higher education & training
Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

Tshwane South TVET College
"achieve the future"

LESSON PLAN

CAMPUS: _____CENTURION_____

Lecture's Name	Subject	Topic	Date From	Date To
KOEN	**ELECTRO N5**	**DC MACHINES**	**5/4/2020**	**5/8/2020**
Week Number:1	**Learning Objective /Learning Outcome** **To understand demag and crossmag theory and calculations. Compoles Compensating Level compound Starters Speed control**		**Teaching Resources/Aids textbook white board**	**Length of period 1hour15 min**

ACTIVITIES

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions,Practical,etc)	Lesson Completed	
		What will the lecturer do?	What will students do?		Yes	No
Monday	**After this lesson the learner must do the calculations and understand the theory**	**demag and crossmag theory and calculations. Compoles**	**Do class work and home work and exercises**	Demonstration,Discussions,	**Yes**	

Tuesday	**After this lesson the learner must do the calculations and understand the theory**	**demag and crossmag theory and calculations. Compensating Level compound generators**	**Do class work and home work and exercises**	Demonstration,Discussions,	**Yes**	
Wednesday	**After this lesson the learner must do the calculations and understand the theory**	**Level compound generators**	**Do class work and home work and exercises**	Demonstration,Discussions,	**Yes**	
Week Days	**Objectives**	**Activities**		**Teaching Methodology** (Demonstrably,Discussions,Practical,etc)	**Lesson Completed**	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Thursday	**After this lesson the learner must do the calculations and understand the theory**	**Speed torque Starting**	**Do class work and home work and exercises**	Demonstration,Discussions,	**Yes**	
Friday	**After this lesson the learner must do the calculations and understand the theory**	**Speed control**	**Do class work and home work and exercises**	Demonstration,Discussions,	**Yes**	

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Lecturer Signature **Senior/ HoD Signature**

LESSON PLAN

CAMPUS: _____CENTURION_____

Lecture's Name	Subject	Topic	Date From	Date To
KOEN	**ELECTRO N5**	**AC MACHINES**	**5/11/2020**	**5/15/2020**
Week Number:2	**Learning Objective /Learning Outcome** **To understand** AC Circuit theory: Single and polyphase systems. Generating an emf. Instantaneous values. RMS aid average values. Simpson's rule. Calculations of mixed circuits using phasors. Types of waveforms. Power. **theory and calculations**		**Teaching Resources/Aids textbook white board**	**Length of period 1hour15 min**

ACTIVITIES

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions,Practical,etc)	Lesson Completed	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Monday	**After this lesson the learner must do the calculations and understand the theory**	AC Circuit theory: Single and polyphase systems	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Tuesday	**After this lesson the learner must do the calculations and understand the theory**	Generating an emf. Instantaneous values. RMS aid average values	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

Wednesday	**After this lesson the learner must do the calculations and understand the theory**	Simpson's rule. Calculations of mixed circuits using phasors	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Week Days	**Objectives**	**Activities**		**Teaching Methodology** (Demonstrably,Discussions,Practical,etc)	**Lesson Completed**	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Thursday	**After this lesson the learner must do the calculations and understand the theory**	Types of waveforms. Power.	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Friday	**After this lesson the learner must do the calculations and understand the theory**	**REVISION**	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

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Lecturer Signature **Senior/ HoD Signature**

LESSON PLAN

CAMPUS: _____CENTURION_____

Lecture's Name	Subject	Topic	Date From	Date To
KOEN	**ELECTRO N5**	**DC MACHINES**	**5/18/2020**	**5/22/2020**
Week Number:3	**Learning Objective /Learning Outcome** **To understand** Transformers: Polyphase transformers (use, construction and operation). Leakage reactsnce. Welding machines. Calculation. on and off load. Transformers in parallel — sharing of load, circulating currents. Equivalent circuit. Tap—changing on and off load. Cooling methods. **theory and calculations**		**Teaching Resources/Aids textbook white board**	**Length of period 1hour15 min**

ACTIVITIES

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions,Practical,etc)	Lesson Completed	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Monday	**After this lesson the learner must do the calculations and understand the theory**	Transformers: Polyphase transformers (use, construction and operation)	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Tuesday	**After this lesson the learner must do the calculations and**	Leakage reactance. Welding machines. Calculation. on and off	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

	understand the theory	load.				
Wednesday	**After this lesson the learner must do the calculations and understand the theory**	Transformers in parallel — sharing of load,	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Week Days	**Objectives**	**Activities**		**Teaching Methodology** (Demonstrably,Discussions,Practical,etc)	**Lesson Completed**	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Thursday	**After this lesson the learner must do the calculations and understand the theory**	circulating currents. Equivalent circuit.	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Friday	**After this lesson the learner must do the calculations and understand the theory**	Tap—changing on and off load. Cooling methods	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

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Lecturer Signature **Senior/ HoD Signature**

LESSON PLAN

CAMPUS: ____CENTURION_____

Lecture's Name	Subject	Topic	Date From	Date To
KOEN	**ELECTRO N5**	**MEASURING**	**5/25/2020**	**5/29/2020**
Week Number:4	**Learning Objective /Learning Outcome** **To understand** Measuring: Measuring power in balanced and unbalanced systems with wattmeters. Range changing — shunt resistance; transformers **theory and calculations**		**Teaching Resources/Aids textbook white board**	**Length of period 1hour15 min**

ACTIVITIES

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions,Practical,etc)	Lesson Completed	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Monday	**After this lesson the learner must be able to do the calculations and study the theory**	Measuring:	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Tuesday	**After this lesson the learner must be able to do the calculations and study the theory**	Measuring power in balanced and unbalanced systems with wattmeters	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

Wednesday	**After this lesson the learner must be able to do the calculations and study the theory**	Range changing	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Week Days	**Objectives**	**Activities**		**Teaching Methodology** (Demonstrably,Discussions,Practical,etc)	**Lesson Completed**	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Thursday	**After this lesson the learner must be able to do the calculations and study the theory**	shunt resistance; transformers	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Friday	**After this lesson the learner must be able to do the calculations and study the theory**	**REVISION**	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

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Lecturer Signature **Senior/ HoD Signature**

LESSON PLAN

CAMPUS: ____CENTURION_____

Lecture's Name	Subject	Topic	Date From	Date To
KOEN	**ELECTRO N5**	**AC MACHINES**	**6/1/2020**	**6/5/2020**
Week Number:5	**Learning Objective /Learning Outcome** **To understand** AC Machines: Alternator and synchronous motor (construction, use and operation) — starting up; parallel operation; damping and hunting; synchronizing. Induction motors — rotating field; slip; speed control b pole changing; losses (flow diagram); reversal; current — speed relation— snip; construction of circle diagram **theory and calculations**		**Teaching Resources/Aids textbook white board**	**Length of period 1hour15 min**

ACTIVITIES

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions,Practical,etc)	Lesson Completed	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Monday	**After this lesson the learner must be able to explain the of** AC Machines	AC Machines: Alternator and synchronous motor (construction, use and operation)	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Tuesday	**After this lesson the learner must be able to explain the of** AC Machines	starting up; parallel operation; damping and hunting; synchronizing	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

Wednesday	**After this lesson the learner must be able to explain the of** AC Machines	Induction motors — rotating field; slip; speed control b pole changing	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Week Days	**Objectives**	**Activities**		**Teaching Methodology** (Demonstrably,Discussions,Practical,etc)	**Lesson Completed**	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Thursday	**After this lesson the learner must be able to explain the of** AC Machines	losses (flow diagram); reversal; current — speed relation— ship	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Friday	**After this lesson the learner must be able to explain the of** AC Machines	construction of circle diagram	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

Lecturer Signature

Senior/ HoD Signature

LESSON PLAN

CAMPUS: _____CENTURION_____

Lecture's Name	Subject	Topic	Date From	Date To
KOEN	**ELECTRO N5**	**Generation and supply of ac power**	**6/8/2020**	**6/12/2020**
Week Number:6	**Learning Objective /Learning Outcome** **To understand** Generation and supply of ac power: Resistance of overhead Lines, capacitance and inductance regulation of transmission line. **theory and calculations**		**Teaching Resources/Aids textbook white board**	**Length of period 1hour15 min**

ACTIVITIES

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions,Practical,etc)	Lesson Completed	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Monday	**After this lesson the learner must be able to explain the of**	Generation and supply of ac power	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Tuesday	**After this lesson the learner must be able to explain**	: Resistance of overhead	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

Wednesday	**After this lesson the learner must be able to explain**	capacitance and inductance	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Week Days	**Objectives**	**Activities**		**Teaching Methodology** (Demonstrably,Discussions,Practical,etc)	**Lesson Completed**	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Thursday	**After this lesson the learner must be able to explain**	regulation of transmission line	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Friday	**After this lesson the learner must be able to explain**	regulation of transmission line	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

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Lecturer Signature **Senior/ HoD Signature**

LESSON PLAN

CAMPUS: ____CENTURION_____

Lecture's Name	Subject	Topic	Date From	Date To
KOEN	**ELECTRO N5**	**Switchgear and protective devices**	**6/15/2020**	**6/19/2020**
Week Number:7	**Learning Objective /Learning Outcome** **To understand** Switchgear and protective devices: 'Earth leakage relay and other differential protection relays. Bucholz relay. Protection of high inductive circuits — metrosil; discharge resistance. Static control: Multivibrators. Flip-flops; counters and logic circuits. Design, development and operation of logic circuits. Operational amplifier characteristics and feedback circuits. Phase control. Installation, care, operation, maintenance, supervision and inspection of transformers, cables, switchgear and protective devices. **theory and calculations**		**Teaching Resources/Aids textbook white board**	**Length of period 1hour15 min**

ACTIVITIES

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions,Practical,etc)	Lesson Completed	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Monday	**After this lesson the learner must be able to explain the of**	Switchgear and protective devices: 'Earth leakage relay and other	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

		differential protection relays. Bucholz relay. Protection of high inductive circuits — metrosil; discharge resistance.				
Tuesday	**After this lesson the learner must be able to explain the of**	Static control: Multivibrators. Flip-flops; counters and logic circuits. Design, development and operation of logic circuits. Operational amplifier characteristics and feedback circuits. Phase control	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Wednesday	**After this lesson the learner must be able to explain the of**	Installation, care, operation, maintenance, supervision and inspection of transformers, cables, switchgear and protective devices.	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Week Days	**Objectives**	**Activities**		**Teaching Methodology** (Demonstrably,Discussions,Practical,etc)	**Lesson Completed**	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Thursday	**After this lesson the learner must be able to explain the of**	**REVISION** Materials used for the design of electrical equipment, i.e. copper, aluminium, etc., their characteristics? Costs, etc. Types of dielectrics ‘quid and solid).	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

Friday	**After this lesson the learner must be able to explain the of**	**REVISION**	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

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Lecturer Signature **Senior/ HoD Signature**

LESSON PLAN

CAMPUS: _____CENTURION_____

Lecture's Name	Subject	Topic	Date From	Date To
	ELECTRO	**REVISION**	**6/22/2020**	**6/26/2020**
Week Number:8	**Learning Objective /Learning Outcome** To understand COMPOLES theory,the gen Emf, Flux, Torque in N.m,resonant circuits ,transformer,induction motor,alternator and calculations		**Teaching Resources/Aids textbook white board**	**Length of period 1hour15 min**

ACTIVITIES

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions, Practical,etc)	Lesson Completed	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Monday	**REVISION**	Name FOUR methods of improving commutation.**Increase brush contact, shifting brushes, interpoles, compensating windings** A 1290 kW, 540 V, six-pole DC series generator has a wave-connected winding with	**Do class work and home work in exercises**	Demonstration Discussions	**Yes**	

		260 armature conductors.Determine the number of turns per pole required for the commutating poles, assuming the compole ampere turns per pole to be about 1, 3 times the armature ampere turns per pole and the brushes to be in geometric neutral axis A six-pole lap-wound, 335 V shunt-excited DC machine draws an armature current of 8, 25 A on no-load at 1 500 rpm When loaded, it draws an armature current of 65 A from the supply and runs at 1 500 rpm. The resistance of the armature circuit is 0, 4 and there are 1 200 armature conductors. Calculate **the gen Emf, Flux, Torque in N.m**				
Tuesday	**REVISION**	A constant voltage at a frequency of 0, 75 MHz is applied across a circuit consisting of an inductor in series with a variable cap. When the capacitor is adjusted	**Do class work and home work in exercises**	Demonstration Discussions	**Yes**	

		to305 pF, the current has its maximum value. When the capacitance is reduced to 280 pF, the current is 0,707 of its max value. **Find the inductance and resistance of the inductor.** A resonant circuit comprising of a coil with an inductance of 465 µH and a resistance of 38 Ω in parallel with a variable capacitor, is connected in series with a resistor of 8675 Ω. The supply across this circuit is 50 V, with a frequency of 1, 5 MHz. Calculate: **Value of capacitor at resonance, the impedance of the parallel circuit, Current in each**				
Wednesday	**REVISION**	State FOUR requirements that are necessary, for satisfactory performance to be obtained, when operating transformers in parallel. **Same volts ratio, same p.u**	**Do class work and home work in exercises**	Demonstration Discussions	**Yes**	

		impedance, same polarity, same phase sequence, zero relative phase displacement A single-phase transformer with a supply voltage of 278 V has an equivalent resistance of 0,33Ω and an equivalent leakage reactance of 0, 83 ohms referred to the primary winding. The secondary winding is connected to a coil with a resistance of 335Ω and a reactance of 180 Ω. The secondary winding has 5 times as many turns as the primary winding. **Calculate the secondary terminal voltage.** THREE similar inductors each with a resistance of 26 Ω and an inductance of0,027 H, are delta-connected to a three-phase 375 V, 50 Hz, and sinusoidal supply. Calculate **Line current Power factor** = Cos **0,950 lag**				

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions,Practical,etc)	Lesson Completed	
		What will the lecturer do?	What will students do?		Yes	No
Thursday	**REVISION**	The input to a 2635 V three- phase delta-connected induction motor is 128 kW. The pf is 0, 85 lagging.Calculate: **the line and phase currents the input power readings on the TWO watt-meters the kVA rating of the motor** A three-phase transmission line supplies a 1, 25 MW star-connected load with a power factor of 0,75lagging at a line voltage of 34 kV. The line has a resistance of 86 Ω per phase and an inductive reactance of 145 Ω per phase. Calculate **Voltage at the sending end the per-unit regulation the efficiency of the line**	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Friday	**REVISION**	**Calculate the efficiency and the output power** of a three-phase 565 V induction motor,	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

		running on load with a fractional slip of 0,08 and drawing a current of 75 A at a power factor of 0,8. When running light at 565 V, the motor has an input current of 23 A and the power taken is 2 175 W. The resistance per phase of the stator winding is 0, 7 Ω (delta-connected). A three-phase, six-pole star-connected alternator delivers 425 V between lines on open circuit, running at a speed of 1 550 r/min. There are two conductors per slot and three slots per pole per phase. If the winding has a pitch factor of 0, 8 and a distribution factor of 0, 96 and assuming a sine wave Calculate: **the frequency turns per phase useful flux per pole**				

Lecturer Signature **Senior/ HoD Signature**

LESSON PLAN

CAMPUS: _____CENTURION_____

Lecture's Name	Subject	Topic	Date From	Date To
	ELECTRO	**REVISION**	**6/29/2020**	**7/3/2020**
Week Number:9	**Learning Objective /Learning Outcome** To understand COMPOLES theory,the gen Emf, Flux, Torque in N.m,resonant circuits ,transformer,induction motor,alternator and calculations		**Teaching Resources/Aids textbook white board**	**Length of period 1hour15 min**

ACTIVITIES

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions, Practical,etc)	Lesson Completed	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Monday	**REVISION**	Name FOUR methods of improving commutation.**Increase brush contact, shifting brushes, interpoles, compensating windings** A 1290 kW, 540 V, six-pole DC series generator has a wave-connected winding	**Do class work and home work in exercises**	Demonstration Discussions	**Yes**	

		with 260 armature conductors.Determine the number of turns per pole required for the commutating poles, assuming the compole ampere turns per pole to be about 1, 3 times the armature ampere turns per pole and the brushes to be in geometric neutral axis A six-pole lap-wound, 335 V shunt-excited DC machine draws an armature current of 8, 25 A on no-load at 1 500 rpm When loaded, it draws an armature current of 65 A from the supply and runs at 1 500 rpm. The resistance of the armature circuit is 0, 4 and there are 1 200 armature conductors. Calculate **the gen Emf, Flux, Torque in N.m**				
Tuesday	**REVISION**	A constant voltage at a frequency of 0, 75 MHz is applied across a circuit consisting of an inductor in series with a variable cap. When the capacitor is adjusted to305 pF, the current has its maximum value. When the	**Do class work and home work in exercises**	Demonstration Discussions	**Yes**	

		capacitance is reduced to 280 pF, the current is 0,707 of its max value. **Find the inductance and resistance of the inductor.** A resonant circuit comprising of a coil with an inductance of 465 µH and a resistance of 38 Ω in parallel with a variable capacitor, is connected in series with a resistor of 8675 Ω. The supply across this circuit is 50 V, with a frequency of 1, 5 MHz. Calculate: **Value of capacitor at resonance, the impedance of the parallel circuit, Current in each**				
Wednesday	**REVISION**	State FOUR requirements that are necessary, for satisfactory performance to be obtained, when operating transformers in parallel. **Same volts ratio, same p.u impedance, same polarity, same phase sequence, zero relative phase displacement** A single-phase transformer with a supply voltage of 278 V has an equivalent	**Do class work and home work in exercises**	Demonstration Discussions	**Yes**	

		resistance of 0,33Ω and an equivalent leakage reactance of 0, 83 ohms referred to the primary winding. The secondary winding is connected to a coil with a resistance of 335Ω and a reactance of 180 Ω. The secondary winding has 5 times as many turns as the primary winding. **Calculate the secondary terminal voltage.** THREE similar inductors each with a resistance of 26 Ω and an inductance of0,027 H, are delta-connected to a three-phase 375 V, 50 Hz, and sinusoidal supply. Calculate **Line current Power factor** = Cos **0,950 lag**				
Week Days	**Objectives**	**Activities**		**Teaching Methodology** (Demonstrably,Discussions,Practical,etc)	**Lesson Completed**	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Thursday	**REVISION**	The input to a 2635 V three- phase delta-connected induction motor is 128 kW. The pf is 0, 85 lagging.Calculate: **the line and phase currents the input power readings on**	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

		the TWO watt-meters the kVA rating of the motor A three-phase transmission line supplies a 1, 25 MW star-connected load with a power factor of 0,75lagging at a line voltage of 34 kV. The line has a resistance of 86 Ω per phase and an inductive reactance of 145 Ω per phase. Calculate **Voltage at the sending end the per-unit regulation the efficiency of the line**				
Friday	**REVISION**	**Calculate the efficiency and the output power** of a three-phase 565 V induction motor, running on load with a fractional slip of 0,08 and drawing a current of 75 A at a power factor of 0,8. When running light at 565 V, the motor has an input current of 23 A and the power taken is 2 175 W. The resistance per phase of the stator winding is 0, 7 Ω (delta-connected). A three-phase, six-pole star-connected alternator delivers 425 V between lines on open circuit, running at a speed of 1 550	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

		r/min. There are two conductors per slot and three slots per pole per phase. If the winding has a pitch factor of 0, 8 and a distribution factor of 0, 96 and assuming a sine wave Calculate: **the frequency turns per phase useful flux per pole**				

Lecturer Signature

Senior/ HoD Signature

LESSON PLAN

CAMPUS: ____CENTURION_____

Lecture's Name	Subject	Topic	Date From	Date To
	ELECTRO	**REVISION**	**7/6/2020**	**7/10/2020**
Week Number:10	**Learning Objective /Learning Outcome** To understand COMPOLES theory,the gen Emf, Flux, Torque in N.m,resonant circuits ,transformer,induction motor,alternator and calculations		**Teaching Resources/Aids textbook white board**	**Length of period 1hour15 min**

ACTIVITIES

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions, Practical,etc)	Lesson Completed	
		What will the lecturer do?	**What will students do?**		**Yes**	**No**
Monday	**REVISION**	Name FOUR methods of improving commutation.**Increase brush contact, shifting brushes, interpoles, compensating windings** A 1290 kW, 540 V, six-pole DC series generator has a wave-connected	**Do class work and home work in exercises**	Demonstration Discussions	**Yes**	

		winding with 260 armature conductors.Determine the number of turns per pole required for the commutating poles, assuming the compole ampere turns per pole to be about 1, 3 times the armature ampere turns per pole and the brushes to be in geometric neutral axis A six-pole lap-wound, 335 V shunt-excited DC machine draws an armature current of 8, 25 A on no-load at 1 500 rpm When loaded, it draws an armature current of 65 A from the supply and runs at 1 500 rpm. The resistance of the armature circuit is 0, 4 and there are 1 200 armature conductors. Calculate **the gen Emf, Flux, Torque in N.m**				
Tuesday	**REVISION**	A constant voltage at a frequency of 0, 75 MHz is applied across a circuit consisting of an inductor in series with a variable cap. When the capacitor	**Do class work and home work in exercises**	Demonstration Discussions	**Yes**	

		is adjusted to305 pF, the current has its maximum value. When the capacitance is reduced to 280 pF, the current is 0,707 of its max value. **Find the inductance and resistance of the inductor.** A resonant circuit comprising of a coil with an inductance of 465 µH and a resistance of 38 Ω in parallel with a variable capacitor, is connected in series with a resistor of 8675 Ω. The supply across this circuit is 50 V, with a frequency of 1, 5 MHz. Calculate: **Value of capacitor at resonance, the impedance of the parallel circuit, Current in each**				
Wednesday	**REVISION**	State FOUR requirements that are necessary, for satisfactory performance to be obtained, when operating transformers in parallel. **Same volts ratio, same p.u impedance, same polarity, same phase sequence, zero relative phase**	**Do class work and home work in exercises**	Demonstration Discussions	**Yes**	

		displacement A single-phase transformer with a supply voltage of 278 V has an equivalent resistance of 0,33Ω and an equivalent leakage reactance of 0, 83 ohms referred to the primary winding. The secondary winding is connected to a coil with a resistance of 335Ω and a reactance of 180 Ω. The secondary winding has 5 times as many turns as the primary winding. **Calculate the secondary terminal voltage.** THREE similar inductors each with a resistance of 26 Ω and an inductance of0,027 H, are delta-connected to a three-phase 375 V, 50 Hz, and sinusoidal supply. Calculate **Line current Power factor** = Cos **0,950 lag**				

Week Days	Objectives	Activities		Teaching Methodology (Demonstrably,Discussions,Practical,etc)	Lesson Completed	
		What will the lecturer do?	What will students do?		Yes	No
Thursday	**REVISION**	The input to a 2635 V three- phase delta-connected induction motor is 128 kW. The pf is 0, 85 lagging.Calculate: **the line and phase currents the input power readings on the TWO watt-meters the kVA rating of the motor** A three-phase transmission line supplies a 1, 25 MW star-connected load with a power factor of 0,75lagging at a line voltage of 34 kV. The line has a resistance of 86 Ω per phase and an inductive reactance of 145 Ω per phase. Calculate **Voltage at the sending end the per-unit regulation the efficiency of the line**	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	
Friday	**REVISION**	**Calculate the efficiency and the output power** of a three-phase 565 V induction motor,	**Do class work and home work in exercises**	Demonstration,Discussions,	**Yes**	

		running on load with a fractional slip of 0,08 and drawing a current of 75 A at a power factor of 0,8. When running light at 565 V, the motor has an input current of 23 A and the power taken is 2 175 W. The resistance per phase of the stator winding is 0, 7 Ω (delta-connected). A three-phase, six-pole star-connected alternator delivers 425 V between lines on open circuit, running at a speed of 1 550 r/min. There are two conductors per slot and three slots per pole per phase. If the winding has a pitch factor of 0, 8 and a distribution factor of 0, 96 and assuming a sine wave Calculate: **the frequency turns per phase useful flux per pole**				

Lecturer Signature **Senior/ HoD Signature**