

SYLLABUS FOR COMPUTER BASED TEST (CBT) FOR RECRUITMENT OF JUNIOR MANAGEMENT TRAINEE (ELECTRICAL)

A. SUBJECT KNOWLEDGE (80%) : 160 NOS. OF MULTIPLE CHOICE QUESTIONS (MCQS)		
SL. NO.	SUBJECT	TOPICS
1	BASIC ELECTRICAL ENGINEERING	FUNDAMENTALS – AC THEORY - GENERATION OF ELECT. POWER - CONVERSION OF ELECTRICAL ENERGY - WIRING AND POWER BILLING - MEASURING INSTRUMENTS
2	CIRCUIT AND NETWORK THEORY	MAGNETIC CIRCUITS - COUPLED CIRCUITS - CIRCUIT ELEMENTS AND ANALYSIS - NETWORK THEOREMS - AC CIRCUIT AND RESONANCE - POLY-PHASE CIRCUIT – TRANSIENTS - TWO-PORT NETWORK – FILTERS
3	ELECTRICAL ENGINEERING MATERIAL	CONDUCTING MATERIALS - SEMICONDUCTING MATERIALS - INSULATING MATERIALS - DIELECTRIC MATERIALS - MAGNETIC MATERIALS - MATERIAL FOR SPECIAL PURPOSES
4	ENVIRONMENTAL STUDIES	THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES - NATURAL RESOURCES - SYSTEMS - BIODIVERSITY AND IT'S CONSERVATION - ENVIRONMENTAL POLLUTION - SOCIAL ISSUES AND THE ENVIRONMENT - HUMAN POPULATION AND THE ENVIRONMENT
5	ENERGY CONVERSION – I	DC GENERATORS - DC MOTORS - SINGLE PHASE TRANSFORMER - AUTO TRANSFORMER - INSTRUMENT TRANSFORMERS
6	ANALOG ELECTRONICS AND OP-AMP	P-N JUNCTION DIODE - SPECIAL SEMICONDUCTOR DEVICES - RECTIFIER CIRCUITS & FILTERS - TRANSISTORS - TRANSISTOR CIRCUITS - TRANSISTOR AMPLIFIERS & OSCILLATORS - FIELD EFFECT TRANSISTOR - OPERATIONAL AMPLIFIERS
7	ELECTRICAL MEASUREMENT & INSTRUMENTATION	MEASURING INSTRUMENTS - ANALOG AMMETERS AND VOLTMETERS - WATTMETER AND MEASUREMENT OF POWER - ENERGY METERS AND MEASUREMENT OF ENERGY - MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR - MEASUREMENT OF RESISTANCE, INDUCTANCE & CAPACITANCE - SENSORS AND TRANSDUCER OSCILLOSCOPE
8	GENERATION TRANSMISSION & DISTRIBUTION	GENERATION OF ELECTRICITY - TRANSMISSION OF ELECTRIC POWER - OVER HEAD LINE - PERFORMANCE OF SHORT & MEDIUM LINES - EHV TRANSMISSION DISTRIBUTION SYSTEM - UNDERGROUND CABLE - ECONOMIC ASPECTS - TYPES OF TARIFF - SUBSTATION
9	ENERGY CONVERSION – II	ALTERNATOR (SYNCHRONOUS GENERATOR) - SYNCHRONOUS MOTOR - INDUCTION MOTOR - SINGLE PHASE INDUCTION MOTOR - COMMUTATOR MOTORS - SPECIAL ELECTRIC MACHINE - THREE PHASE TRANSFORMERS
10	DIGITAL ELECTRONICS & MICROPROCESSOR	BASICS OF DIGITAL ELECTRONICS - COMBINATIONAL LOGIC CIRCUITS - SEQUENTIAL LOGIC CIRCUITS - 8085 MICROPROCESSOR - INTERFACING AND SUPPORT CHIPS
11	UTILIZATION OF ELECTRICAL ENERGY & TRACTION	ELECTROLYTIC PROCESS - ELECTRICAL HEATING - PRINCIPLES OF ARC WELDING - ILLUMINATION - INDUSTRIAL DRIVES - ELECTRIC TRACTION
12	POWER ELECTRONICS AND PLC	UNDERSTAND THE CONSTRUCTION AND WORKING OF POWER ELECTRONIC DEVICES - UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS - UNDERSTAND THE INVERTERS AND CYCLO-CONVERTERS - UNDERSTAND APPLICATIONS OF POWER ELECTRONIC CIRCUITS - PLC AND ITS APPLICATIONS
13	ELECTRICAL INSTALLATION AND ESTIMATING	INDIAN ELECTRICITY RULES - ELECTRICAL INSTALLATIONS - INTERNAL WIRING - OVER HEAD INSTALLATION - OVER HEAD SERVICE LINES - ESTIMATING FOR DISTRIBUTION SUBSTATIONS

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14	SWITCH GEAR AND PROTECTIVE DEVICES	INTRODUCTION TO SWITCHGEAR - FAULT CALCULATION - FUSES - CIRCUIT BREAKERS - PROTECTIVE RELAYS - PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES - PROTECTION AGAINST OVER VOLTAGE AND LIGHTING - STATIC RELAY
15	CONTROL SYSTEM ENGINEERING	FUNDAMENTAL OF CONTROL SYSTEM - MATHEMATICAL MODEL OF A SYSTEM - CONTROL SYSTEM COMPONENTS - BLOCK DIAGRAM ALGEBRA & SIGNAL FLOW GRAPHS - TIME RESPONSE ANALYSIS - ANALYSIS OF STABILITY BY ROOT LOCUS TECHNIQUE - FREQUENCY RESPONSE OF SYSTEM - NYQUIST PLOT
16	TESTING AND MAINTENANCE OF ELECTRICAL MACHINE	INSTALLATION, COMMISSIONING AND TESTING OF MACHINE - INSTALLATION, COMMISSIONING AND TESTING OF TRANSFORMER - INSTALLATION, COMMISSIONING AND TESTING OF SUB-STATION - MAINTENANCE
17	RENEWABLE ENERGY SYSTEMS	INTRODUCTION TO RENEWAL ENERGY - SOLAR ENERGY - WIND ENERGY - BIOMASS POWER - OTHER ENERGY SOURCES

B. NUMERICAL / GK & REASONING (10%) : 20 NOS. OF MULTIPLE CHOICE QUESTIONS (MCQS)

C. ENGLISH KNOWLEDGE (10%) : 20 NOS. OF MULTIPLE CHOICE QUESTIONS (MCQS)

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