

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN ELECTRICAL ENGINEERING
Semester: 4

Subject Name A. C. DISTRIBUTION AND UTILISATION

Sr.No	Course content
1.	A.C DISTRIBUTION 1.1 Primary and secondary distribution system. 1.2 Simple calculations of feeders fed at one end and two ends and for closed loop simpl network. 1.3 I.E Rules for releasing new service connections.
2.	SUBSTATION 2.1 Types of substation. 2.2 Functions of substations. 2.3 Equipment and layout of (a) Receiving substation (b) Distribution substation. 2.4 Use of Control equipment in substation.
3.	CABLES 3.1 Classification of cables normally used in distribution system. 3.2 Construction of cables. 3.3 selection of cables as per IS /data sheet / catalogue.
4.	PF IMPROVEMENT AND TARRIF 4.1 Concept of P.F. & its usual values for m/c. 4.2 Causes & effects of low P.F. 4.3 Methods of improving P.F. 4.4 Most Economical P.F. & its calculations. 4.5 Types of tariff & its calculations (as per current norms of Electricity board).
5.	5.0 INDUSTRIAL DRIVES 5.1 Types of drives and power transmission methods. 5.2 Types of motors used and their enclosures. 5.3 Selection of motor for particular applications. 5.4 Motors used for electric traction, its characteristics & requirements
6.	ILLUMINATION 6.1 Concepts and principles of illumination. 6.2 Design of lighting scheme.

7.	HEATING, WELDING AND ELECTROCHEMICAL PROCESSES 7.1 Principle and types of electrical heatings. 7.2 Resistance ovens and arc furnaces used. 7.3 Design of heating elements. 7.4 Causes of failures of heating elements. 7.5 Principles, types and equipment used for welding. 7.6 Electrochemical processes - electroplating, anodising and electroforming. 7.7 Battery charging.
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TUTORIAL ASSIGNMENT:

1. Calculate the voltage to be maintained at the feeding end of a distributor loaded at two points along its length
2. Prepare technical report after visiting a substation
3. Given the blue print of a substation, interpret it.
4. Prepare a technical report after visiting an industry, manufacturing electrical heating furnaces.
5. Improve the power factor – Case Study
6. Given an energy bill (industrial / commercial) interpret in view of current norms
7. Tariff – Case Study
8. Given the data, design an illumination scheme for a small building.
9. Given different load situations (at least 10). Select the appropriate motor and justify.
10. Given a specific load condition determine the rating of a motor (Motor for a pump, motor for a lift)

Reference Books:

1. Electrical Power by S.L.Uppal
2. Electrical Power system by V.K.Mehta
3. Art & science of utilization of electrical energy by H.Pratab