Sharma	3	2	>10 UP TO 14	10	4	1%	2%	3%	4%	5%	CHECK	
5	101404007	Ajay Singh	0	1	> 6 UP TO 10	6	3	27.1	18.6	27.1	1.7	25.4	100.0	2.80
6	101404009	Alka Thakur	8	3	>2 UP TO 6	2	2							
7	101404012	Ankush Goyal	10	3	UP TO 2	0	1							
8	101404013	Anmol Arjun Bharaj	0	1										
9	101404014	Anmol Goyat	3	2										
10	101404015	Anmol Rattan Kaur	4	2										

Total number of students = 59

For marks detail of all students refer course file.

CLO 5: Enumerate the applications of three phase induction motor, single phase induction

Tool used: EST Q 3 (b,c)

3(b) Write the constructional features, working principle and applications of single- phase reluctance motor.

3(c) Explain the working principle of shaded pole induction motor with suitable diagram

S.No.	Rollno.	Name	(b,c) MARKS	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	101404001	Abhay Mahipal	3	2	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
2	101404002	Abhijeet Singh Sankhla	0	1	Range of marks	LIMIT	Score	22	15	6	10	6	59	
3	101404004	Abhinav Arora	1	1	>8 UP TO 12	8	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404006	Abhishek Sharma	7	4	>6 UP TO 8	6	4	1%	2%	3%	4%	5%	CHECK	
5	101404007	Ajay Singh	0	1	> 4 UP TO 6	4	3	37.3	25.4	10.2	16.9	10.2	100.0	2.37
6	101404009	Alka Thakur	2.5	2	>2 UP TO 4	2	2							
7	101404012	Ankush Goyal	6	3	UP TO 2	0	1							
8	101404013	Anmol Arjun Bharaj	1	1										
9	101404014	Anmol Goyat	3	2										
10	101404015	Anmol Rattan Kaur	4.5	3										

Total number of students = 59

For marks detail of all students refer course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 5 for UEE401(ELE4,5,6 and7)			
	Average Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET)*	3.02	5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET)*	2.98	5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET)*	2.51	5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET)*	2.52	5	<--TO BE FILLED BY
(READ & FILL VALUE FROM CLO5 SHEET)	2.22	5	COURSE COORDINATOR
Weighted average score	2.65		

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 5 for for UEE401(ELE4,5,6 and7)			
	Average Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)*	4.49	5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)*	4.47	5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)*	4.49	5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)*	4.54	5	<--TO BE FILLED BY
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)*	4.60	5	COURSE COORDINATOR
ghted average score	4.52		

TABLE 6:Overall weighted average score of course for UEE401(ELE4,5,6 and7)		
Assessment tools	Average weighted score	Assessment tool Weight
Weighted average student class performance	2.65	5
Weighted average student course survey	4.52	5

The overall score for attainment of CLO's for UEE401(ELE4,5,6 and7) is thus **3.584** on a scale of 1 to 5.

CLO 1: Explain the operation of three phase induction motor, single phase induction motor, three phase synchronous generator, synchronous motor and fractional kW motors.

Tool used:EST question no 1(a) 2(a) 4(c) 5(a)

1(a) Compare 3-phase induction motor and transformer by clearly stating similarities and differences.

2(a) A squirrel cage induction motor has a slip of 4% at full load. Its starting current is 5 times the full load current. The stator

4(c) Draw and explain phasor diagram of a cylindrical rotor alternator at leading power factor load.

5 (a) Draw and explain the phasor diagrams at lagging power factor for salient pole synchronous motor.

S.No.	Rollno.	Name	Max. Marks (22)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404062	Manjosh Singh Dhillon	14.0	4	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
2	101404063	Manpreet Singh Brar	8.5	3	Range of marks	LIMIT	Score	17	15	20	17	17	86	
3	101404064	Manvir Kaur	7.5	3	>14 UP TO 22	14	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404065	Mehak Bhatia	12.0	4	>10 UP TO 14	10	4	1%	2%	3%	4%	5%	CHECK	
5	101404066	Mithilesh Kumar	6.0	2	> 6 UP TO 10	6	3	19.8	17.4	23.3	19.8	19.8	100.0	3.02
6	101404067	Mohit Goyal	16.0	5	>2 UP TO 6	2	2							
7	101404068	Mridul Marwaha	20.5	5	>=0 UP TO 2	0	1							
8	101404069	Mudit Arora	20.5	5			0							
9	101404070	Naveen Parashar	2.5	2										
10	101404072	Nigam Wadhwa	4.5	2										

Total number of students = 86

For marks detail of all students refer course file.

CLO 2: Analyze the performance characteristics of three phase induction motor, single phase induction motor, three phase synchronous generator and synchronous motor.

Tool used: EST Question 1(b), 1(c) and 4(b)

Tool used: EST Q 1(b,c) 4(b)

1(b) A 3-phase, delta connected, 4-pole, 50 Hz induction motor has a stator resistance of 0.4 Ω per phase at operating temperature. For a line current of 20 A, the stator input is 4000 watts. For negligible stator core losses, find out internal

1(c) Explain the terms air gap power Pg, internal mechanical power developed Pm and shaft power Psh. How are these related to each other? Hence show that

Pg : rotor ohmic loss : Pm = 1 : s : (1-s).

S.No.	Rollno.	Name	Max. Marks (20)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404062	Manjosh Singh Dhillon	11.0	4	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL
2	101404063	Manpreet Singh Brar	13.0	4	Range of marks	LIMIT	Score	16	15	20	25	10	86
3	101404064	Manvir Kaur	8.5	3	>14 UP TO 20	14	5						DIRECT MESUREMENT AVERAGE SCORE
4	101404065	Mehak Bhatia	10.5	4	>10 UP TO 14	10	4	1%	2%	3%	4%	5%	CHECK
5	101404066	Mithilesh Kumar	10.0	3	> 7 UP TO 10	7	3	18.6	17.4	23.3	29.1	11.6	100.0	2.98
6	101404067	Mohit Goyal	15.5	5	>3 UP TO 7	3	2						
7	101404068	Mridul Marwaha	14.0	4	>=0 UP TO 3	0	1						
8	101404069	Mudit Arora	14.0	4			0						
9	101404070	Naveen Parashar	1.0	1									
10	101404072	Nigam Wadhwa	6.5	2									

Total number of students = 86

For marks detail of all students refer course file.

UEE401-ALTERNATING CURRENT MACHINES

CLO 3: Determine the equivalent circuit parameters of three phase induction motor and single phase induction motor.

Tool used: EST Q 2(b) & 3 (a)

2(b) A 400 V, 1450 rpm, 50 Hz wound rotor induction motor has the following circuit model parameters:

$r1= 0.3\ \Omega$, $r2'=0.25\ \Omega$, $x1 = x2 = 0.6\ \Omega$, $Xm = 35\ \Omega$, rotational loss = 1500 W

(i) Calculate the starting current and torque when motor is started on full load.

(ii) Calculate full load current, power factor and torque.

3(a) A 230 V, 380 W, 50 Hz, 4-pole, single phase induction motor gave the following test results:

No-load test: 230 V, 84 W, 2.8 A

Blocked-rotor test: 110 V, 460 W, 6.2 A

The stator winding resistance is 4.6 ohms and during the blocked rotor test, the auxiliary winding is open. Determine the equivalent circuit parameters and draw the equivalent circuit.

o.	Rollno.	Name	Max. Marks (16)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)											
1	101404062	Manjosh Singh Dhillon	3.5	2	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL			
2	101404063	Manpreet Singh Brar	2.0	1	Range of marks	LIMIT	Score	24	17	27	13	5	86			
3	101404064	Manvir Kaur	6.0	3	>11 UP TO 16	11	5								DIRECT MESUREMENT AVERAGE SCORE	
4	101404065	Mehak Bhatia	7.0	3	>8 UP TO 11	8	4	1%	2%	3%	4%	5%	CHECK			
5	101404066	Mithilesh Kumar	0.0	1	>5 UP TO 8	5	3	27.9	19.8	31.4	15.1	5.8	100.0		2.51	
6	101404067	Mohit Goyal	9.0	4	>2 UP TO 5	2	2									
7	101404068	Mridul Marwaha	15.0	5	>=0 UP TO 2	0	1									
8	101404069	Mudit Arora	11.0	4												
9	101404070	Naveen Parashar	2.0	1	Total number of students = 86											
10	101404072	Nigam Wadhwa	9.0	4	For marks detail of all students refer course file.											

UEE401-ALTERNATING CURRENT MACHINES

CLO 4: Elaborate the power flow equations of synchronous generator and synchronous motor including concept

Tool used: EST Q 4(a) 5(b)

4 (a) A 400 V, 3 phase mesh connected synchronous motor runs at rated voltage with an excitation emf of 510 V. Its synchronous impedance per phase is 0.5 + j4 ohms and friction, windage and iron losses are 900 W. Calculate the shaft power output and line current for (i) maximum power output and (ii) maximum power input.

5(b) Derive the expressions of electromagnetic power, reluctance power and total output power of a salient pole

S.No.	Rollno.	Name	Max. Marks (20)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404062	Manjosh Singh Dhillon	0.0	1	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL
2	101404063	Manpreet Singh Brar	0.0	1	Range of marks	LIMIT	Score	33	11	20	8	14	86
3	101404064	Manvir Kaur	0.0	1	>14 UP TO 20	14	5						
4	101404065	Mehak Bhatia	5.0	2	>10 UP TO 14	10	4	1%	2%	3%	4%	5%	CHECK
5	101404066	Mithilesh Kumar	9.0	3	> 6 UP TO 10	6	3	38.4	12.8	23.3	9.3	16.3	100.0
6	101404067	Mohit Goyal	20.0	5	>2 UP TO 6	2	2						
7	101404068	Mridul Marwaha	12.5	4	>=0 UP TO 2	0	1						
8	101404069	Mudit Arora	17.0	5									
9	101404070	Naveen Parashar	0.0	1									
10	101404072	Nigam Wadhwa	0.0	1									

DIRECT MESUREMENT AVERAGE SCORE

2.52

Total number of students = 86

For marks detail of all students refer course file.

UEE401-ALTERNATING CURRENT MACHINES

CLO 5: Enumerate the applications of three phase induction motor, single phase induction motor, three phase

Tool used: EST Q 3 (b,c)

3(b) Write the constructional features, working principle and applications of single- phase reluctance motor.

3(c) Explain the working principle of shaded pole induction motor with suitable diagram

S.No	Rollno.	Name	Max. Marks (12)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	1.01E+08	Manjosh Singh Dhillon	5.0	3	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
2	1.01E+08	Manpreet Singh Brar	4.5	3	Range of marks	LIMIT	Score	33	21	18	8	6	86	
3	1.01E+08	Manvir Kaur	3.0	2	>8 UP TO 12	8	5							DIRECT MESUREMENT AVERAGE SCORE
4	1.01E+08	Mehak Bhatia	4.0	2	>6 UP TO 8	6	4	1%	2%	3%	4%	5%	CHECK	
5	1.01E+08	Mithilesh Kumar	0.0	1	> 4 UP TO 6	4	3	38.4	24.4	20.9	9.3	7.0	100.0	2.22
6	1.01E+08	Mohit Goyal	8.5	5	>2 UP TO 4	2	2							
7	1.01E+08	Mridul Marwaha	6.0	3	>=0 UP TO 2	0	1							
8	1.01E+08	Mudit Arora	9.0	5										
9	1.01E+08	Naveen Parashar	0.0	1										
10	1.01E+08	Nigam Wadhwa	2.0	1										

Total number of students = 86

For marks detail of all students refer course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 5 for UEE301 - 2ELE-4,5,6			
	Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	3.17	5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.18	5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	3.99	5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	2.77	3	<--TO BE FILLED BY COURSE COORDINATOR
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)*	4.45	5	
CLO1 *(READ & FILL VALUE FROM CLO6 SHEET CELL P14-->)*			
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P14-->)*			
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)*			
Weighted average score	3.58		

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 5 for UEE301 - 2ELE-4,5,6			
	Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)*	3.63	5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)*	3.72	5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)*	3.75	5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)*	3.81	3	<--TO BE FILLED BY COURSE COORDINATOR
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)*	3.78	5	
CLO1 *(READ & FILL VALUE FROM CLO6 SHEET CELL P25-->)*			
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P25-->)*			
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)*			
Weighted average score	3.73		

TABLE 6:Overall weighted average score of course UEE301 - 2ELE-4,5,6		
Assessment tools	weighted score	Assessment tool Weight
Weighted average student class performance	3.58	5
Weighted average student course survey	3.73	5

The overall score for attainment of CLO's in UEE301 is thus   3.654   on a scale of 1 to 5.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 4 for UMA031			
	Average Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	3.70	5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.51	5	<--TO BE FILLED BY COURSE COORDINATOR
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	3.49	5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	3.33	5	
Weighted average score	3.51		

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 6 for UMA031			
	Average Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)*	4.19	5	<--TO BE FILLED BY COURSE COORDINATOR
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)*	4.22	5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)*	4.17	5	
Weighted average score	4.19		

TABLE 6:Overall weighted average score of course A		
Assessment tools	Average	Assessment tool
Weighted average student class performance	3.51	5
Weighted average student course survey	4.19	5

The overall score for attainment of CLO's in UMA 031 is thus **3.850** on a scale of 1 to 5.

CLO 1: To formulate and solve linear programming problems.

Tool used: MST Q1 Marks (15)

(a) A farm is engaged in breeding pigs. The pigs are fed on various products grown on the farm. In view of the need to ensure certain nutrient constituents (call them X, Y and Z), it is necessary to buy two additional products, say A and B. One unit of product A contains 36 units of X, 3 units and Y and 20 units of Z. One unit of product B contains 6 units of X, 12 units of Y and 10 units of Z. The minimum requirement of X, Y and Z is 40 units, 50 units and 60 units respectively. The product A costs rupees 20 per unit and product B rupees 40 per unit. Formulate this problem as a liner programming problem to minimize the total cost. (4)

) Find the optimal solution of the following linear programming problem (LPP) using Two- Phase method. Also, find

alternative solution, if they exist.

$$\text{Min } Z = 2x_1 + x_2 \text{ subject to } \quad -2x_1 + x_2 \leq 2, \ -2x_1 + 3x_2 \leq 6, \ 2x_1 + x_2 \geq 4, \ x_1 \geq 0, \ x_2 \geq 0. \quad (6)$$

· Reddy Mikks produces both interior and exterior paints from two raw materials, M1 and M2. One unit of exterior paint uses one unit of M1 and 2 units of M2, and one unit of interior paint uses one unit of M1 and one unit of M2. The maximum daily availability of the raw material M1 is 8 units and that of M2 is 10 units. The profit per unit of exterior paint is rupees 5 and for interior paint is rupees 4. The linear programming model of this problem which aims at maximizing total profit is given below, where x and y represents the number of units of exterior and interior paint respectively.

$$\text{Max } 4x+3y \text{ subject to } x + y \leq 8, \ 2x + y \leq 10, \ x,y \geq 0.$$

Using the graphical sensitivity answer the following:

If a choice is made to increase the availability of M1 and M2 at an additional cost of rupees 1.5 per unit. Is it advisable?

) Suppose the unit profits of exterior and interior paints are changed to rupees 5 and 10 respectively. Will the current optimum remain the same? Justify your answer. (5)

S.No.	Rollno.	Name	MST Q1 Marks (15)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	101204013	Anshul Kumar	0	1	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
2	101504002	Aastha Jain	4	2	Range of marks	LIMIT	Score	3	13	16	25	26	83	DIRECT MESUREMENT AVERAGE SCORE
3	101254015	Kuldeep Singh Deora	4.5	2	>11 UP TO 15	11	5							
4	101504004	Aayush Vohra	10	4	>8 UP TO 11	8	4	1%	2%	3%	4%	5%	CHECK	3.70
5	101504005	Aayush Rai Anand	13.5	5	>5 UP TO 8	5	3	3.6	15.7	19.3	30.1	31.3	100.0	
6	101504006	Abhijeet Singh Bhatia	11	4	>2 UP TO 5	2	2							
7	101504007	Abhinandan Narang	14	5	>=0 UP TO 2	0	1							
8	101504008	Abhishek Agarwal	14.5	5										
9	101504009	Abhishek Pandey	6.5	3	Total number of students = 83									

| 10 | 101504010 | Abhishek Prasad | 3.5 | 2 |

For marks detail of all students refer to course file.

CLO 2: Solve the transportation and assignment problems

Tool used: EST-Q3 & Q4 Marks (20+16=36)

Three electronic power plants, namely S_1, S_2 and S_3 with capacities 20, 40 and 30 million kwh supply electricity to three cities D_1, D_2 and D_3. The maximum demands at three cities are estimated as 30, 20 and 20 million kwh. The price per million kwh at three cities (in dollars) is given below:

	D_1	D_2	D_3
S_1	1	2	1
S_2	0	4	5
S_3	2	3	2

If a unit from electric plant is not shipped out, a storage cost is incurred at the rate of \$3, \$4 and \$5 per unit for S_1, S_2 and S_3 respectively. The utility company wishes to determine the most economical plant for the distribution and purchase of energy.
(a) Use Vogel's approximation method to find starting basic feasible solution.
(b) Determine an optimal distribution plan for the utility company.
(c) Determine an alternative optimal distribution plan for the company, if exists.

A captain of a cricket team has to allot four middle batting positions. The average runs scored by each batsman at these positions are given in the table.
Find the arrangement of batsmen to positions which would give the maximum number of runs.

	P	Q	R	S
I	42	35	28	21
II	30	25	20	15
III	30	25	20	15
IV	24	20	16	12

S.No.	Rollno.	Name	EST-Q3 & Q4 Marks (20+16=36)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)							
1	101204013	Anshul Kumar	0	1	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL
2	101504002	Aastha Jain	15	3	Range of marks	LIMIT	Score	4	16	21	18	24	83
3	101254015	Kuldeep Singh Deora	21	4	>28 UP TO 36	28	5						
4	101504004	Aayush Vohra	36	5	>20 UP TO 28	20	4	1%	2%	3%	4%	5%	CHECK
5	101504005	Aayush Rai Anand	36	5	> 12 UP TO 20	12	3	4.8	19.3	25.3	21.7	28.9	100.0
6	101504006	Abhijeet Singh Bhatia	19.5	3	>4 UP TO 12	4	2						
7	101504007	Abhinandan Narang	36	5	>=0 UP TO 4	0	1						
8	101504008	Abhishek Agarwal	15.5	3									
9	101504009	Abhishek Pandey	36	5									
10	101504010	Abhishek Prasad	8	2									

DIRECT MESUREMENT AVERAGE SCORE: 3.51

Total number of students = 83

For marks detail of all students refer to course file.

CLO 3: To solve the Project Management problems using CPM

Tool used: EST Q6 Marks (20)

A small project consists of the following activities where duration is in days and cost is in rupees are given in the following table.

Activity	Duration	Normal duration	Normal cost	Crash duration	Crash cost
(1-2)	5	5	3000	4	4000
(2-3)	6	6	1200	2	2000
(2-5)	4	4	1000	3	1800
(2-4)	5	5	1200	3	2000
(3-5)	0	0	0	0	0
(4-5)	0	0	0	0	0
(5-6)	3	3	1600	3	1600

(a) Use critical path method to find the normal duration for completing the project.

(b) Find the most economical schedule for completing the project in 12 days.

S.No.	Rollno.	Name	EST Q6 Marks (20)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)												
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL				
1	101204013	Anshul Kumar	0	1	Range of marks	LIMIT	Score	8	10	21	21	23	83				
2	101504002	Aastha Jain	2	1													
3	101254015	Kuldeep Singh Deora	18	5	>16 UP TO 20	16	5										
4	101504004	Aayush Vohra	20	5	>12 UP TO 16	12	4	1%	2%	3%	4%	5%	CHECK		DIRECT MESUREMENT AVERAGE SCORE	
5	101504005	Aayush Rai Anand	16	4	>7 UP TO 12	7	3	9.6	12.0	25.3	25.3	27.7	100.0		3.49	
6	101504006	Abhijeet Singh Bhatia	16	4	>2 UP TO 7	2	2									
7	101504007	Abhinandan Narang	20	5	>=0 UP TO 2	0	1									
8	101504008	Abhishek Agarwal	16	4												
9	101504009	Abhishek Pandey	18	5												
10	101504010	Abhishek Prasad	2	1												

Total number of students = 83

For marks detail of all students refer to course file.

CLO 4: To solve two person zero-sum games

The payoff matrix of Player A is shown in below Table.

	Player B			
	3	8	4	4
Player A	−7	2	10	2

(a) Find the optimal solution using graphical method.
(b) Write the linear programming problem with respect to Player A.
(c) Write the linear programming problem with respect to Player B.

S.No.	Rollno.	Name	EST Q7 Marks (15)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101204013	Anshul Kumar	0	1	Range of marks	LIMIT	Score	9	17	20	12	25	83	
2	101504002	Aastha Jain	0	1										
3	101254015	Kuldeep Singh Deora	7.5	3	>11 UP TO 15	11	5							DIRECT MESUREMENT AVERAGE SCORE
4	101504004	Aayush Vohra	15	5	>8 UP TO 11	8	4	1%	2%	3%	4%	5%	CHECK	
5	101504005	Aayush Rai Anand	13	5	> 5 UP TO 8	5	3	10.8	20.5	24.1	14.5	30.1	100.0	3.33
6	101504006	Abhijeet Singh Bhatia	3.5	2	>2 UP TO 5	2	2							
7	101504007	Abhinandan Narang	9	4	>=0 UP TO 2	0	1							
8	101504008	Abhishek Agarwal	5	2										
9	101504009	Abhishek Pandey	5.5	3										
10	101504010	Abhishek Prasad	2	1										

Total number of students = 83

For marks detail of all students refer to course file.

UTA009- COMPUTER PROGRAMMING-II

CLO 1: comprehend the concepts of Object Oriented Computing in Java

Tool used: EST Q1 (a,b,c)

A. Demonstrate any four differences between abstract class and interface in Java. 4
B. Write a Java program in which a method M1 accepts variable number of integer arguments and prints the smallest and largest number among them. These integers should be entered as command line arguments. 10
C. Discuss method overriding with suitable example. 6.

S.No.	Rollno.	Name	EST Q1 (a, b, c)=20	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101604001	Aakanksha Garg	10	5	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL
2	101604002	Aastha Aggarwal	9	5	Range of marks	LIMIT	Score	14	11	14	16	103	158
3	101604003	Aayush Gaharwar	7	4	>8 UP TO 20	8	5						DIRECT MESUREMENT AVERAGE SCORE
4	101604004	Abhigyan Prakash Singh	15	5	>6 UP TO 8	6	4	1%	2%	3%	4%	5%	CHECK
5	101604005	Abhinandan Vijan	17	5	> 4 UP TO 6	4	3	8.9	7.0	8.9	10.1	65.2	100.0
6	101604006	Abhishek Garg	19	5	>2 UP TO 4	1	2						4.16
7	101604008	Abhranil Mandal	0	1	0 TO 2	0	1						
8	101604009	Aditi Singh	12	5									
9	101604010	Aditya Kapur	6	3									
10	101604011	Aditya Rathore	7	4									

Total number of students = 158

For marks detailas of all students refer to course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 4 for UTA009		
	Average Score	WEIGHT
CLO 1: comprehend the concepts of Object Oriented Computing in Java	4.16	5
CLO 2:implement decision statements and looping statements.	4.67	5
CLO 3: grasp the concepts of input and output handling from console and files.	3.99	5
CLO 4: Develop application to demonstrate use of data structures	3.56	5
Weighted average score	4.10	

<--TO BE FILLED BY COURSE COORDINATOR

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 4 for UTA009		
	Average Score	WEIGHT
CLO 1: comprehend the concepts of Object Oriented Computing in Java	2.95	5
CLO 2:implement decision statements and looping statements.	2.94	5
CLO 3: grasp the concepts of input and output handling from console, files and internet in Java	2.89	5
CLO 4: Develop application to demonstrate use of data structures	2.84	5
Weighted average score	2.91	

<--TO BE FILLED BY COURSE COORDINATOR

TABLE 6:Overall weighted average score of course A		
Assessment tools	Average	Assessment
Weighted average student class performance	4.10	5
Weighted average student course survey	2.91	5

The overall score for attainment of CLO's in UTA009 is thus   3.500   on a scale of 1 to 5.

UTA009- COMPUTER PROGRAMMING-II

CLO 2: implement decision statements and looping statements.

Tool used: EST Q2

A. Explain Bitwise AND, Bitwise OR, Bitwise Exclusive OR and Left Shift assignment operators with suitable examples. 6
B. Create a Java class EST to overload the method M2 for following cases:
(i)M2 accepts two integer arguments and returns their sum.
(ii) M2 accepts two string arguments and returns their concatenation.
Write another class EST1 containing main method to demonstrate both cases. 10
C. Write a Java program to print the grade of a student and its description as per range of the marks given in following table. Your program must demonstrate the use of switch case statement.
Range of Marks Grade Description
Between 71 to 100 A Very Good Grade
Between 51 to 70 B Good Grade
Between 34 to 50 C Average Grade
Below 33 D Poor Grade
7
D. Write the output of the following code:

```
class TRY1 {
public static void main(String[] args) {
int a;
a = sum(2,3);
System.out.println(a);
}
static int sum(int a, int b) {
try{
int c = a+b;
return c;
}
finally
{ System.out.println("Finally Block");
}
} } 2
```

S.No.	Rollno.	Name	EST Q2 =25	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101604001	Aakanksha Garg	20	5	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL
2	101604002	Aastha Aggarwal	20.5	5	Range of marks	LIMIT	Score	4	5	6	9	134	158
3	101604003	Aayush Gaharwar	17.5	5	>10 UP TO 25	10	5						
4	101604004	Abhigyan Prakash Singh	19	5	>8 UP TO 10	8	4	1%	2%	3%	4%	5%	CHECK
5	101604005	Abhinandan Vijan	20	5	> 6 UP TO 8	6	3	2.5	3.2	3.8	5.7	84.8	100.0
6	101604006	Abhishek Garg	23	5	>2 UP TO 6	2	2						
7	101604008	Abhranil Mandal	13	5	0 TO 2	0	1						
8	101604009	Aditi Singh	18	5									
9	101604010	Aditya Kapur	14.5	5									
10	101604011	Aditya Rathore	11	5									

DIRECT MESUREMENT AVERAGE SCORE

4.67

Total number of students = 158

For marks detailas of all students refer to course file.

UTA009- COMPUTER PROGRAMMING-II

CLO 3: grasp the concepts of input and output handling from console and files.

Tool used: EST Q3(a,c,d)+Q1(d)

A. Write a Java program to read a text file and to display the total number of occurrence of vowels, and total occurrence of all other non-vowel characters in that file.

S.No.	Rollno.	Name	EST Q3(a+c+d)+Q1 (d)=20	SCORE (1-5)
1	101604001	Aakanksha Garg	7.0	4
2	101604002	Aastha Aggarwal	12.0	5
3	101604003	Aayush Gaharwar	8.0	4
4	101604004	Abhigyan Prakash Singh	10.0	5
5	101604005	Abhinandan Vijan	7.0	4
6	101604006	Abhishek Garg	18.0	5
7	101604008	Abhranil Mandal	4.0	2
8	101604009	Aditi Singh	12.0	5
9	101604010	Aditya Kapur	5.0	3
10	101604011	Aditya Rathore	12.0	5

DIRECT MESUREMENT (USING STUDENT PERFORMNACE)

SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
Range of marks	LIMIT	Score	4	23	22	30	79	158	
>8 UP TO 20	8	5							DIRECT MESUREMENT AVERAGE SCORE
>6 UP TO 8	6	4	1%	2%	3%	4%	5%	CHECK	
> 4 UP TO 6	4	3	2.5	14.6	13.9	19.0	50.0	100.0	3.99
>2 UP TO 4	1	2							
0 TO 2	0	1							

Total number of students = 158

For marks detailas of all students refer to course file.

UTA009- COMPUTER PROGRAMMING-II

CLO 4: Develop application to demonstrate use of data structures

Tool used: EST Q4 +Q3(b)

A. Provide the algorithm or pseudo code for linear and binary search techniques to search a given ITEM from an array of n elements.

B. For a given array elements {22, 76, 32, 7, 98, 102, 65, 47}, execute the sub-steps of the Selection Sort to align the array in ascending order.

B Using stack, create a Java application to check whether a given string is palindrome or not. A palindrome string is a string that is same after reverse e.g. madam.

S.No.	Rollno.	Name	EST Q4 +Q3(b) =35	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	101604001	Aakanksha Garg	7.5	3	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
2	101604002	Aastha Aggarwal	17.5	5	Range of marks	LIMIT	Score	24	20	21	29	64	158	DIRECT MESUREMENT AVERAGE SCORE
3	101604003	Aayush Gaharwar	2.0	1	>12 UP TO 35	12	5							
4	101604004	Abhigyan Prakash Singh	10.5	4	>8 UP TO 12	8	4	1%	2%	3%	4%	5%	CHECK	
5	101604005	Abhinandan Vijan	14.5	5	> 6 UP TO 8	6	3	15.2	12.7	13.3	18.4	40.5	100.0	3.56
6	101604006	Abhishek Garg	21.0	5	>2 UP TO 6	2	2							
7	101604008	Abhranil Mandal	0.0	1	0 TO 2	0	1							
8	101604009	Aditi Singh	11.0	4										
9	101604010	Aditya Kapur	0.0	1										
10	101604011	Aditya Rathore	8.0	3										

Total number of students = 158

For marks detailas of all students refer to course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 4 for UEI303			
	Average Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	3.12	5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.04	5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	3.00	5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	3.48	5	<--TO BE FILLED BY COURSE COORDINATOR
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)*			
CLO6 *(READ & FILL VALUE FROM CLO6 SHEET CELL P14-->)*			
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P14-->)*			
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)*			
Weighted average score	3.16		

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 4 for UEI303			
	Average Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)*		5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)*		5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)*		5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)*		5	<--TO BE FILLED BY COURSE COORDINATOR
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)*			
CLO6 *(READ & FILL VALUE FROM CLO6 SHEET CELL P25-->)*			
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P25-->)*			
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)*			
Weighted average score	0.00		

TABLE 6: Overall weighted average score of course A		
	Average	Assessment
Assessment tools	3.16	10
Weighted average student class performance	0.00	0
Weighted average student course survey		

The overall score for attainment of CLO's in UEI303 is thus [3.160] on a scale of 1 to 5.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 4 for UEI303			
	Average Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	3.12	5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.04	5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	3.00	5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	3.48	5	<--TO BE FILLED BY COURSE COORDINATOR
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)*			
CLO6 *(READ & FILL VALUE FROM CLO6 SHEET CELL P14-->)*			
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P14-->)*			
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)*			
Weighted average score	3.16		

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 4 for UEI303			
	Average Score	WEIGHT	
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)*		5	
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)*		5	
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)*		5	
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)*		5	<--TO BE FILLED BY COURSE COORDINATOR
CLO5 *(READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)*			
CLO6 *(READ & FILL VALUE FROM CLO6 SHEET CELL P25-->)*			
CLO1 *(READ & FILL VALUE FROM CLO7 SHEET CELL P25-->)*			
CLO1 *(READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)*			
Weighted average score	0.00		

TABLE 6:Overall weighted average score of course A		
Assessment tools	Average	Assessment
Weighted average student class performance	3.16	10
Weighted average student course survey	0.00	0

The overall score for attainment of CLO's in UEI303 is thus ⎡ 3.160 ⎤ on a scale of 1 to 5.

CLO 1: Understand the basics of signals and systems

Tool used: MST Section C and Q1 of Section D

Q.1: If x(t) = u(t-3) – u(t-5) and h(t) = e-3t u(t), Compute and plot y(t) =x(t) * h(t)   (3)

Q. 2: Find whether the given system is causal and / or Time-Invariant   (2)

y(t)=x(t)cos(t+1)

Q.3: Show that the Energy in a real valued signal is equal to the sum of the energies of its even and odd components.   (3)

SECTION D

Q1. Determine the necessary and sufficient condition for the discrete LTI system with impulse response h[n] to be   (3)

a) Stable

b) Causal

S.No.	Rollno.	Name	EST Q1 Marks(11)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	1.01E+08	Amarpreet	2	1	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
2	1.01E+08	Abhay Mahipal	6	4	Range of marks	LIMIT	Score	18	13	12	21	19	83	
3	1.01E+08	Abhijeet Singh Sankhla	4.5	3	>7.5 UP TO 11	7.5	5							DIRECT MESUREMENT AVERAGE SCORE
4	1.01E+08	Abhimanyu Tyagi	0	1	>5 UP TO 7.5	5	4	1%	2%	3%	4%	5%	CHECK	
5	1.01E+08	Abhinav Arora	0.5	1	>3.5 UP TO 5	3.5	3	21.7	15.7	14.5	25.3	22.9	100.0	3.12
6	1.01E+08	Abhishek Sharma	6	4	>2 UP TO 3.5	2	2							
7	1.01E+08	Ajay Singh	5.5	4	>=0 UP TO 2	0	1							
8	1.01E+08	Alka Thakur	8	5										
9	1.01E+08	Ankush Goyal	1.5	1										
10	1.01E+08	Anmol Arjun Bharaj	2.5	2										

Total number of students = 83

For marks detail of all students refer to course file.

CLO 2: Solve different type of problems related to Fourier series and Fourier

Tool used:

Question 4. For the signal $x(t) = 1/2 + \cos(t) + 1/2 \cos(2t)$ determine its Fourier series coefficients. Also determine the Fourier series coefficients of the following signals?

(a) $x(-t)$ (b) $(d^2 x(t))/[dt]^2$

Question 5. Find the Fourier series coefficients of the given signal x(t):
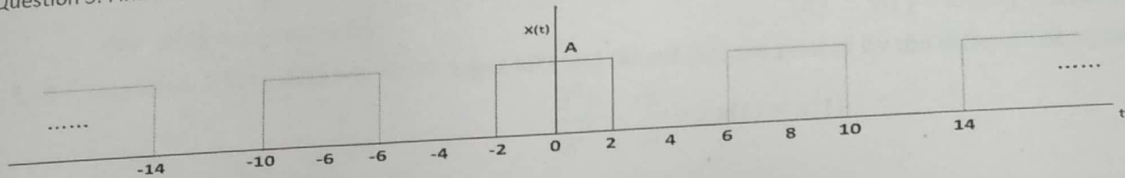
S.No.	Rollno.	Name	Q1 & Q4 MST (6)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
1	101204011	Amarpreet	1	2	of marks	LIMIT	Score	19	18	7	19	20	83	
2	101404001	Abhay Mahipal	5.5	5										DIRECT MESUREMENT AVERAGE SCORE
3	101404002	Abhijeet Singh Sankhla	3.5	4	>3.5 UP TO 6	3.5	5							
4	101404003	Abhimanyu Tyagi	0	1	>2 UP TO 3.5	2	4	1%	2%	3%	4%	5%	CHECK	
5	101404004	Abhinav Arora	0	1	>1 UP TO 2	1	3	22.9	21.7	8.4	22.9	24.1	100.0	3.04
6	101404006	Abhishek Sharma	0.5	2	>0 UP TO 1	0	2							
7	101404007	Ajay Singh	5.5	5	UP TO 2	0	1							
8	101404009	Alka Thakur	5	5										
9	101404012	Ankush Goyal	4	5										
10	101404013	Anmol Arjun Bharaj	1.5	3										

0

Total number of students = 83

For marks detail of all students refer to course file.

CLO 3. Use Laplace and Fourier transforms for different applications

Tool Used: Section C and Section D (50)

Q.1: Determine the Laplace transforms of the functions and its ROC:

(a) $x(t) = \dfrac{\partial u(t)}{\partial t}$

(c) $x(t) = |t| e^{2t} [u(-t)]$

(d) $x(t) = \delta(3t) + u(2t)$

(b) $x(t) = u(-at + b)$

Q.2: Consider an LTI system for which input x(t) and output y(t) are related by the differential equation

$$\frac{\partial^2 y}{\partial t^2} - \frac{\partial y}{\partial t} - 2y(t) = x(t)$$

(a) Find the transfer function H(s)

(b) Find the impulse response h(t) for the cases :
    (i) The system is causal   (ii) the system is stable

Q.3: Find the inverse Laplace transform of the

$X(s) = \dfrac{2s + 4}{s^2 + 4s + 3}$,   (a) Re{s} < -3,   (b) -3 < Re(s) < -1

Q.4: Determine the initial and final values of $x_1(t)$ and $x_2(t)$. given

(a) $L[x_1(t)] = X_1(S) = \dfrac{5s + 3}{s(s + 1)}$ $ROC : Re\{s\} > 0$

(b) $L[x_2(t)] = X_2(S) = \dfrac{2s}{(s - 1)}$ $ROC : Re\{s\} > 1$

Section D

Q.1: Describe any four properties (with proof) of z-transforms.

Q.2.: Using differentiation property of z-transform determine x(n) if

X(z)=log(1-2z), IzI <1/2.

Q.3.: A LTI system is characterized by the system function $H(z) = \dfrac{3 - 4z^{-1}}{1 - 3.5z^{-1} + 1.5z^{-2}}$, specify the ROC of H(z) and determine h(n) for the following conditions

    a) The system is stable

    b) The system is causal

    c) The system is anticausal

Q.4.: a) Express the z-transform of $y(n) = \sum_{k=-\infty}^{n} x(n)$ in terms of X(z) and determine the step response of the system if input is x(n) and output is y(n).

    b) Given the sequence $x(n) = (-1)^n u(n) + a^n u(-n-k)$, determine the constraints on the complex number a and integer k , given that the ROC of X(z) is 1<IzI<3.

S.No.	Rollno.	Name	SEC-C +SecD (50)	SCORE (1-5)
1	101204011	Amarpreet	4	1
2	101404001	Abhay Mahipal	29	4
3	101404002	Abhijeet Singh Sankhla	7	1
4	101404003	Abhimanyu Tyagi	0	1
5	101404004	Abhinav Arora	12	2
6	101404006	Abhishek Sharma	23.5	3
7	101404007	Ajay Singh	22.5	3
8	101404009	Alka Thakur	22.5	3
9	101404012	Ankush Goyal	25.5	3
10	101404013	Anmol Arjun Bharaj	15.5	2

DIRECT MESUREMENT (USING STUDENT PERFORMNACE)

SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
Range of marks	LIMIT	Score	13	14	25	22	9	83	
>37 UP TO 50	37	5							DIRECT MESUREMENT AVERAGE SCORE
>26 UP TO 37	26	4	1%	2%	3%	4%	5%	CHECK	
> 19 UP TO 26	19	3	15.7	16.9	30.1	26.5	10.8	100.0	3.00
>10 UP TO 19	10	2							
>=0 UP TO 10	0	1							

Total number of students = 83

For marks detail of all students refer to course file.

CLO 4. Describe the concept of random signals

Q.1: Differentiate between
(a) Deterministic signal and random signal (b) Random variable and random process [4+4]

S.No.	Rollno.	Name	signals (8)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)										
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL		
1	1E+08	Amarpreet	3	3	Range of marks	LIMIT	Score	6	10	22	28	17	83		
2	1E+08	Abhay Mahipal	4	4											DIRECT MESUREMENT AVERAGE SCORE
3	1E+08	Abhijeet Singh Sankhla	2	2	>5 UP TO 8	5	5								
4	1E+08	Abhimanyu Tyagi	0	1	>3 UP TO 5	3	4	1%	2%	3%	4%	5%	CHECK		3.48
5	1E+08	Abhinav Arora	3	3	> 1 UP TO 2	2	3	7.2	12.0	26.5	33.7	20.5	100.0		
6	1E+08	Abhishek Sharma	6	5	>0 UP TO 1	1	2								
7	1E+08	Ajay Singh	3	3	UP TO 1	0	1								
8	1E+08	Alka Thakur	5	4											
9	1E+08	Ankush Goyal	2	2											
10	1E+08	Anmol Arjun Bharaj	2	2											

0

Total number of students = 83

For marks detail of all students refer to course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 5 for UMA003

	Average Score	WEIGHT	
CLO1 (READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)	3.98	5	
CLO2 (READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)	3.60	5	
CLO3 (READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)	4.13	5	<--TO BE FILLED BY COURSE COORDINATOR
CLO4 (READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)	3.73	5	
CLO5 (READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)	4.08	5	
Weighted average score	3.90		

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 5 for UMA003

	Average Score	WEIGHT	
CLO1 (READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)	4.06	5	
CLO2 (READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)	3.82	5	
CLO3 (READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)	3.84	5	<--TO BE FILLED BY COURSE COORDINATOR
CLO4 (READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)	4.04	5	
CLO5 (READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)	3.80	5	
Weighted average score	3.91		

TABLE 6: Overall weighted average score of course A

	Average	Assessment tool
Assessment tools		
Weighted average student class performance	3.90	6
Weighted average student course survey	3.91	4

The overall score for attainment of CLO's in UMA003 is thus **3.907** on a scale of 1 to 5.

UEE301- DIRECT CURRENT MACHINES AND TRANSFORMERS

CLO 1: Test the transformer and calculate its efficiency and performance in distribution system.

Tool used:

The supply frequency is halved at constant voltage. What will be the effect on hysteresis and eddy current losses of a transformer?

What type of load should be connected to a transformer for getting zero voltage regulation? Justify your answer.

A 250kVA, single-phase transformer is in circuit continuously. For 8 hours in a day, the load is 180kW at 0.8 power factor lagging. For 6 hours, the load is 100kW at unity

A 3-phase transformer has its primary winding connected in delta, and secondary winding in star. It has an equivalent resistance of 1.5% and equivalent reactance of 8%. The primary applied voltage is 6.6kV. What must be the transformation ratio in order that it will deliver 4.8kV at full load current and 0.8 power factor lagging?

Why is All day efficiency of a distribution transformer always lower than its commercial efficiency? Draw the phasor diagram of a practical isolation transformer connected to an inductive load. Hence, derive the expression between secondary induced voltage and load voltage.

What are the various losses that take place in a transformer? How can these losses be reduced? Also, write the procedure to separate the core loses into its components.

S.No.	Rollno.	Name	MST Q1(b,c), Q2, Q5(a) (9) EST Q1 (20)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)							
1	101254015	Kuldeep Singh Deora	15	5	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL
2	101504046	Gurnoor Kaur	8	3	Range of marks	LIMIT	Score	9	13	24	29	8	83
3	101504067	Malay Chand	4	2	>14 UP TO 29	14	5						DIRECT MESUREMENT AVERAGE SCOR
4	101504069	Mayank Kumar	5	2	>8 UP TO 16	8	4	1%	2%	3%	4%	5%	CHECK
5	101504070	Mehul Natu	3	1	> 5 UP TO 8	5	3	10.8	15.7	28.9	34.9	9.6	100.0	3.17
6	101504071	Mohit Goyal	4	2	>3 UP TO 6	3	2						
7	101504073	Neha Bhargava	2.5	1	>=0 UP TO 3	0	1						
8	101504074	Neha Singla	17.5	5									
9	101504075	Nihal Singh	13	4									
10	101504076	Nikhil Sharma	5.5	3									

Total number of students = 83

For marks detail of all students refer course file.

CLO 2: Scrutinize three-phase transformer connections and use special purpose transformer for

Tool used:

Write two advantages that are obtained with the delta connection in transformers. What is meant by 'Rated Burden' of an instrument transformer?

Draw the well-labeled Scott connection of transformers. Explain, how two three-phase transformers can be used to convert a three-

A 6.6kV/440V, 50Hz, 3-phase transformer is delta connected on HT side and star connected on LT side. There are to be 11V per turn and the flux density is not to exceed 1.2Wb/m2. Calculate the number of turns per phase on each winding, and the net iron cross-sectional

Is it possible to connect phasor group 1 and phasor group 11 transformers in parallel? Justify your answer. What is a pulse transformer?

Differentiate between: Earthing Transformer and Power transformer.

A load of 1400kVA at 0.866 power factor lagging is supplied by two 3-phase transformers of 1000kVA and 500kVA capacity operating in parallel. The ratio of transformation is the same in both; 6600/400 delta-star. If the equivalent secondary impedances are (0.001+j0.003)

	Rollno.	Name	MST Q1(d,e), Q4, Q5(b) (10) EST Q3 (18)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	101254015	Kuldeep Singh Deora	13.5	5	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
2	101504046	Gurnoor Kaur	1	1	Range of marks	LIMIT	Score	13	5	30	24	11	83	
3	101504067	Malay Chand	1	1	>11 UP TO 28	11	5							
4	101504069	Mayank Kumar	9.5	4	>6 UP TO 12	6	4	1%	2%	3%	4%	5%	CHECK	DIRECT MESUREMENT AVERAGE SCORE
5	101504070	Mehul Natu	0.5	1	> 3 UP TO 7	3	3	15.7	6.0	36.1	28.9	13.3	100.0	3.18
6	101504071	Mohit Goyal	8	4	>2UP TO 5	2	2							
7	101504073	Neha Bhargava	2	1	>=0 UP TO 2	0	1							
8	101504074	Neha Singla	7	4										
9	101504075	Nihal Singh	11.5	5	Total number of students = 83									
10	101504076	Nikhil Sharma	6.5	4	For marks detail of all students refer course file.									

UEE301- DIRECT CURRENT MACHINES AND TRANSFORMERS

CLO 3: Compute the performance of DC motors and generators in various operating modes.

Tool used:

Why DC series motor cannot run on belt?

What are the effects of armature reaction in a DC machine?

Discuss the classification of rotating electrical machines.

With the help of OCC, explain how voltage is built up in a DC shunt generator. What limits the voltage to which the machine can build up?

Explain the Swinburne's test to determine no-load losses of a DC machine. What are the limitations of this test?

S.No.	Rollno.	Name	EST Q4 Marks(2 2)	SCORE (1- 5)										
					DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	101254015	Kuldeep Singh Deora	18	5	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
2	101504046	Gurnoor Kaur	11	4	Range of marks	LIMIT	Score	1	7	18	22	34	82	
3	101504067	Malay Chand	7	3	>11 UP TO 22	11	5							DIRECT MESUREMENT AVERAGE SCORE
4	101504069	Mayank Kumar	9	4	>7 UP TO 11	7	4	1%	2%	3%	4%	5%	CHECK	
5	101504070	Mehul Natu	11.5	5	> 4 UP TO 7	4	3	1.2	8.5	22.0	26.8	41.5	100.0	3.99
6	101504071	Mohit Goyal	4	2	>2UP TO 4	2	2							
7	101504073	Neha Bhargava	11	4	>=0 UP TO 2	2	1							
8	101504074	Neha Singla	10	4										
9	101504075	Nihal Singh	12	5										
10	101504076	Nikhil Sharma	9	4										

Total number of students = 82

For marks detail of all students refer course file.

UEE301- DIRECT CURRENT MACHINES AND TRANSFORMERS

CLO 4: Explain the advantages of grid operation and can supply increasing load with parallel operation.

Explain, how two DC shunt generators work in parallel, and how they share the load. List out the conditions to be satisfied for running two or more DC shunt generators in parallel.

S.No.	Rollno.	Name	EST Q5(10)	SCORE (1-5)
1	101254015	Kuldeep Singh Deora	6	5
2	101504046	Gurnoor Kaur	0	1
3	101504067	Malay Chand	1	1
4	101504069	Mayank Kumar	0	1
	101504070	Mehul Natu	0	1
6	101504071	Mohit Goyal	6	5
7	101504073	Neha Bhargava	0	1
8	101504074	Neha Singla	5	5
9	101504075	Nihal Singh	2	2
10	101504076	Nikhil Sharma	7	5

DIRECT MESUREMENT (USING STUDENT PERFORMNACE)

SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL
Range of marks	LIMIT	Score	36	8	6	5	28	83
>4 UP TO 10	4	5						

			1%	2%	3%	4%	5%	CHECK	DIRECT MESUREMENT AVERAGE SCORE
>4 UP TO 7	3	4	43.4	9.6	7.2	6.0	33.7	100.0	2.77
> 2 UP TO 4	2	3							
>1 UP TO 2	1	2							
UP TO1	0	1							

Total number of students = 82

For marks detail of all students refer course file.

UEE301- DIRECT CURRENT MACHINES AND TRANSFORMERS

CLO 5: Design the speed control and starting method of DC motor for specific purpose.

Why is it not possible to obtain speed of a DC shunt motor above its normal speed by armature resistance control?

What is the need of a starter in a DC motor? Justify your answer.

A 250V DC shunt motor has an armature current of 20A when running at 1000 rpm against full-load torque. The armature resistance is 0.5 Ohms. What resistance must be inserted in series with the armature to reduce the speed to 500rpm at the same torque?

Derive the speed equation and torque equation of a DC motor. Hence, obtain the characteristics of DC series, DC shunt motors and DC compound motors. Also, write their applications.

S.No.	Rollno.	Name	EST Q6 (20)	SCORE (1-5)	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)
1	101254015	Kuldeep Singh Deora	20.0	5				2	4	4	18	55	83	
2	101504046	Gurnoor Kaur	10.0	4	Range of marks	LIMIT	Score							
3	101504067	Malay Chand	11.0	4	>11 UP TO 20	11	5							DIRECT MESUREMENT AVERAGE SCORE
4	101504069	Mayank Kumar	15.0	5	>7 UP TO 11	7	4	1%	2%	3%	4%	5%	CHECK	
5	101504070	Mehul Natu	15.0	5	> 4 UP TO 7	4	3	2.4	4.8	4.8	21.7	66.3	100.0	4.45
6	101504071	Mohit Goyal	10.0	4	>2 UP TO 4	2	2							
7	101504073	Neha Bhargava	13.0	5	UP TO 2	0	1							
8	101504074	Neha Singla	14.0	5										
9	101504075	Nihal Singh	17.0	5										
10	101504076	Nikhil Sharma	16.0	5										

Total number of students = 83

For marks detail of all students refer course file.

UMA003- MATHEMATICS-I

CLO 1: apply the knowledge of calculus to plot graphs of functions and solve the problem of maxima and minima.

Tool used: MST Question No. 1

(a) Find the equivalent Cartesian form of the point $(5, \tan^{-1}(4/3))$, given in polar form

(b) Sketch the graph of polar curve $r = -1 + \cos\theta$ by using all its salient features in detail

(c) A rectangle is to be inscribed in a semicircle of radius 2. What is the largest area the rectangle can have and what are its dimensions?

S.No.	Rollno.	Name	MST Q1 (10)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101504067	Malay Chand	6.0	3	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL
2	101504068	Manpreet Singh	7.5	4	Range of marks	LIMIT	Score	2	2	12	26	21	63
3	101504069	Mayank Kumar	0.5	1	>8 UP TO 10	8	5						DIRECT MESUREMENT AVERAGE SCORE
4	101504070	Mehul Natu	8.0	4	>6 UP TO 8	6	4	1%	2%	3%	4%	5%	CHECK
5	101504071	Mohit Goyal	6.5	4	> 4 UP TO 6	4	3	3.2	3.2	19.0	41.3	33.3	100.0	3.98
6	101504072	Navi Sood	9.5	5	>2 UP TO 4	2	2						
7	101504073	Neha Bhargava	9.0	5	>=0 UP TO 2	0	1						
8	101504074	Neha Singla	8.0	4									
9	101504075	Nihal Singh	7.0	4	Total number of students = 63								
10	101504076	Nikhil Sharma	7.0	4	For marks detail of all students refer course file.								

UMA003- MATHEMATICS-I

Tool used: EST Q4

(a) (i) Sketch the region of integration of the integral $\int_0^2 \int_0^{4-x^2} \frac{xe^{2y}}{4-y} \, dy \, dx$.

    (ii) Evaluate the above integral by reversing the order of integration.   [3+6=9]

(b) (i) Sketch the region in xy-plane bounded by the lines $y = x, y = \sqrt{3}x$ and the circle $x^2 + y^2 = 1$ in the first quadrant.

    (ii) Evaluate the area of the above region by using polar integral.   [3+6=9]

(c) Evaluate the integral $\int_0^1 \int_0^2 \int_0^{1-z} dy \, dx \, dz$.   [6]

S.No.	Rollno.	Name	EST Q4 (24)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	101504067	Malay Chand	9.0	3	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
2	101504068	Manpreet Singh	13.0	4	Range of marks	LIMIT	Score	3	5	9	10	36	63	
3	101504069	Mayank Kumar	3.0	2	>15 UP TO 24	15	5							DIRECT MESUREMEN T AVERAGE SCORE
4	101504070	Mehul Natu	14.0	4	>10 UP TO 15	10	4	1%	2%	3%	4%	5%	CHECK	
5	101504071	Mohit Goyal	23.0	5	> 5 UP TO 10	5	3	4.8	7.9	14.3	15.9	57.1	100.0	4.13
6	101504072	Navi Sood	23.0	5	>2 UP TO 5	2	2							
7	101504073	Neha Bhargava	13.0	4	>=0 UP TO 2	0	1							
8	101504074	Neha Singla	23.0	5										
9	101504075	Nihal Singh	17.0	5	Total number of students = 63									
10	101504076	Nikhil Sharma	14.0	4	For marks detail of all students refer course file.									

CLO 4: examine functions of several variables, define and compute partial derivatives,

Tool Used: EST Ques. No. 3 (b), (c), (d)

3. (a) If $u = f(x^2 - y^2, y^2 - z^2, z^2 - x^2)$, then find the value of the $\dfrac{1}{x}\dfrac{\partial u}{\partial x} + \dfrac{1}{y}\dfrac{\partial u}{\partial y} + \dfrac{1}{z}\dfrac{\partial u}{\partial z}$.   [6]

(b) (i) Find the derivative of the function $f(x, y, z) = x^3 - xy^2 - z$ at $P(1,1,0)$ in the direction of $\vec{u} = 2\hat{i} - 3\hat{j} + 6\hat{k}$.

(ii) In what directions, does f increase and decrease most rapidly at the point $P(1,1,0)$?

(iii) What are the rates of change of f in these directions?   [4+4+3=11]

(c) Find the absolute maxima and minima of the function $f(x, y) = x^2 - xy + y^2 + 1$ on the

closed triangular plate in the first quadrant bounded by the lines $x = 0$, $y = 4$, $y = x$.   [6]

S.No.	Rollno.	Name	EST Q3 (b,c,d) (18)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101504067	Malay Chand	15.0	4	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL
2	101504068	Manpreet Singh	18.0	5	Range of marks	LIMIT	Score	4	8	9	22	20	63
3	101504069	Mayank Kumar	6.0	2	>15 UP TO 18	15	5						DIRECT MESUREMENT AVERAGE SCORE
4	101504070	Mehul Natu	6.5	2	>11 UP TO 15	11	4	1%	2%	3%	4%	5%	CHECK
5	101504071	Mohit Goyal	18.0	5	> 7 UP TO 11	7	3	6.3	12.7	14.3	34.9	31.7	100.0
6	101504072	Navi Sood	18.0	5	>3 UP TO 7	3	2						
7	101504073	Neha Bhargava	8.5	3	>=0 UP TO 3	0	1						
8	101504074	Neha Singla	17.0	5									
9	101504075	Nihal Singh	16.0	5									
10	101504076	Nikhil Sharma	6.0	2									

DIRECT MESUREMENT AVERAGE SCORE: 3.73

Total number of students = 63

For marks detail of all students refer course file.

UMA003- MATHEMATICS-I

CLO 5: analyze some mathematical problems encountered in engineering applications

Tool used: EST Ques. No. 1(b), (c)

(b) It costs c dollars each to manufacture and distribute backpacks. If the backpacks are sold at x dollars each and the number of the backpacks sold is given by $n = \dfrac{a}{(x-c)} + b(100-x)$, where a and b are certain positive constants, then what selling price will bring a maximum profit? [4]

(c) Check whether the point represented by polar coordinates $(2, 3\pi/4)$ lies on the curve $r = \sin 2\theta$ or not ? Explain. [3]

S.No.	Rollno.	Name	EST Q1 (b,c) (8)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101504067	Malay Chand	7.0	4	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL
2	101504068	Manpreet Singh	6.0	4	Range of marks	LIMIT	Score	0	5	18	7	33	63
3	101504069	Mayank Kumar	5.0	3	>7 UP TO 8	7	5						DIRECT MESUREMENT AVERAGE SCORE
4	101504070	Mehul Natu	8.0	5	>5 UP TO 7	5	4	1%	2%	3%	4%	5%	CHECK
5	101504071	Mohit Goyal	5.0	3	> 3 UP TO 5	3	3	0.0	7.9	28.6	11.1	52.4	100.0	4.08
6	101504072	Navi Sood	8.0	5	>1 UP TO 3	1	2						
7	101504073	Neha Bhargava	6.0	4	>=0 UP TO 1	0	1						
8	101504074	Neha Singla	8.0	5									
9	101504075	Nihal Singh	7.5	5									
10	101504076	Nikhil Sharma	7.0	4									

Total number of students = 63

For marks detail of all students course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 3 for UTA008

	Average Score	WEIGHT	
CLO1 (READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)	3.11	5	
CLO1 (READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)	2.81	5	
CLO1 (READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)	3.96	5	<--TO BE FILLED BY
CLO1 (READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)	3.03	5	COURSE COORDINATOR
CLO1 (READ & FILL VALUE FROM CLO5 SHEET CELL P14-->)	3.00	5	
CLO1 (READ & FILL VALUE FROM CLO6 SHEET CELL P14-->)			
CLO1 (READ & FILL VALUE FROM CLO7 SHEET CELL P14-->)			
CLO1 (READ & FILL VALUE FROM CLO8 SHEET CELL P14-->)			
Weighted average score	3.18		

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 3 for UTA008

	Average Score	WEIGHT	
CLO1 (READ & FILL VALUE FROM CLO1 SHEET CELL P25-->)	3.09	4	
CLO1 (READ & FILL VALUE FROM CLO2 SHEET CELL P25-->)	3.65	4	
CLO1 (READ & FILL VALUE FROM CLO3 SHEET CELL P25-->)	3.64	4	<--TO BE FILLED BY
CLO1 (READ & FILL VALUE FROM CLO4 SHEET CELL P25-->)	3.60	4	COURSE COORDINATOR
CLO1 (READ & FILL VALUE FROM CLO5 SHEET CELL P25-->)	3.75	4	
CLO1 (READ & FILL VALUE FROM CLO6 SHEET CELL P25-->)			
CLO1 (READ & FILL VALUE FROM CLO7 SHEET CELL P25-->)			
CLO1 (READ & FILL VALUE FROM CLO8 SHEET CELL P25-->)			
Weighted average score	3.55		

TABLE 6: Overall weighted average score of course A

Assessment tools	Average	Assessment tool
Weighted average student class performance	3.18	6
Weighted average student course survey	3.55	4

The overall score for attainment of CLO's in UTA008 is thus | 3.328 | on a scale of 1 to 5.

CLO 1.1. Analyze the signals in time and frequency domain

Tool used: EST Q1

Q1: Derive a radix-2 DIF FFT algorithm for an eight point sequence and then obtain FFT of x(n)={1,0,0,0,1,0,0,1} [15]

S.No.	Rollno.	Name	Q1 MARKS (15)	SCORE (15)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)										
1	101404062	Manjosh Singh Dhillon	7.5	4	SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL		
2	101404063	Manpreet Singh Brar	13	5	Range of marks	LIMIT	Score	10	19	16	11	18	74		
3	101404064	Manvir Kaur	0	1	>8 UP TO 15	8	5								DIRECT MESUREMENT AVERAGE SCORE
4	101404065	Mehak Bhatia	11	5	>6 UP TO 8	6	4	1%	2%	3%	4%	5%	CHECK		
5	101404066	Mithilesh Kumar	0	1	> 3 UP TO 6	3	3	13.5	25.7	21.6	14.9	24.3	100.0		3.11
6	101404067	Mohit Goyal	14	5	>1 UP TO 3	1	2								
7 .	101404068	Mridul Marwaha	13	5	>=0 UP TO 1	0	1								
8	101404069	Mudit Arora	13	5											
9	101404070	Naveen Parashar	1	1											
10	101404072	Nigam Wadhwa	8	4											

Total number of students = 74

For marks detail of all students refer to course file.

Tool Used: EST

Q2: Describe the properties of z-Transform using suitable examples. Also describe the concept of causality and stability in z-domain. Describe the relationship between Fourier series coefficients and DFT X(k). [15]

S.No.	Rollno.	Name	EST Q2 MARKS (15)	SCORE (1-5)
1	101404062	Manjosh Singh Dhillon	12	5
2	101404063	Manpreet Singh Brar	13	5
3	101404064	Manvir Kaur	2	1
4	101404065	Mehak Bhatia	9	4
5	101404066	Mithilesh Kumar	0	1
6	101404067	Mohit Goyal	14	5
7	101404068	Mridul Marwaha	8	4
8	101404069	Mudit Arora	12	5
9	101404070	Naveen Parashar	10	4
10	101404072	Nigam Wadhwa	8	4

DIRECT MESUREMENT (USING STUDENT PERFORMNACE)

SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	DIRECT MESUREMENT AVERAGE SCORE
Range of marks	LIMIT	Score	23	9	14	15	13	74	
>10 UP TO 15	10	5							
>7 UP TO 10	7	4	1%	2%	3%	4%	5%	CHECK	
>4 UP TO 7	4	3	31.1	12.2	18.9	20.3	17.6	100.0	2.81
>2 UP TO 5	2	2							
> UP TO 2	0	1							

Total number of students = 74

For marks detail of all students refer to course file.

Tool used: EST

Q4. Obtain the Direct form I, Direct Form II and Cascade structure realization of the following system function

$$H(z)=((1+1.5z^{-1}+0.5z^{-2})(1-1.5z^{-1}+z^{-2}))/(1+z^{-1}+0.25z^{-2})(1+0.25z^{-1}+0.5z^{-2})$$

S.No.	Rollno.	Name	MST Q4 (15)	SCORE (1-5)	SCALE TO BE DEFINED BY COORDINATOR				1'S	2'S	3'S	4'S	5'S	TOTAL	DIRECT MESUREMENT AVERAGE SCORE
					Range of marks	LIMIT	Score		9	7	6	8	44	74	
1	101404062	Manjosh Singh Dhillon	12	5											
2	101404063	Manpreet Singh Brar	13	5											
3	101404064	Manvir Kaur	13	5	>11 UP TO 15	11	5		1%	2%	3%	4%	5%	CHECK	
4	101404065	Mehak Bhatia	15	5	>7 UP TO 11	7	4		12.2	9.5	8.1	10.8	59.5	100.0	3.96
5	101404066	Mithilesh Kumar	5	3	> 4 UP TO 7	4	3								
6	101404067	Mohit Goyal	15	5	>1 UP TO 4	1	2								
7	101404068	Mridul Marwaha	15	5	>=0 UP TO 1	0	1								
8	101404069	Mudit Arora	15	5											
9	101404070	Naveen Parashar	1	1											
10	101404072	Nigam Wadhwa	15	5											

Total number of students = 74

For marks detail of all students refer to course file.

CLO 4: Design various digital filters and analyze their frequency response

Tool Used: EST

Q6 Use bilinear transformation to design a low pass filter using Butterworth approximation to meet the following specifications   [15]

$0.707 \leq |H(e^{j\omega})| \leq 1$ $0 \leq \omega \leq 0.5\pi$

$|H(e^{j\omega})| \leq 0.2$ $0.75\pi \leq \omega \leq \pi$

Q8 Design a FIR filter to meet the following specifications [15]
passband edge=1.5kHz, transition width=1kHz, stopband attenuation> 55dB, Sampling frequency Fs=10kHz.

S.No.	Rollno.	Name	Q6, Q8 MARKS (30)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	101404062	Manjosh Singh Dhillon	10	3	SCALE TO BE DEFINED BY COORDINATOR			1S	2S	3S	4S	5S	TOTAL	
2	101404063	Manpreet Singh Brar	6	2	Range of marks	LIMIT	Score	9	16	25	12	12	74	
3	101404064	Manvir Kaur	10	3	>20 UP TO 30	20	5							DIRECT MESUREMENT AVERAGE SCORE
4	101404065	Mehak Bhatia	15	3	>15 UP TO 20	15	4	1%	2%	3%	4%	5%	CHECK	
5	101404066	Mithilesh Kumar	7	2	> 8 UP TO 15	8	3	12.2	21.6	33.8	16.2	16.2	100.0	3.03
6	101404067	Mohit Goyal	30	5	>4 UP TO 8	4	2							
7	101404068	Mridul Marwaha	23	5	>=0 UP TO 1	0	1							
8	101404069	Mudit Arora	26	5										
9	101404070	Naveen Parashar	13	3										
10	101404072	Nigam Wadhwa	18	4										

Total number of students = 74

For marks detail of all students refer to course file.

UEI503- DIGITAL SIGNAL PROCESSING AND APPLICATIONS

CLO5: Analyze finite word length effects.

Q7. If $H(z)=(0.5+0.4z^{-1})/(1-0.312z^{-1})$ is the transfer function of a digital filter, find the scaling factor S0 to avoid overflow in adder of digital filter.

S.No.	Rollno.	Name	EST Q7 MARKS (10)	SCORE (1-5)
1	101404062	Manjosh Singh Dhillon	0	1
2	101404063	Manpreet Singh Brar	8	5
3	101404064	Manvir Kaur	0	1
4	101404065	Mehak Bhatia	10	5
5	101404066	Mithilesh Kumar	0	1
6	101404067	Mohit Goyal	10	5
7	101404068	Mridul Marwaha	10	5
8	101404069	Mudit Arora	10	5
9	101404070	Naveen Parashar	10	5
10	101404072	Nigam Wadhwa	10	5

DIRECT MESUREMENT (USING STUDENT PERFORMNACE)

SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL
Range of marks	LIMIT	Score	30	3	2	15	24	74
>7 UP TO 10	7	5						

Range of marks	LIMIT	Score	1%	2%	3%	4%	5%	CHECK	DIRECT MESUREMENT AVERAGE SCORE
>4 UP TO 7	4	4							
> 3 UP TO 4	3	3	40.5	4.1	2.7	20.3	32.4	100.0	3.00
>2 UP TO 3	2	2							
UP TO 2	0	1							

Total number of students = 74

For marks detail of all students refer to course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 4 for UEN002		
	Average Score	WEIGHT
CLO1	3.34	1
CLO2	3.77	2
CLO3	3.53	3
CLO4	4.26	4
Weighted average score	3.85	

← TO BE FILLED BY COURSE COORDINATOR

TABLE 5: Weighted Average Student course survey (course portfolio) for CLO 1 to CLO 4 for UEN002		
	Average Score	WEIGHT
CLO1	4.02	1
CLO2	4.02	2
CLO3	4.07	3
CLO4	4.09	4
Weighted average score	4.06	

← TO BE FILLED BY COURSE COORDINATOR

TABLE 6:Overall weighted average score of course UEN002		
Assessment tools	Average weighted	Assessment tool
Weighted average student class performance	3.85	6
Weighted average student course survey	4.06	4

The overall score for attainment of CLO's in UEN002 is thus **3.936** on a scale of 1 to 5.

CLO 1: Correlate major local and regional environmental issues with changes in

Tool Used (EST -

(a) Chernobyl nuclear disaster has been classified on the scale of 7 on the international scale of nuclear disasters. Identify the causes leading to the Chernobyl nuclear disaster. Analyze the health and environmental consequences of this disaster.

S.No.	Rollno.	Name	((20))	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101504002	AASTHA JAIN	1.5	1	Range of marks	LIMIT	Score	11	34	37	66	24	172	
2	101504004	AAYUSH VOHRA	10.5	4										
3	101504005	AAYUSH RAI ANAND	5.5	2	> 12.0 UP TO 20.0	11.9	5							DIRECT MESUREMENT AVERAGE SCORE
4	101504006	ABHIJEET SINGH BHATIA	1	1	> 8.0 UP TO 12.0	7.9	4	1%	2%	3%	4%	5%	CHECK	
5	101504007	ABHINANDAN NARANG	6	3	> 6.0 UP TO 8.0	5.9	3	6.4	19.8	21.5	38.4	14.0	100.0	3.34
6	101504008	ABHISHEK AGARWAL	9	4	> 2.0 up to 6.0	1.9	2							
7	101504009	ABHISHEK PANDEY	3	2	< 2.0	0	1							
8	101504010	ABHISHEK PRASAD	10	4										
9	101504011	ADARSH AGARWAL	8.5	4										
10	101504012	ADITI MISHRA	6.5	3										

Total number of students = 172

For marks detail of all students refer to course file.

CLO 2: Monitor and document the development and dynamics of ecosystems in

Tool Used (EST - Question

(a) Numerical on solid waste management and calorific value.
(b) Outline the parameters on which separation of suspended solids in waste water depend?
(c) Describe any two physical and two chemical properties of municipal solid waste and their importance in waste management perspective.

S.No.	Rollno.	Name	((20))	SCORE (15)	DIRECT MEASUREMENT (USING STUDENT PERFORMNACE)							
1	101504002	AASTHA JAIN	2.5	2	SCALE TO BE DEFINED BY COORDINATOR			1S	2S	3S	4S	5S	TOTAL
2	101504004	AAYUSH VOHRA	14	5	Range of marks	LIMIT	Score	18	27	7	44	76	172
3	101504005	AAYUSH RAI ANAND	7.5	4	> 11.0 UP TO 20.0	10.9	5						
4	101504006	ABHIJEET SINGH BHATIA	1.00	1	> 7.0 UP TO 12.0	6.9	4	1%	2%	3%	4%	5%	CHECK
5	101504007	ABHINANDAN NARANG	5.50	2	> 6.0 UP TO 7.0	5.9	3	10.5	15.7	4.1	25.6	44.2	100.0
6	101504008	ABHISHEK AGARWAL	0.00	1	> 2.0 up to 6.0	1.9	2						
7	101504009	ABHISHEK PANDEY	4	2	< 2.0	0	1						
8	101504010	ABHISHEK PRASAD	8	4									
9	101504011	ADARSH AGARWAL	8.5	4									
10	101504012	ADITI MISHRA	2.00	2									

DIRECT MESUREMENT AVERAGE SCORE: 3.77

Total number of students = 172

For marks detail of all students refer to course file.

CLO 3: Define and document local resource consumption patterns and conservation

Tool Used (EST - Question

Food and Agricultural Organization (FAO) of the United Nations has identified population growth and depleting resources as the major challenges in achieving food security in the 21st century. In this context, review the extent of the challenge posed by depleting resources and growing population to food security.

The utilization of mineral resources has been showing a dramatic increase in the past century. This exploitation of mineral resources is associated with various environmental impacts. Briefly evaluate the environmental impacts of mining.

S.No.	Rollno.	Name	((20))	SCORE (1-5)
1	101504002	AASTHA JAIN	5	2
2	101504004	AAYUSH VOHRA	9	4
3	101504005	AAYUSH RAI ANAND	7	3
4	101504006	ABHIJEET SINGH BHATIA	3.5	2
5	101504007	ABHINANDAN NARANG	10	4
6	101504008	ABHISHEK AGARWAL	6	3
7	101504009	ABHISHEK PANDEY	8	4
8	101504010	ABHISHEK PRASAD	8.5	4
9	101504011	ADARSH AGARWAL	8.5	4
10	101504012	ADITI MISHRA	9	4

DIRECT MESUREMENT (USING STUDENT PERFORMNACE)

SCALE TO BE DEFINED BY COORDINATOR								
Range of marks	LIMIT	Score	1'S	2'S	3'S	4'S	5'S	TOTAL
> 12.0 UP TO 20.0	11.9	5	6	25	37	79	25	172
> 8.0 UP TO 12.0	7.9	4	1%	2%	3%	4%	5%	CHECK
> 6.0 UP TO 8.0	5.9	3	3.5	14.5	21.5	45.9	14.5	100.0
> 2.0 up to 6.0	1.9	2						
< 2.0	0	1						

DIRECT MESUREMENT AVERAGE SCORE: 3.53

Total number of students = 172

For marks detail of all students refer to course file.

CLO 4: Define opportunities available for energy conservation and for use of Tool Used (EST -

As India is facing an increasing demand-supply gap in energy, it is important to harvest the solar potential to meet the energy needs. In this context, analyze the availability of solar energy as a resource in India. Formulate various strategies to tap this resource

S.No.	Rollno.	Name	((20))	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL
1	101504002	AASTHA JAIN	5	2	Range of marks	LIMIT	Score	1	8	16	68	79	172
2	101504004	AAYUSH VOHRA	9	4									
3	101504005	AAYUSH RAI ANAND	11.5	4	> 12.0 UP TO 20.0	11.9	5						
4	101504006	ABHIJEET SINGH BHATIA	12.5	5	> 8.0 UP TO 12.0	7.9	4	1%	2%	3%	4%	5%	CHECK
5	101504007	ABHINANDAN NARANG	10.5	4	> 6.0 UP TO 8.0	5.9	3	0.6	4.7	9.3	39.5	45.9	100.0
6	101504008	ABHISHEK AGARWAL	12	5	> 2.0 up to 6.0	1.9	2						
7	101504009	ABHISHEK PANDEY	6	3	< 2.0	0	1						
8	101504010	ABHISHEK PRASAD	5	2									
9	101504011	ADARSH AGARWAL	7.5	3									
10	101504012	ADITI MISHRA	11	4									

DIRECT MESUREMENT AVERAGE SCORE: 4.26

Total number of students = 172

For marks detail of all students refer to course file.

TABLE 4: Weighted Average Student class performance (course portfolio) for CLO 1 to CLO 4 for UEE 601	Average Score	WEIGHT
CLO1 *(READ & FILL VALUE FROM CLO1 SHEET CELL P14-->)*	2.78	5
CLO2 *(READ & FILL VALUE FROM CLO2 SHEET CELL P14-->)*	3.06	5
CLO3 *(READ & FILL VALUE FROM CLO3 SHEET CELL P14-->)*	2.58	5
CLO4 *(READ & FILL VALUE FROM CLO4 SHEET CELL P14-->)*	2.54	5
Weighted average score	2.74	

UEE601 FLEXIBLE AC TRANSMISSION SYSTEMS

CLO 1: Decide the scheme for power system stability and voltage control

Tool used:

Question 1: 1. Derive the expression for the steady state power transfer, if there is a fixed shunt capacitor connected at the midpoint of the line.

Sr.No.	Roll No.	Name	EST Q1 MARKS (10)	SCORE(1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	DIRECT MESUREMENT AVERAGE SCORE
1	101404001	Abhay Mahipal	8	5										
2	101404002	Abhijeet Singh Sankhla	0	1	Range of marks	LIMIT	Score	45	15	23	17	30	130	
3	101404004	Abhinav Arora	6	4	>7 UP TO 10	7	5							
4	101404006	Abhishek Sharma	1	1	>5 UP TO 7	5	4	1%	2%	3%	4%	5%	CHECK	
5	101404009	Alka Thakur	4	3	> 3 UP TO 5	3	3	34.6	11.5	17.7	13.1	23.1	100.0	2.78
6	101404012	Ankush Goyal	8	5	>1 UP TO 3	1	2							
7	101404013	Bharaj	0	1	>=0 UP TO 1	0	1							
8	101404014	Anmol Goyat	5	3										
9	101404015	Anmol Rattan Kaur	0	1										
10	101404017	Anubhav Kumar	0	1										

Total number of students = 130

For marks detail of all students refer to course file.

CLO 2: Decide the converter configuration for different power systems

Tool used:

Question 2: 2. Classify the various modes of operation of TCSC and explain each mode of operation with suitable diagram.

Question 3: 3. Draw the phasor diagrams of UPFC control and explain each phasor diagram with proper mathematical justification.

Question 4: 4. What is the V- I characteristic of a STATCOM, a TSC, and a TCR individually? What is the combined characteristic when they are connected in parallel?

Sr.No.	Roll No.	Name	EST Q2+Q3+4 MARKS(30)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
1	101404001	Abhay Mahipal	21	5	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
2	101404002	Abhijeet Singh Sankhla	19	4				13	37	30	29	21	130	DIRECT MESUREMENT AVERAGE SCORE
					Range of marks	LIMIT	Score							
3	101404004	Abhinav Arora	3	1	>20 UP TO 30	20	5							
4	101404006	Abhishek Sharma	16	3	>16 UP TO 20	16	4	1%	2%	3%	4%	5%	CHECK	
5	101404009	Alka Thakur	5	1	> 12 UP TO 16	12	3	10.0	28.5	23.1	22.3	16.2	100.0	3.06
6	101404012	Goyal	14	3	>6 UP TO 12	6	2							
7	101404013	Bharaj	8	2	>=0 UP TO 6	0	1							
8	101404014	Anmol Goyat	15	3										
9	101404015	Rattan Kaur	8	2										
10	101404017	Anubhav Kumar	16	3										

Total number of students = 130

For marks detail of all students refer to course file.

CLO 3: Decide the usage of different FACTS compensators for different purposes.

Tool used:

Question 5: 5. Discuss PWM techniques in VSC and explain how the harmonics content can be reduced.

Question 6: 6. Discuss the objectives of series compensation. Explain mathematically the effect of k {where k=(Xc/X)} in series compensation. Draw the P-δ curve for different k and its effect on real and reactive power flow.

Question 7: 7. Draw the phasor diagram and wave diagram which shows the sequence of valve conduction process in one phase leg of a three phase voltage source converter. Start with inverter unity PF and end with Inverter capacitive. Explain each step clearly.

Sr.No.	Roll No.	Name	EST Q5+Q6 +7 MARKS (30)	SCORE(1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
1	101404001	Abhay Mahipal	29	5				26	52	20	15	17	130	DIRECT MESUREMENT AVERAGE SCORE
2	101404002	Abhijeet Singh Sankhla	2	1	Range of marks	LIMIT	Score							
3	101404004	Abhinav Arora	5	1	>20 UP TO 30	20	5							
4	101404006	Abhishek Sharma	8	2	>16 UP TO 20	16	4	1%	2%	3%	4%	5%	CHECK	
5	101404009	Alka Thakur	15	3	> 12 UP TO 18	12	3	20.0	40.0	15.4	11.5	13.1	100.0	2.58
6	101404012	Ankush Goyal	15	3	>6 UP TO 12	6	2							
7	101404013	Bharaj	0	1	>=0 UP TO 6	0	1							
8	101404014	Anmol Goyat	20	4										
9	101404015	Anmol Rattan Kaur	4	1										
10	101404017	Anubhav Kumar	0	1										

Total number of students = 130

For marks detail of all students refer to course file.

CLO 4: Compute the harmonics on AC and DC side and decide their filtering

Tool used:

Question 8: 8. How GCSC and TCR are dual of each other? Explain with proper justification.

Question 9: 9. Explain different methods to control the power flow in meshed network with proper diagrams.

Question 10: 10. Discuss the "indirect" output voltage control of STATCOM by varying the dc capacitor voltage through the temporary phase shift of the output voltage. Explain with suitable wave diagram and block diagram.

Sr.No.	Roll No.	Name	EST Q8+Q9+10 MARKS(30)	SCORE (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
1	101404001	Abhay Mahipal	22	5	SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	DIRECT MESUREMENT AVERAGE SCORE
2	101404002	Abhijeet Singh Sankhla	5	1	Range of marks	LIMIT	Score	29	44	26	20	11	130	
3	101404004	Abhinav Arora	15	3	>20 UP TO 30	20	5							
4	101404006	Abhishek Sharma	21	5	>16 UP TO 20	16	4	1%	2%	3%	4%	5%	CHECK	
5	101404009	Alka Thakur	13	3	16	12	3	22.3	33.8	20.0	15.4	8.5	100.0	2.54
6	101404012	Ankush Goyal	20	4	>6 UP TO 12	6	2							
7	101404013	Bharaj	1	1	>=0 UP TO 6	0	1							
8	101404014	Anmol Goyat	16	3										
9	101404015	Anmol Rattan Kaur	0	1										
10	101404017	Anubhav Kumar	4	1										

Total number of students = 130

For marks detail of all students refer to course file.

CLO1 Select various types of instruments for

Tool used: MST Question Paper (Total Marks 30)

Q1. What do you understand by measurement? Define the role of measurement in the modern

scientific and technological developments.   [2]

Q2.(a)Distinguish between

(i) International standards   ii) Primary standards iii) Secondary standards [3]

(b) Derive the dimension of following quantities

(i) reluctance (ii) permeability (iii) permittivity (iv) magnetic flux   [1]

(c) Explain the atomic standards for frequency and time with their advantages.   [2]

Q3. (a) Define the role of Deflecting , Controlling and Damping forces for satisfactory

operation of electromechanical indicating instruments.   [3]

(b) Classify the different type of indication instruments which are used as ammeter and

voltmeter. Differentiate between PMMC and moving iron instruments.   [3]

(c)   Convert a basic D'Arsonval movement with an internal resistance of 50 Ω and a full

scale deflection current of 2 mA into a multi range dc voltmeter with voltage range 0-10

V, 0-50 V and 0-100V.   [2]

Q4. (a) Give the basic principle of D' Arsonval movement.   [2]

(b) State the operating principle of electrodynamometer with suitable diagram. [2]

(c) Why electrodynamometer is called square law device?   [2]

A dynamometer ammeter is connected in series with a 500 Ω resistor, a rectifying device and a 240 Vrms alternating sinusoidal power supply. The rectifier behaves as a resistance of 200 Ω to current flowing in one direction and as a resistance of 2 KΩ to

S. No.	Roll No	Name	Marks (30)	Score (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)								
					COORDINATOR			1'S	2'S	3'S	4'S	5'S	TOTAL	
1	101404005	Abhishek	0	1	marks	LIMIT	Score	4	5	33	26	11	79	
2	101504002	AASTHA	14.25	3										
3	101504004	AAYUSH	21.75	4	> 22.4 UP TO 30	22.5	5							DIRECT MESUREMENT AVERAGE SCORE
4	101504005	AAYUSH	19	4	> 17.9 UP TO 22.4	18	4	1%	2%	3%	4%	5%	CHECK	
5	101504006	ABHIJEET	16.5	3	> 11.9 UP TO 17.9	12	3	5.1	6.3	41.8	32.9	13.9	100.0	3.44
6	101504007	ABHINANDAN	19.1	4	> 5.9 UP TO 11.9	6	2							
7	101504008	ABHISHEK	20	4	> =0 UP TO 5.9	0	1							
8	101504009	ABHISHEK	19.75	4										
9	101504010	ABHISHEK	15.1	3										
10	101504011	ADARSH	13	3										

Total number of students = 79

For marks detail of all students refer to course file.

CLO1 Select various types of instruments for measurement of variables.

Tool used: MST Question Paper (Total Marks 30)

scientific and technological developments.   [2]

Q2.(a)Distinguish between

(i) International standards   ii) Primary standards iii) Secondary standards [3]

(b) Derive the dimension of following quantities

(i) reluctance (ii) permeability (iii) permittivity (iv) magnetic flux   [1]

(c) Explain the atomic standards for frequency and time with their advantages. [2]

Q3. (a) Define the role of Deflecting , Controlling and Damping forces for satisfactory operation of electromechanical indicating instruments.   [3]

(b) Classify the different type of indication instruments which are used as ammeter and voltmeter. Differentiate between PMMC and moving iron instruments.   [3]

(c) Convert a basic D'Arsonval movement with an internal resistance of 50 Ω and a full scale deflection current of 2 mA into a multi range dc voltmeter with voltage range 0-10 V, 0-50 V and 0-100V.   [2]

Q4. (a) Give the basic principle of D' Arsonval movement.   [2]

(b) State the operating principle of electrodynamometer with suitable diagram. [2]

(c) Why electrodynamometer is called square law device?   [2]

A dynamometer ammeter is connected in series with a 500 Ω resistor, a rectifying device and a 240 Vrms alternating sinusoidal power supply. The rectifier behaves as a resistance of 200 Ω to current flowing in one direction and as a resistance of 2 KΩ to current in the opposite direction. Calculate the reading on the meter.   [3]

Q5.(a) Explain the working principle of single phase wattmeter.   [3]

(b) A series type ohm meter uses 50 Ω basic movement requiring a full scale current of 1 mA. The internal battery voltage is 3V. The desired scale marking for half scale deflection is 2000 Ω. Calculate a) the values of R1 and R2 b) the maximum value of R2 to compensate for 10% drop in battery voltage.   [2]

S. No.	Roll No	Name	Marks (30)	Score (1-5)	DIRECT MESUREMENT (USING STUDENT PERFORMNACE)									
					SCALE TO BE DEFINED BY COORDINATOR			1`S	2`S	3`S	4`S	5`S	TOTAL	
1	101504046	Gurnoor	21.75	4	Range of marks	LIMIT	Score							
2	101504054	Himanshu Gupta	0	1				4	4	26	31	15	80	
3	101504067	Malay Chand	15.1	3	> 22.4 UP TO 30	22.5	5							DIRECT MESUREMENT AVERAGE SCORE
4	101504069	Mayank	22	4	> 17.9 UP TO 22.4	18	4	1%	2%	3%	4%	5%	CHECK	
5	101504070	Mehul	19.5	4	> 11.9 UP TO 17.9	12	3	5.0	5.0	32.5	38.8	18.8	100.0	3.61
6	101504071	Mohit	9	2	> 5.9 UP TO 11.9	6	2							
7	101504073	Neha Bhargava	14.1	3	> =0 UP TO 5.9	0	1							
8	101504074	Neha Singla	21.5	4										
9	101504075	Nihal	16.1	3										
10	101504076	Nikhil	17	3										

Total number of students = 80

For marks detail of all students refer to course file.