SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY
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ROLL NUMBER

WRITTEN TEST FOR THE POST OF JR. TECHNCIAL ASST (ELECTRICAL)

DATE: 24/06/2025 TIME: 10 to 11.30 AM

DURATION: 60 MINUTES Total Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Write your Roll Number on the top of the Question Booklet and in the answer sheet.
2. Each question carries 1 mark.
3. There will not be any Negative Marking.
4. **Write legibly the alphabet of the most appropriate answer (A, B, C or D) in the separate answer sheet provided.**
5. Over-writing is not permitted.
6. Candidate should sign in the question paper and answer sheet.
7. No clarifications will be given.
8. Candidate should hand over the answer sheet to the invigilator before leaving the examination hall.

Signature of the Candidate

Junior Technical Assistant (Electrical)

1. What is the principle of operation of a transformer?
   A. Electrostatic induction
   B. Electromagnetic induction
   C. Magnetic repulsion
   D. Faraday shielding
2. What is the primary purpose of using an isolator in an electrical circuit?
   A. Overload protection
   B. Switching under load
   C. Safe maintenance disconnection
   D. Voltage regulation
3. Which parameter remains constant in a pure inductive circuit with several inductors in parallel and series?
   A. Voltage
   B. Current
   C. Power
   D. Frequency
4. The unit of electrical energy is:
   A. Watt
   B. Volt
   C. Kilowatt-hour
   D. Ampere-hour
5. Which material is commonly used for fuse wires?
   A. Copper
   B. Silver
   C. Tin-lead alloy
   D. Aluminium
6. In star-delta starting, which connection is used during starting?
   A. Delta
   B. Open loop
   C. Star
   D. Mesh
7. Which type of motor is generally used for hospital HVAC systems?
   A. DC shunt motor
   B. Synchronous motor
   C. 3-phase induction motor
   D. Universal motor
8. Which method is commonly used to start large squirrel cage induction motors?
   A. Direct-on-line (DOL)
   B. Star-delta
   C. Rotor resistance
   D. Auto-transformer
9. Which color is typically used for earth wire insulation in India?
   A. Red
   B. Yellow
   C. Green
   D. Blue
10. Which IS standard is primarily used for electrical wiring installations?
    A. IS 3043
    B. IS 732
    C. IS 9000
    D. IS 10118

11. Which of the following is a type of protective relay?
    A. Inverse time overcurrent relay
    B. Float relay
    C. Time delay relay
    D. Sequence relay
12. Which loss is constant in a transformer regardless of load?
    A. Copper loss
    B. Eddy current loss
    C. Hysteresis loss
    D. Iron loss
13. What is the maximum permissible voltage drop in final general-purpose sub-circuits as per IS 732?
    A. 1% B. 2%
    C. 5% D. 10%
14. In battery maintenance, the specific gravity of electrolyte indicates:
    A. Charge level B. Temperature
    C. Voltage D. Capacity of electrolyte
15. Which tool is used to test RYB phase sequence?
    A. Tong tester
    B. Phase tester
    C. Earth loop tester
    D. Phase sequence meter
16. What is the primary reason for using laminated cores in transformers?
    A. Reduce magnetic field
    B. Improve insulation
    C. Reduce weight
    D. Minimize eddy current losses
17. Which factor determines the synchronous speed of an AC motor?
    A. Supply voltage
    B. Supply frequency and number of poles
    C. Load torque
    D. Rotor resistance
18. In a high-voltage transmission system, what does corona discharge cause?
    A. Increased power transfer
    B. Reduction in system voltage
    C. Power loss and radio interference
    D. Increased insulation resistance

19. What happens when the field current of a synchronous generator is increased while maintaining constant load?
    A. Terminal voltage decreases
    B. Power factor becomes leading
    C. Frequency increases
    D. Speed decreases
20. Which type of fault has usually the highest fault current in a hospital power system?
    A. Line to ground
    B. Double line to ground
    C. Line to line
    D. Three-phase fault
21. Which quantity is measured in farads?
    A. Resistance
    B. Inductance
    C. Capacitance
    D. Reactance
22. What is the purpose of a capacitor in a single-phase motor?
    A. Reduce current
    B. Create phase shift
    C. Improve efficiency
    D. Decrease voltage
23. Which unit is used to measure magnetic flux density?
    A. Tesla
    B. Henry
    C. Farad
    D. Weber

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A. Which device converts AC to DC?
    A. Inverter
    B. Converter
    C. Rectifier
    D. Stabilizer

24. Which property of a conductor opposes the flow of current?
    A. Inductance
    B. Resistance
    C. Capacitance
    D. Reactance
25. Which circuit component stores energy in the form of a magnetic field?
    A. Resistor
    B. Capacitor
    C. Inductor
    D. Diode
26. Which law states that the induced EMF is proportional to the rate of change of flux?
    A. Lenz's Law
    B. Kirchhoff's Law
    C. Faraday's First Law
    D. Faraday's Second Law
27. Which type of fire extinguisher is suitable for electrical fires in a panel?
    A. Foam
    B. CO_2
    C. Water
    D. Dry powder
28. What is the purpose of mechanical-electrical interlock in an ACB panel for hospital power supply systems?
    A. Reduce arc flash energy
    B. Allow manual breaker operation
    C. Improve earthing continuity
    D. Prevent simultaneous closure of incomer and bus coupler

29. During autoclave heater connection testing, contactor closing is confirmed but no heating occurs. What is the next logical test?
    A. IR value of heater terminal
    B. Voltage drop across MCB
    C. Phase-to-phase voltage at heater terminals
    D. Replace contactor
30. How does a shunt trip in an ACB help during emergency shutdowns in hospital power systems?
    A. Enables remote disconnection/tripping
    B. Allows delayed tripping
    C. Maintains continuity of power
    D. Boosts undervoltage tripping
32. During DG set synchronization in a hospital with multiple DGs, what must be matched before paralleling with the bus?
    A. Voltage and frequency only
    B. Phase sequence, voltage, frequency, and phase angle
    C. Voltage and phase only
    D. Phase sequence, voltage and frequency
33. A hospital's UPS system shows frequent bypass mode shifts during generator supply even though supply voltage is within acceptable limits. What is the most likely cause?
    A. Generator fuel quality issue
    B. Generator output frequency instability
    C. UPS battery near end-of-life
    D. Faulty isolation transformer
34. Which of the following is the best method to test the integrity of an earth pit in a hospital electrical installation?
    A. Measure resistance using a tong tester
    B. Visual inspection for corrosion
    C. Earth resistance test using fall-of-potential method
    D. Megger test between phase and earth
35. Transformer oil BDV 10 to 20 kV indicates:
    A. Low oil level
    B. High water or contaminants
    C. Overheating
    D. Proper condition
36. For hospital areas, what wire type is best?
    A. PVC wire
    B. Fire retardant wire
    C. XLPE wire
    D. FRLSH wire

37. What should be checked first if an RMU trips after HT restoration, but no fault appears?
    A. Relay reset delay
    B. Breaker mechanical trip
    C. Possibility of inrush trip or overvoltage
    D. HV cable insulation failure
38. In large hospitals, periodic insulation resistance tests should use what instrument and voltage?
    A. Tong tester, 500V
    B. Hipot Tester, 1000V
    C. Multimeter, 250V
    D. Megger, 500V
39. A 500 kVA DG set voltage increases sharply when load is disconnected. The cause is likely:
    A. Faulty AVR sensing
    B. Low coolant temperature
    C. Damaged exciter winding
    D. Reverse power
40. In a UPS battery bank, if few cell are damaged and shorted internally, the system will show:
    A. Over/under voltage
    B. Lower back-up time
    C. No change
    D. Over temperature alarm
41. During a shutdown, a 250 kVA transformer shows insulation resistance between HV phase and earth as 500 kΩ. What does this indicate?
    A. Very good insulation
    B. Acceptable value for used transformer
    C. Safe for energization and needs inspection
    D. Not safe needs inspection
42. When paralleling two DGs in a hospital and operating normally, one show reverse kW reading. What's wrong?
    A. Phase mismatch
    B. Reverse CT polarity
    C. Incorrect fuel calibration
    D. Exciter under-saturation
43. During annual servicing of VCB, IR values between all three phases are 0.2 MΩ. What's the best course of action?
    A.Clean and proceed
    B. Re-tighten all terminals
    C. Refurbish breaker or replace
    D. Acceptable value

44. A hospital DG set cranks but fails to start. What is the most probable first check?
    A. Excitation coil
    B. Battery charge and starter motor
    C. Load relay
    D. Cooling fan
45. In a hospital ACB panel, what could be the impact of failure in UV (undervoltage) coil wiring?
    A. Breaker won't open during fault
    B. Breaker trips continuously
    C. Backup breaker operates
    D. Breaker cannot be closed
46. Why is it important to perform thermal imaging on live hospital DBs (distribution boards)?
    A. Detect wiring layout
    B. Identify neutral cross-sections
    C. Detect hot spots due to loose terminals
    D. Map breaker ratings
47. In a heating appliance, what does high resistance between terminal and earth signify?
    A. Insulation is healthy
    B. Ground fault
    C. Coil open
    D. Heating element failure
48. Four wires of the same material, the same cross-sectional area and the same length when connected in parallel give a resistance of 0.25 Ω. If the same four wires are connected is series, the effective resistance will be
    A. 4 Ω
    B. 2 Ω
    C. 3 Ω
    D. 1 Ω
49. A heater is rated as 230 V, 10 kW, A.C. The value 230 V refers to
    A. peak voltage
    B. average voltage
    C. r.m.s. voltage
    D. none of the above
50. The apparent power drawn by an A.C. circuit is 10 kVA and active power is 8 kW. The reactive power in the circuit is
    A. 6 kVAR
    B .4 kVAR
    C. 8 kVAR
    D. 12 kVAR

Junior Technical Assistant (Electrical)

Answer Key			
1	B	26	D
2	C	27	B
3	D	28	D
4	C	29	C
5	C	30	A
6	C	31	
7	C	32	B
8	B	33	B
9	C	34	C
10	B	35	B
11	A	36	D
12	D	37	C
13	C	38	D
14	A	39	A
15	D	40	B
16	D	41	D
17	B	42	B
18	C	43	C
19	B	44	B
20	D	45	D
21	C	46	C
22	B	47	A
23	A	48	A
24	B	49	C
25	C	50	A