



C.U.SHAH UNIVERSITY – WADHWAN CITY

FACULTY OF: -Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: -Electrical Engineering

SEMESTER: - VI

CODE: -2TE06EBC1

NAME –Electrification of Building and Complex (EBC)

Teaching & Evaluation Scheme:-

| Subject Code | Subject Name | Teaching Scheme (Hours) | | | | Credits | Evaluation Scheme | | | | | | | | Total Marks |
|--------------|--|-------------------------|----|----|-------|---------|-------------------|-------|-----------------|-------|-------------------|----|------------|------|-------------|
| | | Th | Tu | Pr | Total | | Theory | | | | Practical (Marks) | | | | |
| | | | | | | | Sessional Exam | | University Exam | | Internal | | University | | |
| | | | | | | | Marks | Hours | Marks | Hours | Pr | TW | Pr | TW | |
| 2TE06EBC1 | Electrification of Building and Complex(EBC) | 04 | 00 | 02 | 06 | 05 | 30 | 1.5 | 70 | 03 | ---- | 20 | 30 | ---- | 150 |

Objectives:-

- Knowledge about new Building Materials and Electrical Fittings and Accessories.
- Insight on Electrification of High Rise Buildings and Complexes.
- Plan, Design, Estimate and Execute the Electrification of Multistoried Buildings and Commercial Complexes as per IE Rules.

Prerequisites: - Basic Knowledge of Electrical Wirings

Course Outlines:-

| Sr. No. | Course Contents | No Of Hours |
|---------|--|-------------|
| 1 | Elements of Electrification Classification of Electrical Installation, General requirement of Electrical installation, Reading and Interpretation of Electrical Engineering Drawings, Diagrams, Plans and Layout, Testing of Wiring Installation for Verification of Current: Earthing, Insulation Resistance and Continuity as per IS. Preparation of Testing/Supervisory Report, Selection of Main Cable, Main Switches, Circuit Breakers, Etc, Illumination Requirements in High Rise Commercial and Public Building, Economical consideration in the Illumination Design. | 9 |
| 2 | Electrification of Multistory Buildings Wiring Layout of an Electrical Installation, Electrification of Wiring Supply, Location from Nearby Substation, Type of Wiring, Decision on Number of Sub Circuits from the Total Circuit Requirement, Calculation of Total Load on Electrical Distribution Work, Estimation of Material Requirements Floor Wise, Specification of Wiring Material and Accessories, Estimation of Total Cost of Electrification Using Schedule of Rates(SOR), Requirements of Approval from Electrical Inspection for High Rise Building, Load Calculation for Lifts, Escalators, Air Conditioners and Their Simplified Wiring Diagram, Problems, Case Studies | 12 |
| 3 | Electrification of Complexes and Public Buildings Concept of Commercial Installation, Comparison of Residential and Commercial Installation, Fundamental Considerations for Planning of an Electrical Installation System for Commercial Building, Special Requirements of Hotels, Theaters, Library, | 10 |

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| | Cultural Halls Etc. From Electrification Points of View Estimation of Material Requirement, Unit Cost and Total Cost of Electrification of Complexes, Case Studies. | |
| 4 | Distribution System for Multistoried Buildings Methods and Estimation of Underground Service Connection, Incoming Supply to Substation for Multistoried High Rise Buildings, Distribution Panels and Bus Bar System, Meter Connection, Bifurcation of Metering, Meters as Per Consumers Demand, Use of Digital Meter, Cable Laying in Building, Special Precautions. | 11 |
| 5 | Electrical Safety and IE Rules Importance of Safety Rules, Safety Precaution in Electrical Installation of Multistoried Buildings- Fire Alarm System and Smoke Detection System, Safety for Lifts and Escalators, Earthing System (IE Rules Regarding Safety), Use of ELCB and MCB in an Installation, Electronic Safety Locks at the Entrance, Use of National Building Code (Electrical Service) for Safety. Use of D.G. Set as A Standby Power Supply in Case of Emergency, IE Rules Related to Electrical Installation and Testing. | 10 |

List of Experiments:-

- Draw and Interpret the symbols used for Electrical Wirings.
- Design Economical Illumination System for any Complex/ Building.
- Draw A Complete Wiring Diagram, of Any One of The Commercial Complexes. (Cinema, Hotel, Library, Cultural Hall, Hospital Etc.)
- Calculate Load for Lift, Escalators, and Air Conditioning in High Rise Building. (A Group of 5 Students, Having One Different Complex per Group.)
- Interpret and Prepare Electrical Test Report of A Large Building or Complex.
- Calculate Load, Draw Wiring Diagram and Estimate Cost of any Given High Rise Building.
- Testing of Safety Devices in Electrical Installation in a High Rise Building.
- Prepare Field Visit Report (Important Observations) of Any High-Rise Building or Complex for Electrical Installation & Wiring.
- To Study about IE Rules for Electrical Safety.
- Perform Electrical Tests for Commercial and High Rise Buildings As Per IE.
- To Study about Smoke Detection System and Fire Alarm System.

Learning Outcomes:-

- Interpret Plan and Wiring Diagrams of Electrification of Buildings and Complexes.
- Test a Given Wiring Installation of a Building and Prepare Test Report.
- Test Wiring Installation of a Multistory, Commercial Building and Complexes.
- Estimate the Materials and Cost of Different Electrification.
- Test The Safety Devices in Multistoried Buildings.

Books Recommended:-

- Electrical Design Estimation and Costing by **Raina K.B. Bhattacharya S.K.**, Willet Estern Ltd., Latest Edition
- Electrical Estimation and Costing by **Uppal S.L.**, Khanna Publisher, New Delhi,
- India Electrical Rules 1956 Hand Book by **Chudley R.**, Butterwarth –London New Delhi.Latest Edition.
- National Building Code of India Group 1 and Group 4 by **Bureau of Indian Standard.** New Delhi, Book No. 1604, Latest Edition.