University of Global Village, Barisal

Lesson Plan of Winter-2023

Program Name: **B.Sc. in Computer Science and Engineering** (**CSE**), Semester: **1st**
Teacher's Name: **A. H. M. Delwar Haidar**, Short Tag (**EEE-A**)

Course Name: **Electrical Circuits,** Course Code: **CSE 105,** Credit: **3.** **REG & EVN**

Topics no.	Class no	Week no	Date	Class Contents
1.	1	1		Fundamental conception on different types of energy & discussion on Electrical energy.
2.	2			Basic idea on DC & AC Generation, transmission, uses up to load, comparison of AC & DC with facilities.
3.	3			Electrical quantities & units, conversion.
4.	4-6	2		Discussion on DC voltage, current resistance, power, energy, measuring unit, related measuring instruments, connection diagram in circuit.
5.				Electrical circuit theories: Ohm's law, problems on Ohm's Law.
				1st Quiz Test
6.	7-9	3		Kirchhoff's current law (KCL).
7.				Kirchhoff's voltage law (KVL).
8.				Theory of series circuit, problems on voltage, current, power, consumed energy.
9.				Theory of parallel circuit.
10.	10-12	4		Voltage divider rule on series circuit , problem solution.
11.				Current divider rule on parallel circuit for two branches & more than two branches.
12.				Circuit simplification: Wye-Delta transformation, problems solution.
13.				Definition & theory of Dependent source, Independent source, voltage source, current source, source conversion.
14.	13-15	5		Network theorems – Theory & problems on loop method
15.				Network theorems – Theory & problems on Nodal analysis.
16.	16-17	6		Theory and problem solution on Thevenin's Theorem.
17.				Theory and problem solution on Maximum Power Transfer Theorem.
18.				Theory and problem solution on Millman's Theorem.
				2nd Quiz Test
19.	18-20	7		Transient analysis of different circuit at initial condition with and without source Magnetic circuit: Definition, Magnet and its nature, magnetic quantities & variables. Self-inductance and mutual inductance, coupled circuit.
20.	21-23	8		Comparison of magnetic circuit & electrical circuit.

				Laws of magnetic circuit (Ohm's law and Ampere's circuital law).
22.				Problem solution of magnetic circuits. **1st Assignment submission**
23.				DC measuring apparatus, construction, operation, measuring process.
24.	24-26	9		Phasor algebra, polar & Cartesian method, conversion, problems solution.
				3rd Quiz test
25.	27-29	10		Sinusoidal function: Definition of sinusoid, generation, quantities.
26.				Alternating current and its properties, nature, uses.
27.	30-32	11		AC parameter, their behavior, detail discussion.
28.				Problem solution on single phase circuit.
29.				Effective power, average power, Power triangle, problems solution.
30.				Poly phase EMF Generation
31.	33-35	12		AC Power measurements.
32.				Single Phase Transformer: Definition, working principle, construction, problems solution. Discussion on Three phase transformers.
33.	36-38	13		DC and AC motors: working principle, construction, operation principle, classification, uses. **2nd Assignment submission**
	39-41	14		**4th quiz test** **Review**
	42-43	15		**Review**

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Course Name: **Electrical Circuits Lab,** Course Code: **CSE-106,** Credit: **1.** **REG & EVN**

Assign no.	Class no	Week no	Date	Class Contents
1.	1	1		Identification of electrical measuring instruments, use, connection procedure & measuring with VM, AM, ΩM, Multi meter, Galvanometer, WM, Energy meter, Pf meter, Frequency meter, Temperature meter.
2.	2	2		**Repeat Assignment no 1**
	3	3		**Class test**
3.	4	4		Verification of Ohm's Law.
4.	5	5		Verify the characteristics of series circuit.
5.	6	6		Verify the characteristics of parallel circuit.
6.	7	7		Verify Kirchhoff's voltage law (KVL).
7.				Verify Kirchhoff's current law (KCL).
8.	8	8		Measuring voltage, current, power, power factor, pf angle of pure resistive, inductive, pure capacitive, R-L, R-C, R-L-C series circuit and analysis the pf characteristics, comparing each with another.
9.	9	9		Measuring phase voltage (V_P), Line voltage (V_L), Phase Current (I_P), Line Current (I_L), Neutral Voltage (V_N), Neutral Current (I_N) of 3-ϕ balanced and unbalanced star connected load.
10.	10	10		Measuring V_P, V_L, I_P, I_L of a balanced delta connected load.
11.	11	11		Study the construction of a single phase transformer & determine transformation ratio.
11.	12	12		Connection & operation of different types of motors: DC Series motor, DC Shunt motor.
12	13	13		Connection & operation of Single phase split phase capacitor type induction motor, Three phase induction motor.
	14	14		**Review**
	15	15		**FINAL EXAMINATION**