

| LESSON PLAN:- Electrical Engineering | | | | SUBJECT :- Computer Methods in Power Systems |
|--------------------------------------|-------------|--|---------------|--|
| SEMESTER:- 8th | | | | |
| WEEK | THEORY | TOPIC (INCLUDING ASSIGNMENT /TEST) | PRACTICAL DAY | TOPIC |
| | LECTURE DAY | | | |
| 1 | 1 | Impact of computers on power system | 1 | |
| | 2 | orientation of engineering problems to computers | | |
| | 3 | review of matrices and matrix operations | | |
| | 4 | Incidence and Network Matrices-Network graph | | |
| | 5 | various incidence matrices | | |
| 2 | 1 | generalized element representation | 1 | |
| | 2 | primitive network | | |
| | 3 | primitive network matrices | | |
| | 4 | formation of various network matrices by singular transformations | | |
| | 5 | inter- relations between various incidence matrices and network | | |
| 3 | 1 | Revise | 1 | |
| | 2 | Bus Impedance and admittance matrices | | |
| | 3 | Building algorithms for bus impedance matrix | | |
| | 4 | modification of bus impedance matrix for change of reference bus and for network changes | | |
| | 5 | formation of bus admittance matrix and modification of three-phase network elements | | |
| 4 | 1 | treatment under balanced and unbalanced excitation | 1 | |
| | 2 | transformation matrices | | |
| | 3 | SESSIONAL -1 | | |
| | 4 | SESSIONAL -1 | | |
| | 5 | SESSIONAL -1 | | |
| 5 | 1 | unbalanced elements | 1 | |
| | 2 | Short-Circuit Studies Introduction | | |
| | 3 | network short circuit studies using Z bus | | |
| | 4 | short circuit calculations using symmetrical components for various types of faults | | |
| | 5 | Load-Flow Studies Introduction | | |
| 6 | 1 | importance of load flow studies | 1 | |
| | 2 | classification of buses | | |
| | 3 | Load flow equations | | |
| | 4 | iterative methods | | |
| | 5 | computer algorithms | | |
| 7 | 1 | load flow solutions using Gauss Seidel method | 1 | |
| | 2 | Newton Raphson methods | | |
| | 3 | decoupled and fast decoupled load flow solutions | | |
| | 4 | representation of regulating and off nominal ration transformers | | |
| | 5 | comparison of load flow solution methods | | |
| | 1 | Revision | 1 | |

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|----|---|--|---|--|
| 8 | 2 | SESSIONAL -2 | | |
| | 3 | SESSIONAL -2 | | |
| | 4 | SESSIONAL -2 | | |
| | 5 | | | |
| 9 | 1 | Introduction of Sparsity | 1 | |
| | 2 | optimally ordered triangular factorization | | |
| | 3 | schemes of optimal ordering Stability Studies | | |
| | 4 | Algorithms flow chart | | |
| | 5 | transient stability solution using modified euler method | | |
| 10 | 1 | Power System Security introduction | 1 | |
| | 2 | contingency analysis using Z bus | | |
| | 3 | various distribution factors | | |
| | 4 | | | |
| | 5 | | | |
| 11 | 1 | | 1 | |
| | 2 | | | |
| | 3 | | | |
| | 4 | | | |
| | 5 | | | |
| 12 | 1 | | 1 | |
| | 2 | | | |
| | 3 | | | |
| | 4 | | | |
| | 5 | | | |
| 13 | 1 | | 1 | |
| | 2 | SESSIONAL -3 | | |
| | 3 | SESSIONAL -3 | | |
| | 4 | SESSIONAL -3 | | |
| | 5 | | | |

| LESSON PLAN:- Electrical Engineering | | | | |
|--------------------------------------|-------------|-------------------------------------|---|-------|
| SEMESTER:- 8th | | | SUBJECT :- Utilization Of Electrical Energy | |
| WEEK | THEORY | TOPIC (INCLUDING ASSIGNMENT /TEST) | | TOPIC |
| | LECTURE DAY | | | |
| 1 | 1 | Introduction to Illumination | 1 | |
| | 2 | Term used in illumination | | |
| | 3 | Law's of illumination | | |
| | 4 | sources of light | | |
| | 5 | arc lamp | | |
| 2 | 1 | incandescent lamp | 1 | |
| | 2 | discharge lamp | | |
| | 3 | sodium vapour | | |
| | 4 | mercury vapour lamp | | |
| | 5 | florescent tubes | | |
| 3 | 1 | lightening schemes | 1 | |
| | 2 | method of lightning calculation | | |
| | 3 | Introduction to Electrical Heating | | |
| | 4 | Advantages of Electrical Heating | | |
| | 5 | various types of Electrical heating | | |
| 4 | 1 | Power frequency Heating | 1 | |
| | 2 | High frequency heating | | |
| | 3 | SESSIONAL -1 | | |
| | 4 | SESSIONAL -1 | | |
| | 5 | SESSIONAL -1 | | |
| 5 | 1 | Degree of heating element | 1 | |
| | 2 | Equivalent circuit of arc furnace | | |
| | 3 | Resistance heating | | |
| | 4 | Arc heating | | |
| | 5 | Induction heating | | |
| 6 | 1 | dielectric heating | 1 | |
| | 2 | Electric Welding | | |
| | 3 | types of electrical welding | | |
| | 4 | resistance welding | | |
| | 5 | arc welding | | |
| 7 | 1 | electrical winding equipment | 1 | |
| | 2 | Comparison between AC & DC welding | | |
| | 3 | types of electrodes | | |
| | 4 | advantages of coated electrodes. | | |
| | 5 | Introduction to Electroplating | | |

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|----|---|--|---|--|
| 8 | 1 | Basic principle | 1 | |
| | 2 | SESSIONAL -2 | | |
| | 3 | SESSIONAL -2 | | |
| | 4 | SESSIONAL -2 | | |
| | 5 | faraday's law of electrostatics | | |
| 9 | 1 | terms used, Application of electrolysis | 1 | |
| | 2 | factors governing electro deposition | | |
| | 3 | power supply | | |
| | 4 | Refrigeration & Air Conditioning | | |
| | 5 | Basic principle | | |
| 10 | 1 | various compression cycle & system its application | 1 | |
| | 2 | electric circuit of refrigerator | | |
| | 3 | electric circuit of air conditioner | | |
| | 4 | Traction Motors,Different system of electric traction | | |
| | 5 | comparison between AC & DC system | | |
| 11 | 1 | block diagram of traction system | 1 | |
| | 2 | Starting of traction motor | | |
| | 3 | Speed control of traction motor | | |
| | 4 | braking- Speed control | | |
| | 5 | braking –Speed time curves | | |
| 12 | 1 | Mechanics of Train movement | 1 | |
| | 2 | Tractive effort for acceleration | | |
| | 3 | Power and energy output from driving axles | | |
| | 4 | Specific energy output and consumption-Train resistance | | |
| | 5 | | | |
| 13 | 1 | | 1 | |
| | 2 | SESSIONAL -3 | | |
| | 3 | SESSIONAL -3 | | |
| | 4 | SESSIONAL -3 | | |
| | 5 | | | |