

Lesson Plan

"PVC" NSSK GP Bilaspur		Department: Electrical Engineering				
Syllabus Coverage		Course : Diploma		Duration: 3 Yrs.		
		Total Period: 56		Theory : 56		
Sr. No.	Period Nos.	Topic	Details	Instruction reference	Additional Study Recommended	Remarks
1	5 (1-5)	Safety & Prevention of Accidents	Definition of Safety, Hazard, accident, major accident hazard, responsibility, authority, accountability, Monitoring. Need of Safety, I.E. Rules & Statutory regulations for safety of persons & equipment in electrical installation, Dos & don'ts for Substation operators, Causes of electrical accidents, severity of shock, Procedure for rescuing the person who has received an electric shock, methods of providing artificial respiration, Precautions to be taken to avoid fire due to electrical faults, various measures to prevent electrical accidents, types and operation of fire extinguishers.			
2	10 (6-15)	Introduction to Testing & Maintenance of Machines	Objectives of Testing, Concept of tolerance, Routine tests, Special tests, Methods of testing: Direct, Indirect and Regenerative, Concepts of preventive, predictive, and breakdown maintenance, Advantages of maintenance, Preventive maintenance schedule, Introduction to Total Productive Maintenance.	Installation, Maintenance and Repair of Electrical Machines and Equipment by Madhvi Gupta, KATSON Publication		
3	10(16-25)	Testing & Maintenance of Rotating Electrical Machines	Type tests, routine tests & special tests of single and three-phase Induction motors, Routine, Preventive, & breakdown maintenance of Single & 3-phase Induction motors as per IS 9001:1992. Maintenance schedule of alternators & synchronous machines as per IS 4884- 1968. Brake test on DC Series motor.	Handbook & Journals on Preventive Maintenance by C. J. Hubert		

4	8(26-33)	Testing & Maintenance of Transformers	<p>Procedure for conducting following tests on Transformers: Measurement of winding resistance, no load losses, & no load current, impedance, voltage, load losses,</p> <p>Insulation resistance, Induced over voltage withstand test, separate source voltage withstand test, Impulse voltage withstand test, Temperature rise test of oil & winding.</p> <p>Different methods of determining temp rise in transformer: back to back test, short circuit test, open delta (delta – delta) test.</p> <p>Preventive maintenance & routine maintenance of distribution transformer as per I.S. Periodic checks for replacement of oil, silica gel, parallel operation of single & 3-phase transformer, load sharing calculations</p>			
5	5 (34-38)	Testing & Maintenance of Insulation	<p>Classification of insulating materials as per I.S, factors affecting life of insulating materials, measurement of insulation resistance & interpretation of condition of insulating. Methods of measuring temperature of internal parts of windings/machines & applying the correction factor when the machine is hot.</p> <p>Properties of good transformer oil, Causes of contamination of insulating oil, Procedure of acidity test, sludge test, crackle test and flash point test, Need and method of Filtration of Transformer oil, Methods of cleaning the insulation covered with loose, dry dust, sticky dirt, & oily viscous films, procedure for cleaning, washing & drying of insulation, re-varnishing, Methods of internal heating & vacuum impregnation</p>			
6	10(39-48)	Trouble Shooting of Electrical Machines & Switchgear	<p>Significance of Trouble Shooting of electrical machines, procedure of trouble shooting, Internal and External causes of Equipment failure.</p> <p>Various types of faults (mechanical, electrical & magnetic) in electrical machines and reason for their occurrence,</p> <p>Use and application of following tools in Troubleshooting: Bearing puller, Filler gauge, Dial indicator, Spirit level, Megger, Earth tester, Growler,</p>			

Multimeter,
Trouble shooting charts for Single & 3-
phase Induction Motor, Transformers.
Common troubles in electrical
installation, maintenance & trouble
shooting of LV switchgear like MCCB,
ELCB, contactors & batteries.

Factors involved in designing the
machine foundation, Requirement of
different dimension of foundation for
static & rotating machines, procedure
for levelling & alignment of two shafts
of directly & indirectly coupled drives,
effects of misalignment, Installation of
rotating machines as per I.S.
Use of various devices & tools in
loading, unloading, lifting, and carrying
heavy equipment.

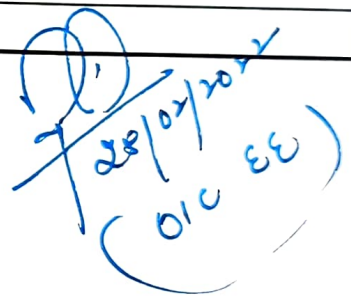
**Installation
of Electrical
Machines &
Equipment**

7 8(49-56)

Approved

H.O.D. Signature

Date :


28/07/2022
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