Department of Electrical and Electronics

New course introduced

SL. NO.	COURSE CODE	COURSE OFFERED
1	SEE1615	TESTING AND COMMISSIONING OF ELECTRICAL EQUIPMENT

		L	T	P	Credits	Total Marks
SEEA3015	TESTING AND COMMISSIONING OF ELECTRICAL EQUIPMENT	3	0	0	3	100

COURSE OBJECTIVES

- To undertake installation, commissioning and maintenance of various electrical equipment.
- To impart knowledge on maintenance schedule of different equipment and machines.
- To trouble shoot various electrical equipment, machines and domestic appliances.
- To have familiar about electrical safety regulations and rules during maintenance.

UNIT 1 SAFETY MANAGEMENT **9Hrs.**

Objectives, Safety Management during Operation and Maintenance, Clearance and Creepages, Electric Shock, need of Earthing, different methods of Earthing, factors affecting the Earth Resistance, methods of measuring the Earth Resistance, Equipment Earthing and System Grounding, Earthing Procedure - Building installation, Domestic appliances, Industrial premises, Earthing of substation, generating station and overhead line.

UNIT 2 TESTING OF TRANSFORMER, PLANT AND EQUIPMENT: **9 Hrs.**

Measurement of winding resistance, voltage ratio and check of voltage vector relationship; Measurement of impedance voltage/short-circuit impedance and load loss; Measurement of no-load loss and current; Measurement of insulation 13 28 resistance; Dielectric tests; Temperature-rise, insulation and HV test, dielectric absorption, switching impulse test. Drying out procedure for transformer. PI index, Commissioning steps for transformer, Troubleshooting & Maintenance of transformer.

UNIT 3 INSTALLATION AND COMMISSIONING OF ROTATING ELECTRICAL MACHINES 9 Hrs.

Degree of protection, cooling system, degree of cooling with IP- IC code (brief discussion), enclosures, rating of industrial rotating electric machine, installation, commissioning and protection of rotating electric machine, drying out of electric rotating machine, insulation resistance measurement, site testing and checking, care, services and maintenance of motors.

UNIT 4 TRANSMISSION LINE **9 Hrs.**

Commissioning of A.C transmission line and HVDC transmission, galvanize steel structure, towers and insulator for transmission and distribution line, tower footing resistance, substation equipment, bus bar system, power cable, low power control cable, Contactor, GIS (gas insulated substation).

UNIT 5 SWITCH GEAR & PROTECTIVE DEVICES **9 Hrs.**

Standards, Classification, specification, rating and duties of CB, installation, commissioning tests, maintenance schedule, type & routine tests. Operation of s/s (steps) for line Circuit breaker maintenance. Location of lightening arrester with reasons.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Understand the Procedure of different types of earthing for different types of electrical installations.

CO2 - Trouble shoot and preparing the maintenance schedule of the transformers.

CO3 - Analyze and trouble shoot various types of rotating electrical machines.

CO4 – Estimate the commissioning of AC transmission line and HVDC transmission.

CO5 – Prepare the maintenance schedule for switch gear and protective devices.

CO6 – Plan the location of lightening arrester.

REFERENCES

1. Rao, S., “Testing, commissioning, operation and maintenance of electrical equipment”, 6/E., Khanna Publishers, New Delhi
2. Paul Gill, “Electrical power equipment maintenance and testing”, CRC Press, 2008.
3. Singh Tarlok, "Installation, commissioning and maintenance of Electrical equipment", S.K. Kataria and Sons, New Delhi,
4. Philip Kiameh, “Electrical Equipment Handbook: Troubleshooting and Maintenance”, McGrawHill, 2003.
5. Relevant Indian Standards (IS Code) and IEEE Standards for-Installation, maintenance and commissioning of electrical equipments/machines.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100 **Exam Duration: 3 Hrs.**

PART A: 10 Question of 2 marks each – No choice **20 Marks**

PART B: 2 Questions from each unit of internal choice; each carrying 16 marks **80 Marks**