CENTRAL POLYTECHNIC COLLEGE,THARAMANI – 600113.

(An Autonomous Institution)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTION BANK

EEE-61015-INDUSTRIAL MANAGEMENT AND SAFETY

(E – SCHEME)

U.NO	Q NO	QUESTIONS
1	1	What is the term for the flow of electric charge? (a) Voltage (b) Resistance (c) Current (d) Power **Ans: Current**
1	2	The opposition to the flow of electric current is known as: (a) Conductance (b) Capacitance (c) Resistance (d) Inductance **Ans: Resistance**
1	3	Which term describes the potential difference between two points? (a) Amperage (b) Voltage (c) Wattage (d) Ohmage **Ans: Voltage**
1	4	What is the standard unit of electrical resistance? (a) Ampere (b) Volt (c) Ohm (d) Watt **Ans: Ohm**
1	5	A material that allows electric current to flow easily is called a: (a) Insulator (b) Resistor (c) Conductor (d) Capacitor **Ans: Conductor**
1	6	What is the primary objective of electrical safety measures? (a) To increase power output (b) To prevent injury and loss of life (c) To reduce electricity bills (d) To speed up industrial production **Ans: To prevent injury and loss of life**
1	7	Which of the following is an objective of security measures in power systems? (a) Promoting aesthetic design (b) Preventing unauthorized access to high-voltage areas (c) Maximizing current leakage (d) Reducing the number of circuit breakers **Ans: Preventing unauthorized access to high-voltage areas**
1	8	The goal of 'Zero Accident' policy in electrical industries is to: (a) Eliminate all hazards and risks (b) Hire more safety officers (c) Install more decorative lights (d) Increase voltage levels **Ans: Eliminate all hazards and risks**
1	9	Safety protocols are designed to ensure: (a) Minimal energy consumption (b) Reliability and safe operation of equipment (c) Cheaper installation of wires (d) Usage of non-standard materials **Ans: Reliability and safe operation of equipment**
1	10	Why is regular maintenance considered a safety objective? (a) To make the equipment look new (b) To identify and fix potential electrical hazards (c) To increase the weight of the machinery (d) To consume more spare parts **Ans: To identify and fix potential electrical hazards**

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1	11	Which factor primarily determines the severity of an electric shock? (a) The color of the wire (b) The amount of current flowing through the body (c) The brand of the insulator (d) The room temperature **Ans: The amount of current flowing through the body**
1	12	What is a common hazard associated with high-voltage arcing? (a) Low noise levels (b) Fire and explosion (c) Increased cooling (d) Reduction in dust **Ans: Fire and explosion**
1	13	Which condition increases the risk of electric shock for a person? (a) Wearing rubber boots (b) Standing on a dry wooden floor (c) Having wet skin (d) Using insulated tools **Ans: Having wet skin**
1	14	What is the risk of an overloaded circuit? (a) Decreased current (b) Overheating and potential fire (c) Increased voltage (d) Improved efficiency **Ans: Overheating and potential fire**
1	15	Step potential is a hazard commonly found near: (a) A low-voltage battery (b) A grounded electrical appliance (c) Faulty high-voltage transmission towers (d) Solar panels **Ans: Faulty high-voltage transmission towers**
1	16	The 'Rule of Three' in electrical safety often refers to: (a) Voltage, Current, Resistance (b) Time, Distance, Shielding (c) Generation, Transmission, Distribution (d) Red, Yellow, Blue **Ans: Time, Distance, Shielding**
1	17	What is the principle of 'Lockout-Tagout' (LOTO)? (a) To lock doors of the office (b) To ensure machinery remains de-energized during maintenance (c) To tag expensive equipment (d) To limit the number of employees **Ans: To ensure machinery remains de-energized during maintenance**
1	18	Why is 'Earthing' or 'Grounding' essential? (a) To provide a low-resistance path for fault current (b) To increase the cost of installation (c) To make the circuit look complex (d) To prevent voltage from dropping **Ans: To provide a low-resistance path for fault current**
1	19	Double insulation is used in appliances to: (a) Double the weight of the appliance (b) Prevent electric shock if functional insulation fails (c) Allow higher voltage consumption (d) Reduce the heat generated **Ans: Prevent electric shock if functional insulation fails**
1	20	What is the primary purpose of a fuse? (a) To store electrical energy (b) To break the circuit during overcurrent (c) To change DC to AC (d) To measure the voltage **Ans: To break the circuit during overcurrent**

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1	21	Which PPE is most critical for protecting eyes from electric arcs? (a) Sunglasses (b) Arc-rated face shield (c) Reading glasses (d) Plastic goggles **Ans: Arc-rated face shield**
1	22	Before working on a circuit, what should be the first step? (a) Wear a watch (b) Verify the circuit is de-energized (c) Clean the area (d) Adjust the voltage **Ans: Verify the circuit is de-energized**
1	23	How can one prevent accidental contact with live parts? (a) Using bright colors (b) Using enclosures and barriers (c) Using longer wires (d) Working at night **Ans: Using enclosures and barriers**
1	24	What should be used to extinguish an electrical fire? (a) Water (b) Class C (CO2 or dry chemical) extinguisher (c) Foam extinguisher (d) Wet cloth **Ans: Class C (CO2 or dry chemical) extinguisher**
1	25	Which device provides protection against ground faults? (a) Standard Switch (b) GFCI (Ground Fault Circuit Interrupter) (c) Voltmeter (d) Capacitor **Ans: GFCI (Ground Fault Circuit Interrupter)**
1	26	The scope of electrical safety includes: (a) Design, installation, and operation of electrical systems (b) Only marketing electrical goods (c) Only painting the substation (d) Measuring the distance between cities **Ans: Design, installation, and operation of electrical systems**
1	27	Safety standards like NEC (National Electrical Code) focus on: (a) Reducing the price of appliances (b) Safe electrical installation and practices (c) Maximizing the current capacity (d) Promoting a specific brand **Ans: Safe electrical installation and practices**
1	28	Who is responsible for maintaining electrical safety in a workplace? (a) Only the manager (b) Only the electrician (c) Everyone, including management and employees (d) The insurance company **Ans: Everyone, including management and employees**
1	29	Electrical safety training should be provided to: (a) Only highly skilled engineers (b) Only clerical staff (c) All personnel working with or near electrical equipment (d) No one **Ans: All personnel working with or near electrical equipment**
1	30	Which area is covered by residential electrical safety? (a) Industrial power plants only (b) Household wiring and appliance safety (c) Space station wiring only (d) Railway electrification only **Ans: Household wiring and appliance safety**

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1	31	A primary electrical shock occurs when: (a) A person is frightened by a spark (b) Current passes through the human body (c) Someone reads about a shock (d) A transformer hums **Ans: Current passes through the human body**
1	32	A secondary electrical injury, like falling from a ladder after a shock, is called: (a) Direct shock (b) Indirect or secondary hazard (c) Primary shock (d) Static discharge **Ans: Indirect or secondary hazard**
1	33	At what current level does 'let-go' threshold typically occur? (a) 1 mA (b) 10-20 mA (c) 1:00 AM (d) 10:00 AM **Ans: 10-20 mA**
1	34	Ventricular fibrillation can be caused by currents as low as: (a) 1 microampere (b) 100 milliamperes (c) 100 Amperes (d) 10,000 Amperes **Ans: 100 milliamperes**
1	35	Which type of current (AC or DC) is generally considered more dangerous at low frequencies (50-60 Hz)? (a) DC (b) AC (c) Both are equally safe (d) Neither is dangerous **Ans: AC**
1	36	The medical condition where muscles contract involuntarily during a shock is: (a) Anesthesia (b) Tetanic contraction (c) Respiration (d) Digestion **Ans: Tetanic contraction**
1	37	Which organ is most susceptible to damage from an electric shock passing through the chest? (a) Kidney (b) Heart (c) Liver (d) Spleen **Ans: Heart**
1	38	What is the immediate first aid for a victim who has stopped breathing due to shock? (a) Give them water (b) CPR (Cardiopulmonary Resuscitation) (c) Cover with a heavy blanket (d) Ask them to walk **Ans: CPR (Cardiopulmonary Resuscitation)**
1	39	Burns from an electric shock are often more severe because: (a) They only affect the skin (b) They cause internal tissue damage along the path of current (c) They are cold burns (d) They heal instantly **Ans: They cause internal tissue damage along the path of current**
1	40	Delayed effects of an electric shock can include: (a) Immediate weight gain (b) Neurological and psychological issues (c) Change in eye color (d) Improved hearing **Ans: Neurological and psychological issues**

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1	41	An arc flash occurs when: (a) A light bulb is turned on (b) Electric current leaves its intended path and travels through air (c) A battery is charged (d) The sun shines on a solar panel **Ans: Electric current leaves its intended path and travels through air**
1	42	The temperature of an electric arc can reach up to: (a) 100Â°C (b) 500Â°C (c) 19,000Â°C (d) 0Â°C **Ans: 19,000Â°C**
1	43	Sparkover in high voltage systems usually happens when: (a) Air insulation breaks down (b) Voltage is zero (c) Humidity is 0% (d) Current is low **Ans: Air insulation breaks down**
1	44	Which of the following can trigger an arc flash? (a) Using a voltmeter correctly (b) Accidental contact with a tool across energized busbars (c) Reading a manual (d) Wearing rubber gloves **Ans: Accidental contact with a tool across energized busbars**
1	45	Protection against arc flash includes: (a) Wearing polyester clothing (b) Using arc-rated PPE and maintaining safe distance (c) Working closer to the source (d) Increasing the current **Ans: Using arc-rated PPE and maintaining safe distance**
1	46	In a residential building, why should a 3-pin plug be used? (a) To make it look professional (b) To provide a ground connection for safety (c) To increase the power usage (d) To match the socket design only **Ans: To provide a ground connection for safety**
1	47	What is the danger of using 'octopus' wiring (multiple adapters) in a shop? (a) Low light levels (b) Overloading the circuit and causing a fire (c) Saving too much energy (d) Making the room too cold **Ans: Overloading the circuit and causing a fire**
1	48	Wet areas in homes (like bathrooms) should have: (a) Standard switches (b) GFCI protected outlets (c) Open wiring (d) No electricity **Ans: GFCI protected outlets**
1	49	When replacing a fuse in a residential building, one must: (a) Use any wire available (b) Use a fuse with the correct rating (c) Use a thicker wire to prevent frequent blowing (d) Never replace it **Ans: Use a fuse with the correct rating**
1	50	Electrical appliances in shops should be: (a) Left on 24/7 (b) Periodically inspected for frayed cords and loose connections (c) Wrapped in plastic while in use (d) Operated without grounding **Ans: Periodically inspected for frayed cords and loose connections**

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2	1	Which document is essential before starting the installation of an electrical plant? (a) Marketing brochure (b) Approved installation drawings and layouts (c) Company annual report (d) Employee payroll **Ans: Approved installation drawings and layouts**
2	2	What is a key 'precondition' for starting electrical installation work at a site? (a) The building must be fully painted (b) Civil works and foundations must be completed and cured (c) All staff must have laptops (d) The landscaping must be finished **Ans: Civil works and foundations must be completed and cured**
2	3	Preliminary preparations include checking the 'Bill of Quantities' (BOQ) to ensure: (a) The price of electricity is low (b) All required materials and components are available (c) The weather is sunny (d) The customer is satisfied **Ans: All required materials and components are available**
2	4	Which of the following is part of the 'site readiness' check? (a) Availability of construction power and water (b) Selection of office furniture (c) Installing decorative plants (d) Hiring a security guard for the parking lot **Ans: Availability of construction power and water**
2	5	Pre-installation inspection of equipment is done to: (a) Check for transit damage and shortages (b) Clean the equipment for photography (c) Increase the resale value (d) Test the maximum current capacity **Ans: Check for transit damage and shortages**
2	6	Which is a major risk during the installation of heavy electrical equipment? (a) Typing errors (b) Mechanical failure of lifting tackle or cranes (c) Loss of internet connection (d) Inadequate lighting in the office **Ans: Mechanical failure of lifting tackle or cranes**
2	7	Safety aspects during installation primarily focus on: (a) Reducing the cost of labor (b) Preventing accidents, injuries, and equipment damage (c) Speeding up the project regardless of quality (d) Using non-standard tools **Ans: Preventing accidents, injuries, and equipment damage**
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2	8	What is 'Field Quality' in the context of erection? (a) The color of the grass at the site (b) Adherence to technical specifications and standards during assembly (c) The number of workers on the field (d) The speed of the wind **Ans: Adherence to technical specifications and standards during assembly**
2	9	To ensure safety during erection, which zone should be cordoned off? (a) The cafeteria (b) The heavy lifting and handling area (c) The parking lot (d) The main entrance road **Ans: The heavy lifting and handling area**
2	10	Risk assessment before installation helps in: (a) Increasing the budget (b) Identifying potential hazards and implementing controls (c) Avoiding the work entirely (d) Choosing the cheapest contractor **Ans: Identifying potential hazards and implementing controls**

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2	11	Which PPE is mandatory for all erection personnel at a construction site? (a) Silk gloves (b) Safety helmet (Hard hat) (c) Wristwatch (d) Canvas shoes **Ans: Safety helmet (Hard hat)**
2	12	Erection personnel working at heights must use: (a) Sunglasses (b) Full-body safety harness (c) Raincoat (d) Leather apron **Ans: Full-body safety harness**
2	13	What type of footwear is required for electrical installation work? (a) Slippers (b) Steel-toed safety shoes with electrical insulation (c) Running shoes (d) Leather boots with metal spikes **Ans: Steel-toed safety shoes with electrical insulation**
2	14	When handling sharp steel structures, workers should wear: (a) Rubber bands (b) Cut-resistant gloves (c) Woolen mittens (d) No gloves **Ans: Cut-resistant gloves**
2	15	Ear protection is required when: (a) The site is quiet (b) The noise level exceeds 85 decibels (c) Working in the office (d) Talking to supervisors **Ans: The noise level exceeds 85 decibels**
2	16	During the installation of a large transformer, why is the oil filtered? (a) To change its color (b) To remove moisture and impurities (c) To make it flow faster (d) To reduce its weight **Ans: To remove moisture and impurities**
2	17	What is the purpose of a Buchholz relay in a power transformer? (a) To measure the oil level (b) To detect internal faults and gas accumulation (c) To cool the windings (d) To regulate the output voltage **Ans: To detect internal faults and gas accumulation**
2	18	Before filling oil in a large transformer, what process is often carried out? (a) Painting (b) Vacuum pull-down (Evacuation) (c) Heating the tank with fire (d) Washing with water **Ans: Vacuum pull-down (Evacuation)**
2	19	Which component of the transformer helps in absorbing moisture from the air? (a) Conservator (b) Silica gel breather (c) Explosion vent (d) Tap changer **Ans: Silica gel breather**
2	20	During transformer installation, the 'Tan Delta' test is performed to check: (a) The height of the transformer (b) The condition of the insulation (c) The weight of the core (d) The speed of the fan **Ans: The condition of the insulation**

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2	21	What is the first piece of equipment usually encountered by a transmission line entering a switchyard? (a) Transformer (b) Lightning Arrester (c) Bus bar (d) Circuit breaker **Ans: Lightning Arrester**
2	22	The primary function of an isolator in a switchyard is: (a) To break fault current (b) To provide a visible physical disconnection for maintenance (c) To measure voltage (d) To step down current **Ans: To provide a visible physical disconnection for maintenance**
2	23	Circuit breakers in a switchyard must be installed on: (a) Wooden planks (b) Level and stable concrete foundations (c) Loose soil (d) Rubber mats only **Ans: Level and stable concrete foundations**
2	24	Which gas is commonly used as an insulating medium in modern high-voltage circuit breakers? (a) Oxygen (b) SF6 (Sulfur Hexafluoride) (c) Nitrogen (d) Carbon Dioxide **Ans: SF6 (Sulfur Hexafluoride)**
2	25	During switchyard erection, 'sag' in busbars/conductors must be maintained to: (a) Allow for thermal expansion and contraction (b) Make the site look artistic (c) Reduce the number of insulators (d) Increase the voltage **Ans: Allow for thermal expansion and contraction**
2	26	What is a major safety concern when installing rotating machines? (a) The color of the motor (b) Entanglement in moving parts and proper alignment (c) The weight of the user manual (d) The price of the lubricant **Ans: Entanglement in moving parts and proper alignment**
2	27	Proper alignment of the motor and load shaft is necessary to prevent: (a) Excessive vibration and bearing failure (b) High electricity bills (c) Change in motor color (d) Voltage drops **Ans: Excessive vibration and bearing failure**
2	28	The 'Drying Out' process of a rotating machine is intended to: (a) Remove dust from the outer casing (b) Remove moisture from the windings (c) Cool down the machine after running (d) Paint the internals **Ans: Remove moisture from the windings**
2	29	Which instrument is used to measure the Insulation Resistance (IR) of a motor? (a) Ammeter (b) Megger (Insulation Tester) (c) Tachometer (d) Manometer **Ans: Megger (Insulation Tester)**
2	30	A low Insulation Resistance value in a motor indicates: (a) The motor is brand new (b) Moisture or contamination in the insulation (c) The motor is too powerful (d) High efficiency **Ans: Moisture or contamination in the insulation**

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2	31	Why is it important to check the phase sequence before commissioning a 3-phase motor? (a) To ensure it rotates in the correct direction (b) To save energy (c) To reduce noise (d) To make the wires look neat **Ans: To ensure it rotates in the correct direction**
2	32	Safety during installation of electrical machines involves providing: (a) Soft music (b) Proper earthing and protective enclosures (c) Extra paint (d) Plastic covers only **Ans: Proper earthing and protective enclosures**
2	33	The 'Polarization Index' (PI) is calculated to: (a) Measure the speed of the motor (b) Assess the condition of the insulation over time (c) Check the weight of the rotor (d) Measure the input voltage **Ans: Assess the condition of the insulation over time**
2	34	When leveling a machine during installation, which tool is used? (a) Thermometer (b) Spirit level or precision level (c) Barometer (d) Hygrometer **Ans: Spirit level or precision level**
2	35	Foundation bolts should be tightened: (a) Only by hand (b) To the specified torque using a torque wrench (c) As loosely as possible (d) After the machine starts vibrating **Ans: To the specified torque using a torque wrench**
2	36	What should be done if a motor's IR value is below the minimum standard? (a) Start the motor immediately (b) Carry out the drying out process (c) Ignore it (d) Replace the whole machine without checking **Ans: Carry out the drying out process**
2	37	In switchyard installation, the 'Ground Mat' is essential for: (a) Beautification (b) Providing a safe path for fault current and limiting step/touch potential (c) Reducing the cost of wires (d) Supporting the towers **Ans: Providing a safe path for fault current and limiting step/touch potential**
2	38	The insulation resistance test should be performed: (a) Only when the machine is running (b) When the machine is de-energized and disconnected (c) Only during rain (d) Once every 10 years **Ans: When the machine is de-energized and disconnected**
2	39	Which factor affects the insulation resistance of a machine? (a) Temperature and humidity (b) The color of the motor frame (c) The nameplate font (d) The distance from the office **Ans: Temperature and humidity**
2	40	Before energized testing, all tools must be: (a) Hidden (b) Removed from the equipment area and accounted for (c) Left inside the machine (d) Painted **Ans: Removed from the equipment area and accounted for**

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2	41	What is the purpose of 'Grouting' in equipment installation? (a) To clean the machine (b) To fill the space between the equipment base and foundation for stability (c) To provide insulation (d) To change the oil **Ans: To fill the space between the equipment base and foundation for stability**
2	42	Which test confirms that the transformer windings have not shifted during transport? (a) Color test (b) Frequency Response Analysis (FRA) (c) Weight test (d) Noise test **Ans: Frequency Response Analysis (FRA)**
2	43	Current Transformers (CTs) must never have their secondary circuit: (a) Grounded (b) Short-circuited (c) Open-circuited while primary is energized (d) Connected to a meter **Ans: Open-circuited while primary is energized**
2	44	In outdoor switchyards, 'Clearance' refers to: (a) The time taken to finish work (b) Minimum safe distance between energized parts and ground/personnel (c) The amount of paperwork (d) Cleaning the floor **Ans: Minimum safe distance between energized parts and ground/personnel**
2	45	A 'Permit to Work' (PTW) is used to: (a) Pay the workers (b) Grant permission for visitors (c) Ensure safe working conditions and isolation before starting work (d) Buy new equipment **Ans: Ensure safe working conditions and isolation before starting work**
2	46	Vacuum drying of a transformer is done at high temperature to: (a) Melt the core (b) Effectively evaporate and remove moisture from the solid insulation (c) Harden the paint (d) Increase the oil volume **Ans: Effectively evaporate and remove moisture from the solid insulation**
2	47	Personal Protective Equipment (PPE) should be: (a) Shared among all workers (b) Regularly inspected and maintained in good condition (c) Stored in the manager's car (d) Used only during inspections **Ans: Regularly inspected and maintained in good condition**
2	48	During the installation of rotating machines, 'soft foot' refers to: (a) The operator's shoes (b) A condition where the machine feet do not sit flat on the baseplate (c) A type of lubricant (d) Slow starting speed **Ans: A condition where the machine feet do not sit flat on the baseplate**
2	49	The primary risk during the installation of a large oil transformer is: (a) Air pollution (b) Oil spillage and fire hazard (c) The transformer getting cold (d) Too much sunlight **Ans: Oil spillage and fire hazard**
2	50	Final commissioning tests are done to: (a) Calculate the total cost (b) Verify the equipment is ready for safe and reliable operation (c) Check the aesthetics (d) Train new staff **Ans: Verify the equipment is ready for safe and reliable operation**

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3	1	Which type of wiring is most commonly used in modern residential buildings for its safety and aesthetics? (a) Cleat wiring (b) Batten wiring (c) Concealed conduit wiring (d) Casing and capping **Ans: Concealed conduit wiring**
3	2	The main purpose of a 'Two-way switch' in domestic wiring is to control a lamp from: (a) One point (b) Two different points (c) Three points (d) The main distribution board only **Ans: Two different points**
3	3	In a 3-pin socket, why is the earth pin made longer and thicker? (a) To save material (b) To ensure the earth connection is made first and broken last (c) To increase the current flow (d) To prevent it from entering the phase hole **Ans: To ensure the earth connection is made first and broken last**
3	4	What is the standard color code for the 'Phase' or 'Live' wire in new Indian residential installations? (a) Black (b) Green (c) Red (or Brown) (d) Blue **Ans: Red (or Brown)**
3	5	A 'Distribution Board' (DB) in a house serves to: (a) Generate power (b) Divide the main electrical supply into various subsidiary circuits (c) Store electricity for emergencies (d) Change AC to DC **Ans: Divide the main electrical supply into various subsidiary circuits**
3	6	If a water tap gives a shock, the most likely cause is: (a) A faulty water heater with a leaked heating element or poor earthing (b) High water pressure (c) Cold water temperature (d) The tap being made of plastic **Ans: A faulty water heater with a leaked heating element or poor earthing**
3	7	Getting a shock from a 'wet wall' usually indicates: (a) The wall is painted with metallic paint (b) Electrical leakage through dampness due to faulty wiring inside the wall (c) Static electricity from the wind (d) Normal operation of AC circuits **Ans: Electrical leakage through dampness due to faulty wiring inside the wall**
3	8	A ceiling fan 'firing shock' (shock when touched) is often due to: (a) High fan speed (b) Insulation failure in the motor winding touching the fan body (c) Dust on the blades (d) Using a regulator **Ans: Insulation failure in the motor winding touching the fan body**
3	9	What is the first thing you should do if an appliance gives a minor shock? (a) Wash it with water (b) Unplug it and call a qualified electrician (c) Wrap it in tape and continue using it (d) Ignore it if it's not painful **Ans: Unplug it and call a qualified electrician**
3	10	Which device should be installed in the home to prevent fatal shocks from leakage current? (a) Voltage stabilizer (b) RCCB (Residual Current Circuit Breaker) (c) Ammeter (d) Energy meter **Ans: RCCB (Residual Current Circuit Breaker)**

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3	11	In multi-storied buildings, the 'Rising Main' refers to: (a) The elevator system (b) The vertical busbar system used to distribute power to different floors (c) The water pump system (d) The stairs **Ans: The vertical busbar system used to distribute power to different floors**
3	12	Temporary installations (like for festivals or construction) are particularly dangerous because: (a) They are always too bright (b) They often use substandard materials and loose, exposed connections (c) They use too much power (d) They are installed by engineers **Ans: They often use substandard materials and loose, exposed connections**
3	13	For a multi-storied building, fire-resistant low smoke (FR-LS) wires are used to: (a) Increase the weight of the building (b) Prevent the spread of fire and toxic fumes during a short circuit (c) Make the walls look better (d) Reduce the electricity bill **Ans: Prevent the spread of fire and toxic fumes during a short circuit**
3	14	Temporary wiring for a wedding or event should be protected by: (a) Just a master switch (b) Proper MCBs and an ELCB/RCCB (c) Plastic bags over the joints only (d) Thin copper wires **Ans: Proper MCBs and an ELCB/RCCB**
3	15	Lightning protection for multi-storied buildings is provided by: (a) The windows (b) Installing a lightning conductor (Finial) at the highest point (c) Painting the roof white (d) Using thick curtains **Ans: Installing a lightning conductor (Finial) at the highest point**
3	16	A major hazard in agricultural pump installations is: (a) Using too much water (b) Damp environments and lack of proper earthing for the motor (c) The motor being too loud (d) The color of the starter box **Ans: Damp environments and lack of proper earthing for the motor**
3	17	Why is a 'Single Phase Preventer' used in agricultural motor starters? (a) To stop the motor when the tank is full (b) To protect the 3-phase motor if one phase fails (c) To increase the voltage (d) To prevent unauthorized use **Ans: To protect the 3-phase motor if one phase fails**
3	18	For an irrigation pump set, the earthing lead should be: (a) Connected to a dry wooden pole (b) Connected to a properly maintained earth electrode/pit (c) Left hanging in the air (d) Buried only 1 inch deep **Ans: Connected to a properly maintained earth electrode/pit**
3	19	A capacitor is often used in agricultural pumps to: (a) Store water (b) Improve the power factor and starting torque (c) Measure current (d) Change the direction of rotation **Ans: Improve the power factor and starting torque**
3	20	What is the recommended PPE for a farmer operating a pump in wet conditions? (a) Cotton gloves (b) Insulated rubber boots (c) Metal-soled shoes (d) Loose clothing **Ans: Insulated rubber boots**

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3	21	DO: When replacing a light bulb, you should first: (a) Turn the switch OFF (b) Clean the floor (c) Open the windows (d) Wet your hands **Ans: Turn the switch OFF**
3	22	DON'T: You should never pull an electrical cord to: (a) Straighten it (b) Disconnect the plug from the socket (c) Measure its length (d) Store it **Ans: Disconnect the plug from the socket**
3	23	DO: Regularly check appliances for: (a) Frayed wires or cracked plugs (b) The brand logo (c) The manufacturing date only (d) Price tags **Ans: Frayed wires or cracked plugs**
3	24	DON'T: Never use an electrical appliance with: (a) Dry hands (b) Wet hands or while standing in water (c) Shoes on (d) Lights on **Ans: Wet hands or while standing in water**
3	25	DO: In case of an electrical fire, you should: (a) Throw water on it (b) Switch off the main supply and use a dry chemical extinguisher (c) Blow air on it (d) Run away without informing anyone **Ans: Switch off the main supply and use a dry chemical extinguisher**
3	26	Which rating of MCB is typically used for a domestic lighting circuit? (a) 5A to 10A (b) 63A (c) 100A (d) 500A **Ans: 5A to 10A**
3	27	A 'Short Circuit' occurs when: (a) Resistance becomes infinite (b) Live and Neutral wires come into direct contact (c) Voltage is very low (d) The switch is open **Ans: Live and Neutral wires come into direct contact**
3	28	The purpose of a 'Main Switch' in a house is to: (a) Change the TV channel (b) Isolate the entire house from the power supply (c) Increase the voltage (d) Bill the electricity **Ans: Isolate the entire house from the power supply**
3	29	Why should you avoid using many high-power appliances on one socket? (a) The socket will get lonely (b) It can cause overheating and fire due to overloading (c) It reduces the voltage for everyone else (d) The appliances will fight for power **Ans: It can cause overheating and fire due to overloading**
3	30	Electrical insulation is often made of: (a) Copper (b) PVC (Polyvinyl Chloride) (c) Iron (d) Aluminum **Ans: PVC (Polyvinyl Chloride)**

U.NO	Q NO	QUESTIONS
3	31	Which of these is a safe practice? (a) Inserting bare wires into a socket (b) Using a 3-pin plug for grounded appliances (c) Bypassing a fuse (d) Operating a switch with wet hands **Ans: Using a 3-pin plug for grounded appliances**
3	32	A 'Grounded' appliance helps protect you by: (a) Making the appliance heavier (b) Directing fault current safely to the earth (c) Stopping the appliance from moving (d) Connecting to the internet **Ans: Directing fault current safely to the earth**
3	33	Why is aluminum used for some domestic wiring despite being less conductive than copper? (a) It is cheaper and lighter (b) It is stronger than steel (c) It is transparent (d) It doesn't conduct electricity **Ans: It is cheaper and lighter**
3	34	What is the danger of a 'Loose Connection' in a switch? (a) It saves electricity (b) It causes sparking and heat, leading to fire (c) It makes the light brighter (d) No danger **Ans: It causes sparking and heat, leading to fire**
3	35	In a bathroom, the light switch should ideally be: (a) Inside the shower (b) Outside the bathroom or a pull-cord type (c) On the floor (d) Not installed at all **Ans: Outside the bathroom or a pull-cord type**
3	36	What does a 'Fuse' do when current exceeds its rating? (a) It generates more power (b) It melts and breaks the circuit (c) It gets colder (d) It changes color **Ans: It melts and breaks the circuit**
3	37	If an appliance smells like burning plastic, you should: (a) Spray perfume (b) Turn it off and disconnect it immediately (c) Increase its speed (d) Wait until it stops smelling **Ans: Turn it off and disconnect it immediately**
3	38	A 'Step-down transformer' in a domestic stabilizer is used to: (a) Increase current (b) Reduce the voltage to a safe level for appliances (c) Speed up the fan (d) Store energy **Ans: Reduce the voltage to a safe level for appliances**
3	39	The 'Neutral' wire in a balanced 3-phase system: (a) Carries maximum current (b) Carries zero or very little current (c) Is the most dangerous (d) Is always red **Ans: Carries zero or very little current**
3	40	What is the purpose of 'Conduit' in wiring? (a) To provide mechanical protection to wires (b) To make wires look thin (c) To cool the wires (d) To act as a conductor **Ans: To provide mechanical protection to wires**

U.NO	Q NO	QUESTIONS
3	41	How often should an RCCB be tested using its 'Test' button? (a) Never (b) Once every 10 years (c) Regularly (e.g., monthly) (d) Only when it fails **Ans: Regularly (e.g., monthly)**
3	42	An 'Electric Kettle' should never be operated: (a) With a lid (b) Without water (Dry running) (c) On a table (d) In the morning **Ans: Without water (Dry running)**
3	43	The 'Earthing' wire is usually colored: (a) Red (b) Black (c) Green or Green-Yellow (d) Blue **Ans: Green or Green-Yellow**
3	44	What is 'Double Insulation' in a hand-held drill? (a) Two layers of paint (b) Functional insulation plus additional protective insulation (c) Two separate batteries (d) Two handles **Ans: Functional insulation plus additional protective insulation**
3	45	Extension cords should be considered as: (a) A permanent wiring solution (b) A temporary solution only (c) Always safe to bury under rugs (d) Better than wall sockets **Ans: A temporary solution only**
3	46	Why should you never touch a victim of electric shock directly? (a) They might be angry (b) You may also get electrocuted as current flows through you (c) It is bad manners (d) They will get a headache **Ans: You may also get electrocuted as current flows through you**
3	47	If you see a fallen power line on the street, you should: (a) Pick it up and move it (b) Stay away and call the power company (c) Drive over it (d) Poke it with a metal rod **Ans: Stay away and call the power company**
3	48	A 'Smart Meter' primarily helps in: (a) Automating water usage (b) Accurate monitoring and two-way communication of energy use (c) Increasing the voltage (d) Replacing the main switch **Ans: Accurate monitoring and two-way communication of energy use**
3	49	Which material is a poor insulator? (a) Rubber (b) Glass (c) Salty water (d) Dry wood **Ans: Salty water**
3	50	The 'continuity test' is performed to ensure: (a) The wire is beautiful (b) There is a complete, unbroken path for current to flow (c) The wire is very long (d) The insulation is red **Ans: There is a complete, unbroken path for current to flow**

U.NO	Q NO	QUESTIONS
4	1	What is the primary purpose of 'System Grounding' (Neutral Grounding)? (a) To protect equipment from mechanical damage (b) To control the voltage to ground within predictable limits (c) To increase the billing accuracy (d) To reduce the physical size of the motor **Ans: To control the voltage to ground within predictable limits**
4	2	Equipment grounding differs from system grounding because it involves grounding: (a) The neutral point of a transformer (b) Non-current carrying metal parts of an electrical system (c) The live phase wires (d) The transmission tower top only **Ans: Non-current carrying metal parts of an electrical system**
4	3	Which of the following is a result of effective equipment grounding? (a) Increased insulation stress (b) Ensuring that the metal frame of an appliance is at zero potential (c) Eliminating the need for fuses (d) Reducing the power factor **Ans: Ensuring that the metal frame of an appliance is at zero potential**
4	4	In an ungrounded system, what happens during a single line-to-ground fault? (a) The system shuts down immediately (b) The voltage of the healthy phases increases significantly (c) The current flows to the earth through the neutral (d) The fault current is extremely high **Ans: The voltage of the healthy phases increases significantly**
4	5	A 'Solidly Grounded' system is one where: (a) The neutral is connected to earth through a resistor (b) The neutral is connected directly to the earth with no intentional impedance (c) The neutral is left floating (d) The neutral is connected to a capacitor **Ans: The neutral is connected directly to the earth with no intentional impedance**
4	6	What is the main functional requirement of an earthing system? (a) To provide a high resistance path (b) To provide a low impedance path for the return of fault current (c) To prevent the flow of current during normal operation (d) To change the frequency of the system **Ans: To provide a low impedance path for the return of fault current**
4	7	The 'Earth Resistance' of a substation should ideally be: (a) As high as possible (b) As low as possible (typically below 1 Ohm) (c) Exactly 100 Ohms (d) Infinite **Ans: As low as possible (typically below 1 Ohm)**
4	8	Which factor most affects the soil resistivity near an earthing pit? (a) The height of the building (b) Moisture content and salt concentration in the soil (c) The color of the earth electrode (d) The direction of the wind **Ans: Moisture content and salt concentration in the soil**
4	9	What is the purpose of adding charcoal and salt to an earth pit? (a) To prevent rust (b) To reduce the soil resistivity and improve conductivity (c) To keep the pit dry (d) To provide insulation **Ans: To reduce the soil resistivity and improve conductivity**

U.NO	Q NO	QUESTIONS
4	10	The 'Earth Electrode' in a grounding system is usually made of: (a) Plastic (b) Galvanized Iron (GI) or Copper (c) Aluminum only (d) Rubber **Ans: Galvanized Iron (GI) or Copper**
4	11	Which grounding method is preferred for systems where lightning surges are frequent? (a) Reactance grounding (b) Solid grounding (c) Ungrounded system (d) Resistance grounding **Ans: Solid grounding**
4	12	In 'Resistance Grounding', the value of the resistor is chosen to: (a) Maximize the fault current (b) Limit the fault current to a safe value while still allowing relays to operate (c) Stop the current completely (d) Increase the voltage **Ans: Limit the fault current to a safe value while still allowing relays to operate**
4	13	Reactance grounding is typically used to limit: (a) Voltage spikes (b) The magnitude of the ground-fault current (c) Power factor (d) Load current **Ans: The magnitude of the ground-fault current**
4	14	A 'Peterson Coil' is used in which type of grounding? (a) Solid grounding (b) Resonant grounding (c) Ungrounded system (d) Direct grounding **Ans: Resonant grounding**
4	15	The primary advantage of Resonant Grounding (Arc Suppression Coil) is: (a) It makes the circuit breaker trip faster (b) It extinguishes the arc during a transient ground fault (c) It increases the fault current (d) It is the cheapest method **Ans: It extinguishes the arc during a transient ground fault**
4	16	Why is the neutral of a generator often grounded through a distribution transformer? (a) To step up the voltage for transmission (b) To provide high-impedance grounding and limit fault current to very small values (c) To cool the generator (d) To synchronize the generator **Ans: To provide high-impedance grounding and limit fault current to very small values**
4	17	If a generator is solidly grounded, the ground fault current can: (a) Exceed the three-phase short-circuit current (b) Be zero (c) Be less than the load current (d) Have no effect on the windings **Ans: Exceed the three-phase short-circuit current**
4	18	Which grounding method protects the generator core from burning during an internal fault? (a) Solid grounding (b) High-resistance grounding (c) Reactance grounding (d) No grounding **Ans: High-resistance grounding**
4	19	Voltage Transformer (VT) grounding is a form of: (a) Solid grounding (b) High-impedance grounding (c) Low-resistance grounding (d) Reactance grounding **Ans: High-impedance grounding**

4 20 Before selecting a generator neutral earthing method, one must consider:
(a) The color of the generator (b) The magnitude of the charging current of the system
(c) The speed of the turbine only (d) The distance to the city
Ans: The magnitude of the charging current of the system

4 21 The connection between the earth electrode and the electrical equipment is called:
(a) Phase wire (b) Earth lead or Grounding conductor
(c) Neutral wire (d) Insulator
Ans: Earth lead or Grounding conductor

4 22 What happens if an earthing system has a high resistance?
(a) The safety devices (fuses/MCBs) may not trip during a fault (b) The voltage becomes more stable
(c) The electricity bill decreases (d) The equipment runs faster
Ans: The safety devices (fuses/MCBs) may not trip during a fault

4 23 Which of these is NOT a type of system grounding?
(a) Plate grounding (b) Solid grounding
(c) Resistance grounding (d) Reactance grounding
Ans: Plate grounding

4 24 Plate earthing and Pipe earthing are examples of:
(a) System grounding methods (b) Equipment earthing (Physical methods of earthing)
(c) Generator types (d) Transformer configurations
Ans: Equipment earthing (Physical methods of earthing)

4 25 An 'Effective Grounded' system has a X0/X1 ratio of:
(a) Less than 3 (b) Exactly 10
(c) More than 50 (d) Zero
Ans: Less than 3

4 26 Static electricity is removed from equipment bodies by:
(a) Insulation (b) Earthing
(c) Painting (d) Lubrication
Ans: Earthing

4 27 The potential of the earth is taken as:
(a) 100 V (b) Zero
(c) Infinite (d) 11 kV
Ans: Zero

4 28 Which of these is a common method for measuring earth resistance?
(a) Ammeter-Voltmeter method (b) Fall of Potential method
(c) Kelvin Double Bridge (d) Tachometer method
Ans: Fall of Potential method

4 29 During a ground fault, the 'Step Potential' is:
(a) The voltage between the feet of a person standing near the fault (b) The voltage between a hand and a foot
(c) The voltage of the transformer neutral (d) The voltage across the circuit breaker
Ans: The voltage between the feet of a person standing near the fault

4 30 In a 3-phase, 4-wire system, the neutral wire is grounded to:
(a) Provide a path for unbalanced current (b) Stop the motor
(c) Reduce the phase voltage (d) Heat the building
Ans: Provide a path for unbalanced current

4 31 Which grounding method uses a transformer and a resistor in the secondary?
(a) Solid grounding (b) Neutral Grounding Transformer (NGT) method
(c) Peterson coil (d) Reactance grounding
Ans: Neutral Grounding Transformer (NGT) method

4 32 A system is 'Ungrounded' when:
(a) There is no intentional connection to ground (b) The wire is broken
(c) The ground is made of sand (d) The voltage is zero
Ans: There is no intentional connection to ground

4 33 The main disadvantage of an ungrounded system is:
(a) High cost (b) Risk of transient overvoltages and 'arcing grounds'
(c) Low efficiency (d) Small cable size
Ans: Risk of transient overvoltages and 'arcing grounds'

4 34 Why is pipe earthing preferred over plate earthing in some cases?
(a) It is cheaper and requires less space (b) It is more colorful
(c) It uses more water (d) It is less conductive
Ans: It is cheaper and requires less space

4 35 Earth electrodes should be placed at a distance of at least _____ from any building foundation.
(a) 1.5 meters (b) 100 meters
(c) 10 centimeters (d) 0.1 meters
Ans: 1.5 meters

4 36 The thickness of a copper plate electrode should not be less than:
(a) 0.1 mm (b) 3.15 mm
(c) 50 mm (d) 1 meter
Ans: 3.15 mm

4 37 In resistance grounding, if the resistance value is too high, the system behaves like:
(a) A solid grounded system (b) An ungrounded system
(c) A short circuit (d) A superconductor
Ans: An ungrounded system

4 38 What is 'Touch Potential'?
(a) The voltage between a person's hand and their feet when touching a faulty structure (b) The weight of the electrode
(c) The current in the neutral (d) The speed of the relay
Ans: The voltage between a person's hand and their feet when touching a faulty structure

4 39 Earthing through a Peterson coil is also known as:
(a) Capacitance grounding (b) Resonant grounding
(c) Inductive grounding (d) Solid grounding
Ans: Resonant grounding

4 40 Which grounding is common in low-voltage domestic installations?
(a) Solid grounding (b) Peterson coil
(c) Resistance grounding (d) Reactance grounding
Ans: Solid grounding

4 41 A ground fault relay detects:
(a) Overload current (b) Zero-sequence current (leakage to ground)
(c) High frequency (d) Phase-to-phase faults only
Ans: Zero-sequence current (leakage to ground)

4 42 The neutral point of a star-connected alternator is:
(a) Always at 220V (b) Ideally at zero potential
(c) Always disconnected (d) The phase terminal
Ans: Ideally at zero potential

4 43 Why is it dangerous to have a broken neutral in a 3-phase, 4-wire system?
(a) It causes voltage imbalance and potential overvoltage for single-phase loads (b) It stops the generator
(c) It reduces the bill (d) It makes the lights brighter only
Ans: It causes voltage imbalance and potential overvoltage for single-phase loads

4 44 Double earthing is required for:
(a) Small toys (b) High-power machines and motors
(c) Plastic switches (d) Flashlights
Ans: High-power machines and motors

4 45 Which material is used as a backfill in chemical earthing?
(a) Sand (b) Bentonite or specialized conductive compounds
(c) Oil (d) Wood chips
Ans: Bentonite or specialized conductive compounds

4 46 Earthing for lightning arresters should be:
(a) Separate and low impedance (b) Connected to the plumbing pipes
(c) Avoided (d) High resistance
Ans: Separate and low impedance

4 47 The 'Fall of Potential' method uses how many electrodes?
(a) One (b) Three (One under test, two auxiliary)
(c) Ten (d) Zero
Ans: Three (One under test, two auxiliary)

4 48 Which grounding method is best for preventing 'arcing grounds'?
(a) Ungrounded (b) Solid or Resonant grounding
(c) No grounding (d) High resistance only
Ans: Solid or Resonant grounding

4 49 The cross-sectional area of the earthing conductor is determined by:
(a) The color of the walls (b) The maximum expected fault current and its duration
(c) The price of copper (d) The number of switches
Ans: The maximum expected fault current and its duration

4 50 In a solidly grounded system, the neutral is:
(a) Left open (b) Connected to the phase
(c) Connected to earth through a wire of negligible resistance (d) Connected to a battery
Ans: Connected to earth through a wire of negligible resistance

5 1 A Safety Management Policy is a document that outlines:
(a) The company's profit goals (b) The organization's commitment to safety and health at the workplace
(c) The list of all employees (d) The marketing strategy
Ans: The organization's commitment to safety and health at the workplace

5 2 What is the primary role of a 'Safety Committee' in an organization?
(a) To increase the workload (b) To facilitate cooperation between management and employees in safety matters
(c) To punish workers who make mistakes (d) To reduce the salary of workers
Ans: To facilitate cooperation between management and employees in safety matters

5 3 Safety Auditing is a process used to:
(a) Check the financial accounts (b) Systematically evaluate the effectiveness of safety programs and procedures
(c) Measure the voltage of the system (d) Hire new managers
Ans: Systematically evaluate the effectiveness of safety programs and procedures

5 4 Which of these is a method to 'Motivate' employees towards safety?
(a) Safety awards and recognition programs (b) Increasing working hours
(c) Reducing the number of PPEs (d) Ignoring minor injuries
Ans: Safety awards and recognition programs

5 5 The 'Safety Officer' in an industrial plant is responsible for:
(a) Operating the heavy machinery (b) Advising management on safety standards and monitoring compliance
(c) Fixing the lights (d) Preparing the budget
Ans: Advising management on safety standards and monitoring compliance

5 6 As per IE Rules, 'Ground Clearance' for a high voltage line crossing a street should be at least:
(a) 1 meter (b) 6.1 meters (approx. 20 feet)
(c) 100 meters (d) 10 centimeters
Ans: 6.1 meters (approx. 20 feet)

5 7 What does 'Sectional Clearance' in a substation refer to?
(a) The distance between the fence and the gate (b) Minimum clearance required between live parts and the working platform
(c) The thickness of the busbar (d) The time taken to clear a fault
Ans: Minimum clearance required between live parts and the working platform

5 8 IE Rules specify that no building shall be erected under an existing overhead line without:
(a) Painting the roof red (b) Maintaining the required vertical and horizontal clearances
(c) Increasing the line voltage (d) Using wooden bricks
Ans: Maintaining the required vertical and horizontal clearances

5 9 The vertical clearance for high voltage lines above buildings must be at least:
(a) 1.2 meters (b) 3.7 meters
(c) 0.5 meters (d) 10 meters
Ans: 3.7 meters

5 10 Horizontal clearance for high voltage lines from buildings should be at least:
(a) 0.5 meters (b) 2.0 meters
(c) 5.0 meters (d) 10.0 meters
Ans: 2.0 meters

5 11 What is considered the 'Safe Limit' of current that a human body can tolerate for a short duration without heart failure?
(a) 1 Ampere (b) Below 30 mA
(c) 100 Amperes (d) 500 mA
Ans: Below 30 mA

5 12 Safety standards for electrical installations in India are primarily governed by:
(a) Bureau of Indian Standards (BIS) (b) Ministry of Agriculture
(c) Central Water Commission (d) Local Police
Ans: Bureau of Indian Standards (BIS)

5 13 The safe limit for 'Touch Voltage' in a dry environment is generally taken as:
(a) 50 V AC (b) 1000 V AC
(c) 5 V AC (d) 230 V AC
Ans: 50 V AC

5 14 Which IE Rule specifically deals with the instruction for restoration of persons suffering from electric shock?
(a) Rule 1 (b) Rule 44
(c) Rule 100 (d) Rule 5
Ans: Rule 44

5 15 Safety signs and caution notices in substations must be:
(a) Written only in English (b) Displayed in English, Hindi, and the local regional language
(c) Hidden behind doors (d) Small and hard to read
Ans: Displayed in English, Hindi, and the local regional language

5 16 In an electrical substation, which type of fire extinguisher is strictly prohibited?
(a) CO2 extinguisher (b) Dry chemical powder
(c) Water-type or soda-acid extinguisher (d) Clean agent extinguisher
Ans: Water-type or soda-acid extinguisher

5 17 Every electrical installation must have 'First Aid' boxes equipped with:
(a) Painkillers only (b) Standard contents including burn ointments and bandages
(c) Tools for repairing motors (d) Spare fuses
Ans: Standard contents including burn ointments and bandages

5 18 What is the first step in the 'Schaefer's Method' or 'Holger-Nielsen Method' of artificial respiration?
(a) Give the victim water
(b) Clear the airway and place the victim in the correct position
(c) Check the victim's pulse only
(d) Wait for 2 hours
Ans: Clear the airway and place the victim in the correct position

5 19 Fire buckets in a switchyard should be filled with:
(a) Water
(b) Dry sand
(c) Oil
(d) Wood chips
Ans: Dry sand

5 20 How should an electrical fire in a server room be handled?
(a) Sprinkling water
(b) Using a CO2 or Halon-alternative extinguisher
(c) Opening all windows for air
(d) Throwing a wet rug
Ans: Using a CO2 or Halon-alternative extinguisher

5 21 The Electricity Act, 2003 aimed to consolidate the laws relating to:
(a) Only coal mining
(b) Generation, transmission, distribution, trading, and use of electricity
(c) Nuclear weapons
(d) Water taxes
Ans: Generation, transmission, distribution, trading, and use of electricity

5 22 Under Part 4 of the Electricity Act, 2003, who is responsible for granting licenses for transmission?
(a) The local municipality
(b) The Appropriate Commission (CERC/SERC)
(c) The Police Department
(d) Private banks
Ans: The Appropriate Commission (CERC/SERC)

5 23 Section 126 of the Electricity Act, 2003 deals with:
(a) Theft of electricity
(b) Assessment of unauthorized use of electricity
(c) Hiring employees
(d) Fixing the tariff
Ans: Assessment of unauthorized use of electricity

5 24 Section 135 of the Electricity Act, 2003 provides penalties for:
(a) Coming late to work
(b) Theft of electricity and tampering with meters
(c) Buying cheap appliances
(d) Using high-quality wires
Ans: Theft of electricity and tampering with meters

5 25 The 'Appellate Tribunal for Electricity' (APTEL) was established to:
(a) Supply electricity to villages
(b) Hear appeals against the orders of the adjudicating officer or commissions
(c) Build new power plants
(d) Regulate coal prices
Ans: Hear appeals against the orders of the adjudicating officer or commissions

5 26 Which body is responsible for making 'Safety Regulations' under the Electricity Act, 2003?
(a) Ministry of Finance
(b) Central Electricity Authority (CEA)
(c) Ministry of External Affairs
(d) Local Courts
Ans: Central Electricity Authority (CEA)

5 27 A safety audit report should include:
(a) Employee birthdays (b) Identified hazards, non-compliances, and corrective action plans
(c) The cost of lunch (d) Weather forecasts
Ans: Identified hazards, non-compliances, and corrective action plans

5 28 Why is 'Lockout-Tagout' (LOTO) a requirement under safety standards?
(a) To save energy (b) To prevent accidental energization of equipment under repair
(c) To keep the room tidy (d) To stop people from entering the room
Ans: To prevent accidental energization of equipment under repair

5 29 Who has the power to inspect any electrical installation under the Act?
(a) The Electrical Inspector (b) Any passerby
(c) The reception clerk (d) The sales team
Ans: The Electrical Inspector

5 30 If an accident results in loss of life, within what time must it be reported to the Inspector?
(a) Within 24 hours (b) After one month
(c) Immediately, and within the prescribed time (usually 24-48 hours) (d) Never
Ans: Immediately, and within the prescribed time (usually 24-48 hours)

5 31 What is the penalty for obstructing an Electrical Inspector in their duty?
(a) A simple warning (b) Fines and/or imprisonment as per the Act
(c) Promotion (d) Nothing
Ans: Fines and/or imprisonment as per the Act

5 32 The 'Safety Organization' structure in a company should be:
(a) Informal and undocumented (b) Clearly defined with specific roles for managers and supervisors
(c) The same for all industries (d) Handled only by the security guard
Ans: Clearly defined with specific roles for managers and supervisors

5 33 In safety auditing, 'Non-conformance' means:
(a) The equipment is working perfectly (b) A failure to meet a specified requirement or regulation
(c) The auditor is happy (d) The budget is exceeded
Ans: A failure to meet a specified requirement or regulation

5 34 Which of these is a 'Safety Sign' color for 'Prohibition'?
(a) Green (b) Red
(c) Blue (d) Yellow
Ans: Red

5 35 The 'Mandatory' safety signs (e.g., 'Wear Ear Protection') are usually in:
(a) Red circles (b) Blue circles
(c) Yellow triangles (d) Green squares
Ans: Blue circles

5	36	The 'Warning' signs (e.g., 'Danger - High Voltage') are usually in:	
		(a) Red circles	(b) Yellow triangles with black borders
		(c) Green circles	(d) White squares
		Ans: Yellow triangles with black borders	
5	37	Regular safety training for supervisors ensures:	
		(a) They can do the workers' jobs	(b) They can identify hazards and enforce safety protocols effectively
		(c) They get a vacation	(d) They use less paper
		Ans: They can identify hazards and enforce safety protocols effectively	
5	38	Which Part of the Electricity Act 2003 deals with 'National Electricity Policy and Plan'?	
		(a) Part 2	(b) Part 10
		(c) Part 15	(d) Part 20
		Ans: Part 2	
5	39	Under the Act, 'Consumer' means:	
		(a) Anyone who walks by a power plant	(b) Any person who is supplied with electricity for his own use
		(c) Only large industries	(d) The employees of the electricity board
		Ans: Any person who is supplied with electricity for his own use	
5	40	The Central Electricity Authority (CEA) consists of how many members?	
		(a) 1	(b) Not more than 14
		(c) Exactly 100	(d) Unlimited
		Ans: Not more than 14	

U.NO	Q NO	QUESTIONS	
5	41	In Case of a fire involving oil-filled transformers, the best method is to use:	
		(a) Water hose	(b) Emulsifier system or nitrogen injection system
		(c) Fan to blow the smoke	(d) Dry leaves
		Ans: Emulsifier system or nitrogen injection system	
5	42	A 'Safety Policy' must be signed by:	
		(a) The junior-most staff	(b) The Chief Executive or the highest-ranking manager
		(c) A customer	(d) No one
		Ans: The Chief Executive or the highest-ranking manager	
5	43	The significance of IE Rule 77 is related to:	
		(a) Clearance above ground of the lowest conductor	(b) The price of the wire
		(c) The color of the pole	(d) The weight of the insulator
		Ans: Clearance above ground of the lowest conductor	
5	44	Clearance between multi-core cables and telephone lines should be at least:	
		(a) 0.6 meters	(b) 10 meters
		(c) 1 millimeter	(d) 50 meters
		Ans: 0.6 meters	
5	45	Which of these is a psychological factor for motivation in safety?	
		(a) Providing a high-voltage tester	(b) Building a sense of responsibility and belonging
		(c) Buying new boots	(d) Painting the office
		Ans: Building a sense of responsibility and belonging	

5 46 Safety audit frequency for a hazardous electrical plant should be:

(a) Once every 20 years

(b) At least once a year or as per statutory requirement

(c) Only after a major accident

(d) Never

Ans: At least once a year or as per statutory requirement

5 47 The primary objective of the Electricity Act 2003 regarding 'Trading' was to:

(a) Ban all trading

(b) Introduce competition and efficiency in the power sector

(c) Fix one price for the whole world

(d) Discourage private players

Ans: Introduce competition and efficiency in the power sector

5 48 What is 'Creepage Distance'?

(a) Distance between two poles

(b) The shortest path along the surface of an insulating material between two conductive parts

(c) The speed of the current

(d) The depth of the earth pit

Ans: The shortest path along the surface of an insulating material between two conductive parts

5 49 For a 400kV line, the ground clearance required is much higher than a 11kV line because of:

(a) The weight of the wire

(b) The higher potential for air breakdown and arc-over at higher voltages

(c) The length of the tower

(d) Bird protection

Ans: The higher potential for air breakdown and arc-over at higher voltages

5 50 Safety management is a:

(a) One-time activity

(b) Continuous improvement process (PDCA - Plan Do Check Act)

(c) Waste of time

(d) Marketing tool only

Ans: Continuous improvement process (PDCA - Plan Do Check Act)

UNIT - I

PART B SHORT ANSWER 3 MARKS

UNIT NO	Q.NO	QUESTION
1	1	Mention the objective of safety
1	2	Mention the safety measures in Electrical.
1	3	State hazards associated with electric current and voltage
1	4	What is Primary electric shock?
1	5	State the principle of Electric safety
1	6	What are the possibilities of getting electric shock?
1	7	Mention the safety precautions against contact shocks
1	8	State the safety precaution against burns
1	9	Write about the scope of electrical safety
1	10	Mention the objective of safety

UNIT - II

PART B SHORT ANSWER 3 MARKS

2	1	What is meant by safety during installation of plant and equipment?
2	2	Mention three common risks involved during installation of electrical plant.
2	3	Write any three safety aspects to be followed during installation work.
2	4	List three hazards during erection of electrical equipment.
2	5	List any three safety requirements for outdoor switchyard installation.
2	6	What are the three safety aspects during installation of electrical rotating machines?
2	7	Mention three hazards associated with rotating electrical machines.
2	8	List three safety precautions during alignment of rotating machines.
2	9	State any three methods used for drying out of rotating machines.
2	10	Why is insulation resistance measurement carried out? Give three reasons.

UNIT - III

PART B SHORT ANSWER 3 MARKS

3	1	Explain how proper earthing prevents electric shock in residential wiring.
3	2	Describe the safety precautions to be followed while fixing a ceiling fan.
3	3	How can RCCB/ELCB be used to protect users from electric shock in homes?
3	4	Write about wiring and fitting of multi stored building.
3	5	Examine the reasons for fan firing shock and suggest safety improvements.
3	6	Analyze the causes of electric shock from water taps in residential buildings.
3	7	Examine the causes of electrical accidents in agricultural pump sets.
3	8	Evaluate the importance of proper earthing in preventing domestic electrical accidents.
3	9	Evaluate the effectiveness of safety switches in commercial buildings.
3	10	Analyze the causes of electrical hazards due to incorrect use of extension cords and plug points in homes.

UNIT - IV

PART B SHORT ANSWER 3 MARKS

4	1	Explain the need for earthing in electrical systems.
4	2	Describe the functional requirements of an earthing system.
4	3	Explain the basic components of an earthing system.
4	4	Apply suitable equipment earthing for a domestic electrical installation.
4	5	Apply proper earthing methods to reduce touch voltage in electrical equipment.
4	6	How can neutral grounding be applied to improve system stability?
4	7	What is earth equipment?
4	8	What is system earthing?
4	9	State the main part of earthing system.
4	10	Examine the consequences of improper generator neutral earthing.

UNIT - V

PART B SHORT ANSWER 3 MARKS

5	1	Define safety management of electrical system.
5	2	Explain safety auditing.
5	3	Apply the principles of safety auditing to an electrical substation.
5	4	How would you implement a management safety policy in an electrical industry?
5	5	How can safety training motivate employees to follow electrical safety practices?
5	6	How would you apply fire-fighting rules in an electrical installation?
5	7	Discuss about section clearance.
5	8	Apply IE rules to maintain section clearances in overhead electrical lines.
5	9	What is neutral grounding?
5	10	Analyze the effectiveness of The Electricity Act, 2003 in improving electrical safety.

UNIT - I

PART C EXPLANATORY TYPE QUESTIONS 10 MARKS

1	1	Discuss the objectives of safety and safety measures.
1	2	Discuss the hazards associated with electric current and voltage.
1	3	Describe medical analysis of electric shocks and its effects.
1	4	Discuss prevention of shocks.
1	5	Discuss safety precautions against electric shocks in residential buildings and shops.

UNIT - II

PART C EXPLANATORY TYPE QUESTIONS 10 MARKS

2	1	Describe the preconditions for start of installation work.
2	2	Describe the safety aspects during installation.
2	3	Discuss the installation of a large oil immersed power transformer.
2	4	Discuss the safety during installation of electrical rotating machines.
2	5	Describe drying out and insulation resistance measurement of rotating machines.

UNIT - III

PART C EXPLANATORY TYPE QUESTIONS 10 MARKS

3	1	Explain in detail about the wiring and fitting of residential installation.
3	2	Discuss about water tap getting shock in detail.
3	3	Explain in detail about the wiring and fitting of multistoried building..
3	4	Explain about fan firing shock in detail.
3	5	Discuss about Do's and Don'ts for safety in use of domestic electrical appliances.

UNIT - IV

PART C EXPLANATORY TYPE QUESTIONS 10 MARKS

4	1	Discuss neutral grounding in detail.
4	2	Write the distinction between system grounding and equipment grounding.
4	3	Write about the fundamental requirements of earthing system
4	4	Describe earthing system in detail.
4	5	Discuss about the methods of earthing generator neutrals.

UNIT -V

PART C EXPLANATORY TYPE QUESTIONS 10 MARKS

5	1	Discuss safety management of electrical system in detail.
5	2	Explain safety organization
5	3	Discuss different motivation to manager, supervisor and employee
5	4	Discuss standards on electric safety.
5	5	Explain rules regarding first aid and fire fighting facility.
