

| B.E ELECTRICAL AND ELECTRONICS ENGINEERING(EEE) CHOICE BASED CREDIT SYSTEM (CBCS) SEMESTER - VI | | | |
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| COMPUTER AIDED ELECTRICAL DRAWING (Professional Elective) | | | |
| Subject Code | 15EE651 | IA Marks | 20 |
| Number of Lecture Hours/Week | 03 | Exam Hours | 03 |
| Total Number of Lecture Hours | 40 | Exam Marks | 80 |
| Credits - 03 | | | |
| Course objectives: | | | |
| <ul style="list-style-type: none"> • To discuss the terminology of DC and AC armature windings. • To discuss design and procedure to draw armature winding diagrams for DC and AC machines. • To discuss the substation equipment, their location in a substation and development of a layout for substation. • To discuss different sectional views of transformers, DC machine, its parts and alternator and its parts. • To explain development of sectional views of Transformers, DC machine and alternators using the design data, sketches. ■ | | | |
| Suitable CAD software can be used for drawings | | | |
| PART - A | | | |
| Module-1 | | | Teaching Hours |
| Winding Diagrams: (a) Developed Winding Diagrams of D.C. Machines: Simplex Double Layer Lap and Wave Windings. (b) Developed Winding Diagrams of A.C. Machines: (c) Integral and Fractional Slot Double Layer Three Phase Lap and Wave Windings. (d) Single Layer Windings – Un-Bifurcated 2 and 3 Tier Windings, Mush Windings, Bifurcated 3 Tier Windings. ■ | | | 08 |
| Revised Bloom's Taxonomy Level | L ₁ – Remembering, L ₂ – Understanding, L ₃ – Applying. | | |
| Module-2 | | | |
| Single Line Diagrams: Single Line Diagrams of Generating Stations and Substations Covering Incoming Circuits, Outgoing Circuits, Busbar Arrangements (Single, Sectionalised Single, Main and Transfer, Double Bus Double Breaker, Sectionalised Double Bus, One and a Half Circuit Breaker Arrangement, Ring Main), Power Transformers, Circuit Breakers, Isolators, Earthing Switches, Instrument Transformers, Surge or Lightning Arresters, Communication Devices (Power-Line Carrier) and Line Trap. ■ | | | 08 |
| Revised Bloom's Taxonomy Level | L ₁ – Remembering, L ₂ – Understanding, L ₃ – Applying, L ₄ – Analysing. | | |
| PART - B | | | |
| Module-3 | | | |
| Electrical Machine Assembly Drawings Using Design Data, Sketches or Both: Transformers - Sectional Views Of Single And Three Phase Core And Shell Type Transformers. ■ | | | 08 |
| Revised Bloom's Taxonomy Level | L ₁ – Remembering, L ₂ – Understanding, L ₃ – Applying, L ₄ – Analysing. | | |
| Module-4 | | | |
| Electrical Machine Assembly Drawings Using Design Data, Sketches or Both: D.C. Machine - Sectional Views of Yoke with Poles, Armature and Commutator dealt separately. ■ | | | 08 |
| Revised Bloom's Taxonomy Level | L ₁ – Remembering, L ₂ – Understanding, L ₃ – Applying, L ₄ – Analysing. | | |
| Module-5 | | | |
| Electrical Machine Assembly Drawings Using Design Data, Sketches or Both: Alternator – Sectional Views of Stator and Rotor dealt separately. ■ | | | 08 |
| Revised Bloom's Taxonomy Level | L ₁ – Remembering, L ₂ – Understanding, L ₃ – Applying, L ₄ – Analysing. | | |

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|--|---------------------------------------|---------------|----------------|-------------------------------|
| 15EE651 COMPUTER AIDED ELECTRICAL DRAWING (Professional Elective) (continued) | | | | |
| Course Outcomes: At the end of the course the student will be able to: | | | | |
| <ul style="list-style-type: none"> • Discuss the terminology and types of DC and AC armature windings. • Develop armature winding diagram for DC and AC machines • Develop a layout for substation using the standard symbols for substation equipment. . • Draw sectional views of core and shell types transformers using the design data • Draw sectional views of assembled DC machine or its parts using the design data or the sketches. • Draw sectional views of assembled alternator or its parts using the design data or the sketches. ■ | | | | |
| Graduate Attributes (As per NBA) | | | | |
| Engineering Knowledge, Problem Analysis, Modern tool usage, Ethics. | | | | |
| Question paper pattern: | | | | |
| <ul style="list-style-type: none"> • The question paper will have two parts, PART – A and PART – B. • Each part is for 40 marks. • Part A is for Modules 1 and 2. • Questions 1 and 2 of PART - A will be only on DC windings or only on AC windings. Students have to answer any one of them. The marks prescribed is 25. • Question 3 of PART – A covering module 2 is compulsory. The marks prescribed is 15. • Part B is for Modules 3, 4 and 5. • Questions 4 and 5 will cover any two modules of modules 3, 4 and 5. Students have to answer any one of them. The marks prescribed is 40. ■ | | | | |
| Reference Books | | | | |
| 1 | A course in Electrical Machine design | A. K. Sawhney | DhanpatRai | 6 th Edition, 2013 |
| 2 | Electrical Engineering Drawing | K. L. Narang | SatyaPrakashan | 2014 |
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