GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC-Electrical Engineering

SEMESTER: V

Subject Name: **Switchgear**
Subject Code: **X50904**

Teaching Scheme				Evaluation Scheme		
Theory	**Tutorial**	**Practical**	**Total**	**University Exam (E)**	**Mid Sem Exam (Theory) (M)**	**Practical (Internal)**
3	0	2	5	70	30	50

Sr. No	Course Content	Total Hrs.
1.	**Theory of Circuit Interruption:** Introduction, Physics of arc phenomena, Maintenance of the arc, Losses from plasma, Essential properties of arc. Arc interruption theories.	08
2.	**Circuit Constants in Relation to Circuit Breaking:** Introduction, Circuit breaker rating, Circuit constants and circuit conditions restriping voltage transient Characteristics of restriking voltage, Interaction between the breaker and circuit, Current chopping, the duties of switchgear.	10
3.	**Theory and Practice of Conventional Circuit Breakers:** Automatic switch, Air-break circuit breakers, Oil circuit breakers, Single and multi break construction, Air-blast circuit breaker, Performance of circuit breakers and system requirements, Modification of circuit breaker duty by shunt resistors, Power factor correction by series resistance, and Comparative merits of different types of conventional circuit breakers.	10
4.	**Recent Developments in Circuit Breakers:** Modern trends, Vacuum circuit breakers, Sulphur hexafluoride (SF6) circuit breakers D.C. circuit breaker.	06
5.	**Testing of Circuit Breakers:** Introduction, Classification, Description of a simple testing station, Equipments used in the station, Testing procedure, Direct testing, Test report, Indirect testing.	08

References Books:

1. Power System Protection and Switchgear by B Ravindranath and M Chander, New Age International.
2. Switchgear and Protection: Sunil S Rao, Khanna Publishers.
3. Power System Protection and Switchgear by Bhuvanesh Oza, Nirmal Nair, Rashesh Mehta and Vijay Makwana, Tata McGraw Hill .
4. High Voltage Circuit Breakers: Design and Applications by Ruben D. Garzon, CRC Press.