

### **ACADEMIC LESSON PLAN OF WINTER 2024**

| Discipline<br>Electrical                         | Semester: 3 <sup>rd</sup><br>Sec-A(Gr-1)                  | Name of the Teaching Faculty: -<br>Ananya Shubhadarsinee & Sangeeta Kumari Patro                                                                                                  |
|--------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Subject: -Pr-1<br>(Circuit<br>Simulation<br>Lab) | No of Days/per<br>Week Class<br>Allotted:<br>2d(3hr)/week | Semester From: 1 <sup>st</sup> July 2024 to 08 <sup>th</sup> Nov 2024<br>No. of Weeks: 19 weeks                                                                                   |
| Week                                             | Class Day                                                 | Practical Topics                                                                                                                                                                  |
| 1 <sup>st</sup>                                  | 1 <sup>st</sup>                                           | 1. Measurement of equivalent resistance in series and parallel circuit                                                                                                            |
|                                                  | 2 <sup>nd</sup>                                           | 1. Measurement of equivalent resistance in series and parallel circuit                                                                                                            |
| 2 <sup>nd</sup>                                  | 1 <sup>st</sup>                                           | 2. Measurement of power and power factor using series R-L-C Load.                                                                                                                 |
|                                                  | 2 <sup>nd</sup>                                           | 2. Measurement of power and power factor using series R-L-C Load.                                                                                                                 |
| 3 <sup>rd</sup>                                  | 1 <sup>st</sup>                                           | 3. Verification of KCL and KVL                                                                                                                                                    |
|                                                  | 2 <sup>nd</sup>                                           | 3. Verification of KCL and KVL                                                                                                                                                    |
| 4 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 4. Verification of Super position theorem                                                                                                                                         |
|                                                  | 2 <sup>nd</sup>                                           | 4. Verification of Super position theorem                                                                                                                                         |
| 5 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 5. Verification of Thevenin's Theorem                                                                                                                                             |
|                                                  | 2 <sup>nd</sup>                                           | 5. Verification of Thevenin's Theorem                                                                                                                                             |
| 6 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 6. Verification of Norton's Theorem                                                                                                                                               |
|                                                  | 2 <sup>nd</sup>                                           | 6. Verification of Norton's Theorem                                                                                                                                               |
| 7 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 7. Verification of Maximum power transfer Theorem                                                                                                                                 |
|                                                  | 2 <sup>nd</sup>                                           | 7. Verification of Maximum power transfer Theorem                                                                                                                                 |
| 8 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 8. Determine resonant frequency of series R-L-C circuit.                                                                                                                          |
|                                                  | 2 <sup>nd</sup>                                           | 8. Determine resonant frequency of series R-L-C circuit.                                                                                                                          |
| 9 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 9. Study of Low pass filter & determination of cut-off frequency                                                                                                                  |
|                                                  | 2 <sup>nd</sup>                                           | 9. Study of Low pass filter & determination of cut-off frequency                                                                                                                  |
| 10 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 10. Study of High pass filter & determination of cut-off frequency                                                                                                                |
|                                                  | 2 <sup>nd</sup>                                           | 10. Study of High pass filter & determination of cut-off frequency                                                                                                                |
| 11 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 11. Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically. |
|                                                  | 2 <sup>nd</sup>                                           | 11. Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically. |
| 12 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 12. Introduction to P-Spice/MATLAB software.                                                                                                                                      |
|                                                  | 2 <sup>nd</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem                                           |
| 13 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. ii. Series Resonant Circuit                                        |
|                                                  | 2 <sup>nd</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. ii. Series Resonant Circuit                                        |
| 14 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms iii. Transient Response in R-L-C series circuit                     |
|                                                  | 2 <sup>nd</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. iii. Transient Response in R-L-C series circuit                    |
| 15 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. iii. Transient Response in R-L-C series circuit                    |
|                                                  | 2 <sup>nd</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms iii. Transient Response in R-L-C series circuit                     |
| 16 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | Revision Class.                                                                                                                                                                   |
|                                                  | 2 <sup>nd</sup>                                           | Revision Class.                                                                                                                                                                   |
| 17 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | Revision Class.                                                                                                                                                                   |
|                                                  | 2 <sup>nd</sup>                                           | Revision Class.                                                                                                                                                                   |
| 18 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | Revision Class.                                                                                                                                                                   |
|                                                  | 2 <sup>nd</sup>                                           | Revision Class.                                                                                                                                                                   |

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| 19 <sup>th</sup> | 1 <sup>st</sup> | Revision Class. |
|                  | 2 <sup>nd</sup> | Revision Class. |

Ananya Shubhadarsinee

Signature of Faculty

#### ACADEMIC LESSON PLAN OF WINTER 2024

|                                                  |                                                           |                                                                                                                                                                                   |
|--------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Discipline<br>Electrical                         | Semester: 3 <sup>rd</sup><br>Sec-A(Gr-2)                  | Name of the Teaching Faculty: -<br>Ananya Shubhadarsinee & Sangeeta Kumari Patro                                                                                                  |
| Subject: -Pr-1<br>(Circuit<br>Simulation<br>Lab) | No of Days/per<br>Week Class<br>Allotted:<br>2d(3hr)/week | Semester From: 1 <sup>st</sup> July 2024 to 08 <sup>th</sup> Nov 2024<br>No. of Weeks: 19 weeks                                                                                   |
| Week                                             | Class Day                                                 | Practical Topics                                                                                                                                                                  |
| 1 <sup>st</sup>                                  | 1 <sup>st</sup>                                           | 1. Measurement of equivalent resistance in series and parallel circuit                                                                                                            |
|                                                  | 2 <sup>nd</sup>                                           | 1. Measurement of equivalent resistance in series and parallel circuit                                                                                                            |
| 2 <sup>nd</sup>                                  | 1 <sup>st</sup>                                           | 2. Measurement of power and power factor using series R-L-C Load.                                                                                                                 |
|                                                  | 2 <sup>nd</sup>                                           | 2. Measurement of power and power factor using series R-L-C Load.                                                                                                                 |
| 3 <sup>rd</sup>                                  | 1 <sup>st</sup>                                           | 3. Verification of KCL and KVL                                                                                                                                                    |
|                                                  | 2 <sup>nd</sup>                                           | 3. Verification of KCL and KVL                                                                                                                                                    |
| 4 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 4. Verification of Super position theorem                                                                                                                                         |
|                                                  | 2 <sup>nd</sup>                                           | 4. Verification of Super position theorem                                                                                                                                         |
| 5 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 5. Verification of Thevenin's Theorem                                                                                                                                             |
|                                                  | 2 <sup>nd</sup>                                           | 5. Verification of Thevenin's Theorem                                                                                                                                             |
| 6 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 6. Verification of Norton's Theorem                                                                                                                                               |
|                                                  | 2 <sup>nd</sup>                                           | 6. Verification of Norton's Theorem                                                                                                                                               |
| 7 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 7. Verification of Maximum power transfer Theorem                                                                                                                                 |
|                                                  | 2 <sup>nd</sup>                                           | 7. Verification of Maximum power transfer Theorem                                                                                                                                 |
| 8 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 8. Determine resonant frequency of series R-L-C circuit.                                                                                                                          |
|                                                  | 2 <sup>nd</sup>                                           | 8. Determine resonant frequency of series R-L-C circuit.                                                                                                                          |
| 9 <sup>th</sup>                                  | 1 <sup>st</sup>                                           | 9. Study of Low pass filter & determination of cut-off frequency                                                                                                                  |
|                                                  | 2 <sup>nd</sup>                                           | 9. Study of Low pass filter & determination of cut-off frequency                                                                                                                  |
| 10 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 10. Study of High pass filter & determination of cut-off frequency                                                                                                                |
|                                                  | 2 <sup>nd</sup>                                           | 10. Study of High pass filter & determination of cut-off frequency                                                                                                                |
| 11 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 11. Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically. |
|                                                  | 2 <sup>nd</sup>                                           | 11. Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically. |
| 12 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 12. Introduction to P-Spice/MATLAB software.                                                                                                                                      |
|                                                  | 2 <sup>nd</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem                                           |
| 13 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. ii. Series Resonant Circuit                                        |
|                                                  | 2 <sup>nd</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. ii. Series Resonant Circuit                                        |
| 14 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms iii. Transient Response in R-L-C series circuit                     |
|                                                  | 2 <sup>nd</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. iii. Transient Response in R-L-C series circuit                    |
| 15 <sup>th</sup>                                 | 1 <sup>st</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. iii. Transient Response in R-L-C series circuit                    |
|                                                  | 2 <sup>nd</sup>                                           | 12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms iii. Transient Response in R-L-C series circuit                     |

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|------------------|-----------------|-----------------|
| 16 <sup>th</sup> | 1 <sup>st</sup> | Revision Class. |
|                  | 2 <sup>nd</sup> | Revision Class. |
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|                  | 2 <sup>nd</sup> | Revision Class. |
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Ananya Shubhadarsinee

Signature of Faculty

## ACADEMIC LESSON PLAN OF WINTER 2024

|                                                   |                                                                                   |                                                                                                                  |
|---------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Discipline:<br>ELECTRICAL                         | Semester: 3 <sup>rd</sup> Sem (SEC-A)                                             | Name of the Teaching Faculty: ANANYA SHUBHADARSINEE                                                              |
| Subject: TH-2<br>(CIRCUIT &<br>NETWORK<br>THEORY) | No. of days/per week<br>class allotted: 4p/week<br>No. Tutorial period<br>1p/week | Semester From: 1 <sup>st</sup> July 2024 to 08 <sup>th</sup> Nov 2024<br>No. of Weeks: 19 weeks                  |
| 1 <sup>st</sup>                                   | 1 <sup>st</sup>                                                                   | 1.MAGNETIC CIRCUITS<br>1.1 Introduction                                                                          |
|                                                   | 2 <sup>nd</sup>                                                                   | 1 . 2 Magnetizing force, Intensity, MMF, flux and their relations                                                |
|                                                   | 3 <sup>rd</sup>                                                                   | 1 . 3 Permeability, reluctance and permeance.                                                                    |
|                                                   | 4 <sup>th</sup>                                                                   | 1 . 4 Analogy between electric and Magnetic Circuits                                                             |
|                                                   | 5 <sup>th</sup>                                                                   | Tutorial                                                                                                         |
| 2 <sup>nd</sup>                                   | 1 <sup>st</sup>                                                                   | 1 . 5 B-H Curve                                                                                                  |
|                                                   | 2 <sup>nd</sup>                                                                   | 1 . 6 Series & parallel magnetic circuit.                                                                        |
|                                                   | 3 <sup>rd</sup>                                                                   | 1 . 7 Hysteresis loop                                                                                            |
|                                                   | 4 <sup>th</sup>                                                                   | 2.COUPLED CIRCUITS:<br>2 . 1 Self Inductance and Mutual Inductance                                               |
|                                                   | 5 <sup>th</sup>                                                                   | Tutorial                                                                                                         |
| 3 <sup>rd</sup>                                   | 1 <sup>st</sup>                                                                   | 2 . 2 Conductively coupled circuit and mutual impedance 2 . 3 Dot convention<br>2 . 4 Coefficient of coupling    |
|                                                   | 2 <sup>nd</sup>                                                                   | 2 . 5 Series and parallel connection of coupled inductors.                                                       |
|                                                   | 3 <sup>rd</sup>                                                                   | 2 . 6 Solve numerical problems (Contd.)                                                                          |
|                                                   | 4 <sup>th</sup>                                                                   | 2 . 6 Solve numerical problems                                                                                   |
|                                                   | 5 <sup>th</sup>                                                                   | Tutorial                                                                                                         |
| 4 <sup>th</sup>                                   | 1 <sup>st</sup>                                                                   | 3. CIRCUIT ELEMENTS AND ANALYSIS:<br>3 . 1 Active, Passive, Unilateral & bilateral, Linear & Non linear elements |
|                                                   | 2 <sup>nd</sup>                                                                   | 3 . 2 Mesh Analysis, Mesh Equations by inspection                                                                |
|                                                   | 3 <sup>rd</sup>                                                                   | 3 . 3 Super mesh Analysis                                                                                        |
|                                                   | 4 <sup>th</sup>                                                                   | 3 . 4 Nodal Analysis, Nodal Equations by inspection                                                              |
|                                                   | 5 <sup>th</sup>                                                                   | Tutorial                                                                                                         |
| 5 <sup>th</sup>                                   | 1 <sup>st</sup>                                                                   | 3 . 5 Super node Analysis. 3 . 6 Source Transformation Technique                                                 |
|                                                   | 2 <sup>nd</sup>                                                                   | 3 . 7 Solve numerical problems (With Independent Sources Only)                                                   |
|                                                   | 3 <sup>rd</sup>                                                                   | 4. NETWORK THEOREMS:<br>4.1 Star to delta and delta to star transformation                                       |
|                                                   | 4 <sup>th</sup>                                                                   | 4.2 Super position Theorem                                                                                       |
|                                                   | 5 <sup>th</sup>                                                                   | Tutorial                                                                                                         |
| 6 <sup>th</sup>                                   | 1 <sup>st</sup>                                                                   | 4.3 Thevenin's Theorem                                                                                           |
|                                                   | 2 <sup>nd</sup>                                                                   | 4.4 Norton's Theorem                                                                                             |
|                                                   | 3 <sup>rd</sup>                                                                   | 4.5 Maximum power Transfer Theorem.                                                                              |
|                                                   | 4 <sup>th</sup>                                                                   | 4.6 Solve numerical problems (With Independent Sources Only)(Contd.)                                             |
|                                                   | 5 <sup>th</sup>                                                                   | Tutorial                                                                                                         |
| 7 <sup>th</sup>                                   | 1 <sup>st</sup>                                                                   | 4.6 Solve numerical problems (With Independent Sources Only)(Contd.)                                             |
|                                                   | 2 <sup>nd</sup>                                                                   | 4.6 Solve numerical problems (With Independent Sources Only)                                                     |
|                                                   | 3 <sup>rd</sup>                                                                   | 5. AC CIRCUIT AND RESONANCE:<br>5.1 A.C. through R-L, R-C & R-L-C Circuit                                        |
|                                                   | 4 <sup>th</sup>                                                                   | 5.2 Solution of problems of A.C. through R-L, R-C & R-L-C series Circuit by complex algebra method.              |
|                                                   | 5 <sup>th</sup>                                                                   | Tutorial                                                                                                         |
| 8 <sup>th</sup>                                   | 1 <sup>st</sup>                                                                   | 5.3 Solution of problems of A.C. through R-L, R-C & R-L-C parallel & Composite Circuits                          |
|                                                   | 2 <sup>nd</sup>                                                                   | 5.4 Power factor & power triangle.                                                                               |
|                                                   | 3 <sup>rd</sup>                                                                   | 5.5 Deduce expression for active, reactive, apparent power.                                                      |
|                                                   | 4 <sup>th</sup>                                                                   | 5.6 Derive the resonant frequency of series resonance and parallel resonance circuit                             |
|                                                   | 5 <sup>th</sup>                                                                   | Tutorial                                                                                                         |

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| 9 <sup>th</sup>  | 1 <sup>st</sup> | 5.7 Define Bandwidth, Selectivity & Q-factor in series circuit.                                           |
|                  | 2 <sup>nd</sup> | 5.8 Solve numerical problems                                                                              |
|                  | 3 <sup>rd</sup> | 6. POLYPHASE CIRCUIT<br>6.1 Concept of poly-phase system and phase sequence                               |
|                  | 4 <sup>th</sup> | 6.2 Relation between phase and line quantities in star & delta connection                                 |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 10 <sup>th</sup> | 1 <sup>st</sup> | 6.3 Power equation in 3-phase balanced circuit                                                            |
|                  | 2 <sup>nd</sup> | 6.4 Solve numerical problems                                                                              |
|                  | 3 <sup>rd</sup> | 6.5 Measurement of 3-phase power by two wattmeter method.                                                 |
|                  | 4 <sup>th</sup> | 6.6 Solve numerical problems.                                                                             |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 11 <sup>th</sup> | 1 <sup>st</sup> | 7. TRANSIENTS<br>7.1 Steady state & transient state response. (Contd.)                                    |
|                  | 2 <sup>nd</sup> | 7.1 Steady state & transient state response                                                               |
|                  | 3 <sup>rd</sup> | 7.2 Response to R-L, R-C & RLC circuit under DC condition. (Contd.)                                       |
|                  | 4 <sup>th</sup> | 7.2 Response to R-L, R-C & RLC circuit under DC condition.                                                |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 12 <sup>th</sup> | 1 <sup>st</sup> | 7.3 Solve numerical problems(Contd.)                                                                      |
|                  | 2 <sup>nd</sup> | 7.3 Solve numerical problems                                                                              |
|                  | 3 <sup>rd</sup> | 8. TWO-PORT NETWORK<br>8.1 Open circuit impedance (z) parameters                                          |
|                  | 4 <sup>th</sup> | 8.2 Short circuit admittance (y) parameters                                                               |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 13 <sup>th</sup> | 1 <sup>st</sup> | 8.3 Transmission (ABCD) parameters                                                                        |
|                  | 2 <sup>nd</sup> | 8.4 Hybrid (h) parameters.                                                                                |
|                  | 3 <sup>rd</sup> | 8.5 Inter relationships of different parameters.                                                          |
|                  | 4 <sup>th</sup> | 8.6 T and $\pi$ representation.                                                                           |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 14 <sup>th</sup> | 1 <sup>st</sup> | 8.7 Solve numerical problems                                                                              |
|                  | 2 <sup>nd</sup> | 8.7 Solve numerical problems                                                                              |
|                  | 3 <sup>rd</sup> | 9. FILTERS:<br>9.1 Define filter<br>9.2 Classification of pass Band, stop Band and cut-off frequency      |
|                  | 4 <sup>th</sup> | 9.3 Classification of filters.<br>9.4 Constant – K low pass filter.<br>9.5 Constant – K high pass filter. |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 15 <sup>th</sup> | 1 <sup>st</sup> | PUJA HOLIDAYS                                                                                             |
|                  | 2 <sup>nd</sup> |                                                                                                           |
|                  | 3 <sup>rd</sup> |                                                                                                           |
|                  | 4 <sup>th</sup> |                                                                                                           |
|                  | 5 <sup>th</sup> |                                                                                                           |
| 16 <sup>th</sup> | 1 <sup>st</sup> | 9.6 Constant – K Band pass filter.                                                                        |
|                  | 2 <sup>nd</sup> | 9.7 Constant – K Band elimination filter.                                                                 |
|                  | 3 <sup>rd</sup> | 9.8 Solve Numerical problems                                                                              |
|                  | 4 <sup>th</sup> | 9.8 Solve Numerical problems                                                                              |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 17 <sup>th</sup> | 1 <sup>st</sup> | Revision Class                                                                                            |
|                  | 2 <sup>nd</sup> | Revision Class                                                                                            |
|                  | 3 <sup>rd</sup> | Revision Class                                                                                            |
|                  | 4 <sup>th</sup> | Revision Class                                                                                            |
|                  | 5 <sup>th</sup> | Revision Class                                                                                            |
| 18 <sup>th</sup> | 1 <sup>st</sup> | Revision Class                                                                                            |
|                  | 2 <sup>nd</sup> | Revision Class                                                                                            |
|                  | 3 <sup>rd</sup> | Revision Class                                                                                            |
|                  | 4 <sup>th</sup> | Revision Class                                                                                            |
|                  | 5 <sup>th</sup> | Revision Class                                                                                            |

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|                  | 5 <sup>th</sup> | Revision Class |

Ananya Shubhadarsinee

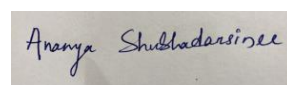
Signature of the Faculty

### ACADEMIC LESSON PLAN OF WINTER 2024

|                                                   |                                                                                      |                                                                                                                  |
|---------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Discipline:<br>ELECTRICAL                         | Semester: 3 <sup>rd</sup> Sem<br>(SEC-B)                                             | Name of the Teaching Faculty: ANANYA SHUBHADARSINEE                                                              |
| Subject: TH-1<br>(CIRCUIT &<br>NETWORK<br>THEORY) | No. of days/per<br>week class allotted:<br>4p/week<br>No. Tutorial period<br>1p/week | Semester From: 1 <sup>st</sup> July 2024 to 08 <sup>th</sup> Nov 2024<br>No. of Weeks: 19 weeks                  |
| 1 <sup>st</sup>                                   | 1 <sup>st</sup>                                                                      | 1.MAGNETIC CIRCUITS<br>1.1 Introduction                                                                          |
|                                                   | 2 <sup>nd</sup>                                                                      | 1 . 2 Magnetizing force, Intensity, MMF, flux and their relations                                                |
|                                                   | 3 <sup>rd</sup>                                                                      | 1 . 3 Permeability, reluctance and permeance                                                                     |
|                                                   | 4 <sup>th</sup>                                                                      | 1 . 4 Analogy between electric and Magnetic Circuits                                                             |
|                                                   | 5 <sup>th</sup>                                                                      | Tutorial                                                                                                         |
| 2 <sup>nd</sup>                                   | 1 <sup>st</sup>                                                                      | 1 . 5 B-H Curve                                                                                                  |
|                                                   | 2 <sup>nd</sup>                                                                      | 1 . 6 Series & parallel magnetic circuit.                                                                        |
|                                                   | 3 <sup>rd</sup>                                                                      | 1 . 7 Hysteresis loop                                                                                            |
|                                                   | 4 <sup>th</sup>                                                                      | 2.COUPLED CIRCUITS:<br>2 . 1 Self Inductance and Mutual Inductance                                               |
|                                                   | 5 <sup>th</sup>                                                                      | Tutorial                                                                                                         |
| 3 <sup>rd</sup>                                   | 1 <sup>st</sup>                                                                      | 2 . 2 Conductively coupled circuit and mutual impedance 2 . 3 Dot convention<br>2 . 4 Coefficient of coupling    |
|                                                   | 2 <sup>nd</sup>                                                                      | 2 . 5 Series and parallel connection of coupled inductors.                                                       |
|                                                   | 3 <sup>rd</sup>                                                                      | 2 . 6 Solve numerical problems (Contd.)                                                                          |
|                                                   | 4 <sup>th</sup>                                                                      | 2 . 6 Solve numerical problems                                                                                   |
|                                                   | 5 <sup>th</sup>                                                                      | Tutorial                                                                                                         |
| 4 <sup>th</sup>                                   | 1 <sup>st</sup>                                                                      | 3. CIRCUIT ELEMENTS AND ANALYSIS:<br>3 . 1 Active, Passive, Unilateral & bilateral, Linear & Non linear elements |
|                                                   | 2 <sup>nd</sup>                                                                      | 3 . 2 Mesh Analysis, Mesh Equations by inspection                                                                |
|                                                   | 3 <sup>rd</sup>                                                                      | 3 . 3 Super mesh Analysis                                                                                        |
|                                                   | 4 <sup>th</sup>                                                                      | 3 . 4 Nodal Analysis, Nodal Equations by inspection                                                              |
|                                                   | 5 <sup>th</sup>                                                                      | Tutorial                                                                                                         |
| 5 <sup>th</sup>                                   | 1 <sup>st</sup>                                                                      | 3 . 5 Super node Analysis. 3 . 6 Source Transformation Technique                                                 |
|                                                   | 2 <sup>nd</sup>                                                                      | 3 . 7 Solve numerical problems (With Independent Sources Only)                                                   |
|                                                   | 3 <sup>rd</sup>                                                                      | 4. NETWORK THEOREMS:<br>4.1 Star to delta and delta to star transformation                                       |
|                                                   | 4 <sup>th</sup>                                                                      | 4.2 Super position Theorem                                                                                       |
|                                                   | 5 <sup>th</sup>                                                                      | Tutorial                                                                                                         |
| 6 <sup>th</sup>                                   | 1 <sup>st</sup>                                                                      | 4.3 Thevenin's Theorem                                                                                           |
|                                                   | 2 <sup>nd</sup>                                                                      | 4.4 Norton's Theorem                                                                                             |
|                                                   | 3 <sup>rd</sup>                                                                      | 4.5 Maximum power Transfer Theorem.                                                                              |
|                                                   | 4 <sup>th</sup>                                                                      | 4.6 Solve numerical problems (With Independent Sources Only)(Contd.)                                             |
|                                                   | 5 <sup>th</sup>                                                                      | Tutorial                                                                                                         |

|                  |                 |                                                                                                           |
|------------------|-----------------|-----------------------------------------------------------------------------------------------------------|
| 7 <sup>th</sup>  | 1 <sup>st</sup> | 4.6 Solve numerical problems (With Independent Sources Only)(Contd.)                                      |
|                  | 2 <sup>nd</sup> | 4.6 Solve numerical problems (With Independent Sources Only)                                              |
|                  | 3 <sup>rd</sup> | 5. AC CIRCUIT AND RESONANCE:<br>5.1 A.C. through R-L, R-C & R-L-C Circuit                                 |
|                  | 4 <sup>th</sup> | 5.2 Solution of problems of A.C. through R-L, R-C & R-L-C series Circuit by complex algebra method.       |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 8 <sup>th</sup>  | 1 <sup>st</sup> | 5.3 Solution of problems of A.C. through R-L, R-C & R-L-C parallel & Composite Circuits                   |
|                  | 2 <sup>nd</sup> | 5.4 Power factor & power triangle.                                                                        |
|                  | 3 <sup>rd</sup> | 5.5 Deduce expression for active, reactive, apparent power.                                               |
|                  | 4 <sup>th</sup> | 5.6 Derive the resonant frequency of series resonance and parallel resonance circuit                      |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 9 <sup>th</sup>  | 1 <sup>st</sup> | 5.7 Define Bandwidth, Selectivity & Q-factor in series circuit.                                           |
|                  | 2 <sup>nd</sup> | 5.8 Solve numerical problems                                                                              |
|                  | 3 <sup>rd</sup> | 6. POLYPHASE CIRCUIT<br>6.1 Concept of poly-phase system and phase sequence                               |
|                  | 4 <sup>th</sup> | 6.2 Relation between phase and line quantities in star & delta connection                                 |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 10 <sup>th</sup> | 1 <sup>st</sup> | 6.3 Power equation in 3-phase balanced circuit                                                            |
|                  | 2 <sup>nd</sup> | 6.4 Solve numerical problems                                                                              |
|                  | 3 <sup>rd</sup> | 6.5 Measurement of 3-phase power by two wattmeter method.                                                 |
|                  | 4 <sup>th</sup> | 6.6 Solve numerical problems.                                                                             |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 11 <sup>th</sup> | 1 <sup>st</sup> | 7. TRANSIENTS<br>7.1 Steady state & transient state response. (Contd.)                                    |
|                  | 2 <sup>nd</sup> | 7.1 Steady state & transient state response                                                               |
|                  | 3 <sup>rd</sup> | 7.2 Response to R-L, R-C & RLC circuit under DC condition. (Contd.)                                       |
|                  | 4 <sup>th</sup> | 7.2 Response to R-L, R-C & RLC circuit under DC condition.                                                |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 12 <sup>th</sup> | 1 <sup>st</sup> | 7.3 Solve numerical problems(Contd.)                                                                      |
|                  | 2 <sup>nd</sup> | 7.3 Solve numerical problems                                                                              |
|                  | 3 <sup>rd</sup> | 8. TWO-PORT NETWORK<br>8.1 Open circuit impedance (z) parameters                                          |
|                  | 4 <sup>th</sup> | 8.2 Short circuit admittance (y) parameters                                                               |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 13 <sup>th</sup> | 1 <sup>st</sup> | 8.3 Transmission (ABCD) parameters                                                                        |
|                  | 2 <sup>nd</sup> | 8.4 Hybrid (h) parameters.                                                                                |
|                  | 3 <sup>rd</sup> | 8.5 Inter relationships of different parameters.                                                          |
|                  | 4 <sup>th</sup> | 8.6 T and $\pi$ representation.                                                                           |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 14 <sup>th</sup> | 1 <sup>st</sup> | 8.7 Solve numerical problems                                                                              |
|                  | 2 <sup>nd</sup> | 8.7 Solve numerical problems                                                                              |
|                  | 3 <sup>rd</sup> | 9. FILTERS: 9.1 Define filter<br>9.2 Classification of pass Band, stop Band and cut-off frequency         |
|                  | 4 <sup>th</sup> | 9.3 Classification of filters.<br>9.4 Constant – K low pass filter.<br>9.5 Constant – K high pass filter. |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 15 <sup>th</sup> | 1 <sup>st</sup> | 9.6 Constant – K Band pass filter.                                                                        |
|                  | 2 <sup>nd</sup> | 9.7 Constant – K Band elimination filter.                                                                 |
|                  | 3 <sup>rd</sup> | 9.8 Solve Numerical problems                                                                              |
|                  | 4 <sup>th</sup> | 9.8 Solve Numerical problems                                                                              |
|                  | 5 <sup>th</sup> | Tutorial                                                                                                  |
| 16 <sup>th</sup> | 1 <sup>st</sup> | Revision Class                                                                                            |
|                  | 2 <sup>nd</sup> | Revision Class                                                                                            |
|                  | 3 <sup>rd</sup> | Revision Class                                                                                            |
|                  | 4 <sup>th</sup> | Revision Class                                                                                            |
|                  | 5 <sup>th</sup> | Revision Class                                                                                            |

|                  |                 |                |
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| 17 <sup>th</sup> | 1 <sup>st</sup> | Revision Class |
|                  | 2 <sup>nd</sup> | Revision Class |
|                  | 3 <sup>rd</sup> | Revision Class |
|                  | 4 <sup>th</sup> | Revision Class |
|                  | 5 <sup>th</sup> | Revision Class |
| 18 <sup>th</sup> | 1 <sup>st</sup> | Revision Class |
|                  | 2 <sup>nd</sup> | Revision Class |
|                  | 3 <sup>rd</sup> | Revision Class |
|                  | 4 <sup>th</sup> | Revision Class |
|                  | 5 <sup>th</sup> | Revision Class |
| 19 <sup>th</sup> | 1 <sup>st</sup> | Revision Class |
|                  | 2 <sup>nd</sup> | Revision Class |
|                  | 3 <sup>rd</sup> | Revision Class |
|                  | 4 <sup>th</sup> | Revision Class |
|                  | 5 <sup>th</sup> | Revision Class |



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