Discipline: Electrical Engineering	Semester: 5th Semester 2020-Winter	Name of the Teaching Faculty: Shri Deepak Patra,Lect. Electrical Engg
Subject: Utilization of Electrical Energy and Traction(UEET)	No. of Days/week Class Allotted:60	Semester from date: 01/09/2020 to date: 31 /12/2020 No of weeks: 17
Week	**Class Day**	**Theory Topics**
1st	1st	ELECTROLYTIC PROCESS: Definition and Basic principle of Electro Deposition.
	2nd	Important terms regarding electrolysis.
	3rd	Faradays Laws of Electrolysis.
	4th	Definitions of current efficiency, Energy efficiency. Principle of Electro Deposition.
2nd	1st	Factors affecting the amount of Electro Deposition.
	2nd	Factors governing the electro deposition.
	3rd	State simple example of extraction of metals.
	4th	Application of Electrolysis.
3rd	1st	ELECTRICAL HEATING: Advantages of electrical heating. Mode of heat transfer and Stephen's Law.
	2nd	Principle of Resistance heating. (Direct resistance and indirect resistance heating.)
	3rd	Discuss working principle of direct arc furnace and indirect arc furnace.
	4th	Working principle of direct core type, vertical core type and indirect core type Induction furnace.
4th	1st	Principle of coreless induction furnace and skin effect.
	2nd	Principle of dielectric heating and its application.
	3rd	Principle of Microwave heating and its application.
	4th	PRINCIPLES OF ARC WELDING: Explain principle of arc welding.
5th	1st	Discuss D. C. & A. C. Arc phenomena.
	2nd	D.C. & A. C. arc welding plants of single and multi-operation type
	3rd	Types of arc welding.
	4th	Explain principles of resistance welding.
6th	1st	Descriptive study of different resistance welding methods.
	2nd	ILLUMINATION: Nature of Radiation and its spectrum.
	3rd	Terms used in Illuminations. [Lumen, Luminous intensity, Intensity of illumination, MHCP, MSCP, MHSCP, Solid angle, Brightness, Luminous efficiency.]
	4th	Explain the inverse square law and the cosine law.

7th	1st	Explain polar curves. Describe light distribution and control. Explain related definitions like maintenance factor and depreciation factors.
	2nd	Design simple lighting schemes and depreciation factor.
	3rd	Constructional feature and working of Filament lamps
	4th	Effect of variation of voltage on working of filament lamps.
8th	1st	Explain Discharge lamps.
	2nd	State Basic idea about excitation in gas discharge lamps.
	3rd	State constructional factures and operation of Fluorescent lamp. (PL and PLL Lamps)
	4th	Sodium vapor lamps. High pressure mercury vapor lamps.
9th	1st	Neon sign lamps. High lumen output & low consumption fluorescent lamps.
	2nd	INDUSTRIAL DRIVES: State group and individual drive.
	3rd	Method of choice of electric drives.
	4th	Explain starting and running characteristics of DC and AC motor.
10th	1st	State Application of: DC motor
	2nd	State Application of 3-phase induction motor.
	3rd	State Application of 3 phase synchronous motors.
	4th	State Application of Single phase induction, series motor, universal motor and repulsion motor.
11th	1st	ELECTRIC TRACTION: Explain system of traction.
	2nd	System of Track electrification.
	3rd	Running Characteristics of DC and AC traction motor.
	4th	Tapped field control. Rheostatic control.
12th	1st	Series parallel control. Multi-unit control.
	2nd	Metadyne control.
	3rd	Regenerative Braking.
	4th	Braking with 1-phase series motor.
13th	1st	Magnetic Braking.
	2nd	Revision of Chapter-1
	3rd	Revision of Chapter-2
	4th	Revision of Chapter-3

14th	1st	Revision of Chapter-4
	2nd	Revision of Chapter-5
	3rd	Revision of Chapter-6
	4th	Discussion of probable questions and answers-1
15th	1st	Discussion of probable questions and answers-2
	2nd	Discussion of probable questions and answers-3
	3rd	Discussion of probable questions and answers-4
	4th	Discussion of probable questions and answers-5
16th	1st	Discussion of probable questions and answers-6
	2nd	Discussion of probable questions and answers-7
	3rd	Discussion of probable questions and answers-8
	4th	Discussion of probable questions and answers-9
17th	1st	Discussion of probable questions and answers-10
	2nd	Discussion of probable questions and answers-11
	3rd	Discussion of probable questions and answers-12
	4th	Discussion of probable questions and answers-13