



**OFFICE OF THE ENGINEER-IN-CHIEF
PUBLIC HEALTH ENGINEERING DEPARTMENT
AIZAWL : MIZORAM**

**WRITTEN EXAMINATION : 2025
FOR THE POST OF**

**ELECTRICIAN-II
(Regular)**

PAPER-III

Code No: _____
(For Official Use)

Signature of Invigilator

SUBJECT (Part)	MARKS OBTAINED
Technical/Specialised Subject (100x2=200 marks)	
Total Marks obtained (Full Marks-200)	

Signature of Examiner



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Roll No: _____
(To be filled in by Candidate)

Signature of Candidate

Signature of Invigilator

Instructions:

1. The question paper will also serve as the answer sheet. Candidates are required to answer directly on the question/answer sheet using Tick (✓) Marks.
2. Time : 3 Hours

ELECTRICIAN-II : PAPER-III (Technical Papers)

(Each question carry 2(two) marks, the total is 200 marks and all question carry equal mark)

1. The property of a conductor due to which it passes electric current is called
(a) Inductance ☐ (b) Capacitance ☐
(c) Reluctance ☐ (d) Conductance ☐
2. Which of the following materials has negative temperature co-efficient of resistance?
(a) Gold ☐ (b) Brass ☐
(c) Carbon ☐ (d) Manganin ☐
3. A Rheostat differs from potentiometer in the respect that it
(a) Has lower wattage ratings ☐
(b) Has higher wattage ratings ☐
(c) Has large number of tapping ☐
(d) Has large number of turns ☐
4. 1 Coulomb charge equals to the charge on
(a) 6.24×10^{18} electrons ☐ (b) 6.24×10^{19} electrons ☐
(c) 6.24×10^{17} electrons ☐ (d) 6.24×10^{12} electrons ☐
5. An instrument which detects electric current flow is known as
(a) Frequency meter ☐ (b) Odometer ☐
(c) Galvanometer ☐ (d) Rheostat ☐
6. The resistance of a conductor varies inversely as
(a) Length ☐ (b) Resistivity ☐
(c) Diameter ☐ (d) Temperature ☐
7. Varistors act like
(a) Linear resistors ☐
(b) Carbon resistors ☐
(c) Resistor with zero temperature co-efficient ☐
(d) Non-linear resistors ☐
8. Melting temperature of electrician's solder is
(a) 300°C ☐ (b) 145°C ☐
(c) 280°C ☐ (d) 185°C ☐
9. In an induction motor, rotor slots are usually not quite parallel to the shaft but are given a slight skew
(a) To reduce the magnetic hum ☐ (b) To reduce the locking tendency of the rotor ☐
(c) Both (A) and (B) above ☐ (d) To increase the speed of the motor ☐
10. Maximum current carrying capacity of 1.5 mm² aluminium wire
(a) 13A ☐ (b) 10A ☐
(c) 8A ☐ (d) 12A ☐
11. Kirchhoff's law is applicable to
(a) AC circuits only ☐ (b) DC circuits only ☐
(c) Passive network only ☐ (d) Both AC and DC circuits ☐
12. The circuit whose properties are same in either direction is known as
(a) Unilateral circuits ☐ (b) Irreversible circuit ☐
(c) Bilateral circuit ☐ (d) Short circuit ☐

13. The capacity of a storage cell is expressed in
 (a) Ampere ☐ (b) Farad ☐
 (c) Ampere hour ☐ (d) None of these ☐
14. Which of the following acts as depolarizer in Leclanché cell?
 (a) NH_4Cl ☐ (b) Mn_2O_3 ☐
 (c) MnO_2 ☐ (d) KOH ☐
15. The property of a capacitor to store electricity is called its
 (a) capacitance ☐ (b) charge ☐
 (c) energy ☐ (d) none of the above ☐
16. The capacity of a storage cell is 2.5 Ah. What is the maximum current that can supply for half hour?
 (a) 0.5 A ☐ (b) 1.8 A ☐
 (c) 2.5 A ☐ (d) 5.0 A ☐
17. Sedimentation in lead acid batteries occurs due to
 (a) Overcharging at high rate ☐ (b) Slow charging at low rate ☐
 (c) Over discharging ☐ (d) Non-utilization for longer periods ☐
18. The capacitance of a capacitor is not affected by
 (a) Thickness of the plates ☐ (b) Distance between plates ☐
 (c) Area of plates ☐ (d) None of these ☐
19. According to Lenz's law the direction of induced current always
 (a) Aids the cause ☐ (b) Opposes the cause ☐
 (c) Remains same ☐ (d) Equal to the cause ☐
20. The unit of dielectric strength is given by
 (a) V/m ☐ (b) V^2/m ☐
 (c) m/V ☐ (d) m/V^2 ☐
21. The unit of electric intensity is
 (a) N/C^2 ☐ (b) Wb/m^2 ☐
 (c) N/C ☐ (d) N^2/C ☐
22. The diamagnetic material has relative permeability
 (a) Less than 1 ☐ (b) More than 1 ☐
 (c) More than 100 ☐ (d) Equal to ferromagnetic material ☐
23. Which one of the following materials is used for cable insulation?
 (a) Phenol formaldehyde ☐ (b) Polytetrafluoroethylene ☐
 (c) Polyvinyl chloride ☐ (d) Acrylonitrile butadiene styrene ☐
24. Working principle of auto transformer is
 (a) Conduction ☐ (b) Induction ☐
 (c) Both induction and conduction ☐ (d) Admittance ☐
25. Magnetic field exists around
 (a) Iron ☐ (b) Copper ☐
 (c) Aluminium ☐ (d) Moving charges ☐
26. Fleming's left-hand rule is used to find
 (a) Polarity of magnetic pole ☐
 (b) Direction of force on a current carrying conductor in a magnetic field ☐
 (c) Direction of magnetic field due to current carrying conductor ☐
 (d) Direction of induced emf in solenoid ☐

27. An induction motor is identical to
 (a) D.C. compound motor ☐ (b) D.C. series motor ☐
 (c) Synchronous motor ☐ (d) Asynchronous motor ☐
28. The unit of capacitance is
 (a) Volts/Coulombs ☐ (b) Coulombs/Volt ☐
 (c) Ohm-metre ☐ (d) None of these ☐
29. Internal resistance of a cell is due to
 (a) Electrode resistance ☐ (b) Resistance of electrolyte ☐
 (c) Surface contact resistance between electrodes and electrolyte ☐
 (d) All of the above ☐
30. Buchholz relay is a protective device used in
 (a) 3 phase motor ☐ (b) Single phase motor ☐
 (c) Auto transformer ☐ (d) Power transformer ☐
31. Skin effect occurs when a conductor carries current at _____ frequencies
 (a) High ☐ (b) Low ☐
 (c) Very low ☐ (d) Medium ☐
32. The value of E within the field due to a point charge can be found with the help of
 (a) Faraday's laws ☐ (b) Kirchhoff's laws ☐
 (c) Coulomb's laws ☐ (d) none of these ☐
33. Form factor for a sine wave is
 (a) 1.414 ☐ (b) 1.11 ☐
 (c) 0.637 ☐ (d) 0.707 ☐
34. In a series RLC circuit on resonance condition
 (a) $V_R = V$ ☐ (b) $Z = R/2$ ☐
 (c) $V_L = 0$ ☐ (d) $X_L = X_C$ ☐
35. Behaviour of conductors, semiconductors and insulators is explained on the basis of
 (a) Atomic nature ☐ (b) Molecular structure ☐
 (c) Energy band structure ☐ (d) All of the above ☐
36. The length of the rod and pipe electrodes used for earthing shall not be less than
 (a) 1 m ☐ (b) 2.5 m ☐
 (c) 5 m ☐ (d) 6 m ☐
37. During continuity test, dead short in an installation is indicated by megger
 (a) zero ohms ☐ (b) 100 megohms ☐
 (c) 1 megohms ☐ (d) infinity ☐
38. Bundled conductors in EHV transmission system provide
 (a) increased capacitance ☐ (b) reduced capacitance ☐
 (c) increased inductance ☐ (d) increased voltage gradient ☐
39. ____ is that property of a capacitor which delays any change of voltage across it.
 (a) Inductance ☐ (b) Capacitance ☐
 (c) Potential gradient ☐ (d) None of these ☐
40. The voltage wave form produced by alternator should be
 (a) Pulse wave ☐ (b) Sine wave ☐
 (c) Triangular wave ☐ (d) Saw tooth wave ☐
41. In DC machines, mechanical losses are primarily function of
 (a) speed ☐ (b) voltage ☐
 (c) current ☐ (d) none of the above ☐

42. Armature of a DC machine is made of
 (a) conducting material ☐ (b) insulating material ☐
 (c) non-ferrous material ☐ (d) silicon steel ☐
43. In electric iron, transfer of heat from coil to base plate is mainly through
 (a) Radiation ☐ (b) Capacitance ☐
 (c) Conduction ☐ (d) Convection ☐
44. When a DC series motor is connected to an AC supply, then
 (a) It will stop ☐ (b) It will run without any trouble ☐
 (c) It may burn out ☐
 (d) It will run with less efficiency and high spark at commutator ☐
45. Transformers undergo regular maintenance to check
 (a) Transformer insulation ☐ (b) Transformer rusting ☐
 (c) Transformer conduction ☐ (d) Transformer oil level ☐
46. Where is field winding mounted in a DC machine?
 (a) Stator ☐ (b) Rotor ☐
 (c) Absent ☐ (d) Anywhere on stator or rotor ☐
47. In normal DC machines operating at full-load conditions, the most powerful electromagnet is
 (a) Field winding ☐ (b) Interpole winding ☐
 (c) Interpole and compensating winding together ☐ (d) Armature winding ☐
48. When an electric train is moving down a hill, the DC motor will operate as
 (a) DC series motor ☐ (b) DC series generator ☐
 (c) DC shunt motor ☐ (d) DC shunt generator. ☐
49. Which of the following is not the function of pole shoe in DC motor?
 (a) To reduce eddy current loss ☐ (b) To reduce reluctance ☐
 (c) To spread out flux ☐ (d) To support field coil ☐
50. What happens to the starting current when switching from star to delta ?
 (a) scalar ☐ (b) vector ☐
 (c) both (A) and (B) ☐ (d) none of these ☐
51. The relative permittivity has the following units
 (a) F/m ☐ (b) m/F ☐
 (c) Wb/m ☐ (d) no units ☐
52. Torque developed by a single-phase induction motor at starting is
 (a) uniform ☐ (b) pulsating ☐
 (c) none of the two ☐ (d) nil ☐
53. Susceptibility is positive for
 (a) Ferromagnetic materials ☐ (b) Diamagnetic materials ☐
 (c) Solid-state relay ☐ (d) Paramagnetic materials ☐
54. The efficiency of an induction motor can be expected to be nearly
 (a) 60 to 90% ☐ (b) 80 to 90% ☐
 (c) 92 to 95% ☐ (d) 65% ☐
55. The cause of crawling in the induction motor is
 (a) 60 to 90% ☐ (b) High loads ☐
 (c) Harmonics developed in the motor ☐ (d) Improper design of the machine ☐

56. The starting capacitor of a single-phase motor is
 (a) Electrolytic capacitor ☐ (b) Ceramic capacitor ☐
 (c) Paper capacitor ☐ (d) None of these ☐
57. In a cable capacitor, voltage gradient is maximum at the surface of the
 (a) earth ☐ (b) conductor ☐
 (c) sheath ☐ (d) insulator ☐
58. In the circle diagram of an induction motor the diameter of circle represents the
 (a) rotor current ☐ (b) line voltage ☐
 (c) operating torque ☐ (d) maximum torque ☐
59. Which of the following materials is good conductor of electricity?
 (a) Gold ☐ (b) Iron ☐
 (c) Aluminium ☐ (d) Copper ☐
60. For an induction motor, synchronous wattage means
 (a) Stator input in watts ☐ (b) Rotor output in watts ☐
 (c) Rotor input in watts ☐ (d) Shaft output in watts ☐
61. Which of the following places is not associated with nuclear power plants in India?
 (a) Narora ☐ (b) Tarapur ☐
 (c) Kota ☐ (d) Bangalore ☐
62. Equipment used for pulverizing the coal is known as
 (a) Ball mill ☐ (b) Hopper ☐
 (c) Burner ☐ (d) Stoker ☐
63. The largest source of electricity in India is
 (a) Tidal power ☐ (b) Hydroelectric power ☐
 (c) Nuclear power ☐ (d) Thermal power ☐
64. Which of the following colour codes is used for live wire ?
 (a) 3-6 ☐ (b) 8-10 ☐
 (c) 16-24 ☐ (d) 30-42 ☐
65. Water hammer occurs in
 (a) surge tank ☐ (b) penstock ☐
 (c) turbine casing ☐ (d) draft tube ☐
66. The modern steam turbines are
 a) impulse turbines ☐ (b) reaction turbines ☐
 (c) impulse-reaction turbines ☐ (d) none of the above ☐
67. Usually, the generated voltage in generating stations is
 (a) 33 KV ☐ (b) 11 KV ☐
 (c) 33 KV ☐ (d) 66 KV ☐
68. The most economical power factor for a consumer is
 (a) 0.9 lagging ☐ (b) 0.9 leading ☐
 (c) 0.5 lagging ☐ (d) 0.5 leading ☐
69. Load factor of a power station is generally
 (a) equal to unity ☐ (b) less than unity ☐
 (c) more than unity ☐ (d) equal to zero diversity factor always ☐
70. In thermal power plant, turbine is placed
 (a) before boiler ☐ (b) in between boiler and generator ☐
 (c) after generator ☐ (d) any of the above ☐

71. The usual spans with RCC poles are
 (a) 30-50 metres ☐ (b) 20-30 metres ☐
 (c) 80-100 metres ☐ (d) 150-200 metres ☐
72. High voltage transmission lines use
 (a) suspension insulators ☐ (b) pin insulators ☐
 (c) both (A) and (B) ☐ (d) none of the above ☐
73. Relays used in long transmission lines is
 (a) Impedance relay ☐ (b) Mho's relay ☐
 (c) Reactance relay ☐ (d) None of the above ☐
74. The material commonly used for insulation in high voltage cables is
 a) paper ☐ b) lead ☐
 c) PVC ☐ d) rubber ☐
75. 66 KV is suitable for transmission of power over
 (a) 200 km ☐ (b) 120 km ☐
 (c) 60 km ☐ (d) 30 km ☐
76. The output rating of an alternator is expressed in
 (a) KW ☐ (b) KVA ☐
 (c) HP ☐ (d) KVAR ☐
77. Current flow through the neutral of three phase 4 wire cable is
 (a) equal to current in phase wires ☐
 (b) equal to the sum of currents in phase wires ☐
 (c) less than current in the phase wire ☐
 (d) more than the current in the phase wire ☐
78. Skin effect results in
 (a) reduced effective resistance but increased effective internal reactance of the conductor ☐
 (b) increased effective resistance but reduced effective internal reactance of the conductor ☐
 (c) reduced effective resistance as well as effective internal reactance ☐
 (d) increased effective resistance as well as effective internal reactance ☐
79. The most suitable practical value of primary distribution is
 (a) 66 kV ☐ (b) 6.6 kV ☐
 (c) 230 V/400 V ☐ (d) 22 kV ☐
80. Which among the following properties has got a higher for aluminium in comparison to that of copper?
 (a) Electrical resistivity ☐ (b) Melting point ☐
 (c) Thermal conductivity ☐ (d) Specific gravity ☐
81. The force producing movement of the pointer in an indicating instrument is called
 (a) Controlling force ☐ (b) Deflecting force ☐
 (c) Damping force ☐ (d) Distracting force ☐
82. An instrument using gravity control will read correctly if used in
 (a) the vertical position only ☐ (b) an inclined position only ☐
 (c) the horizontal position only ☐ (d) any position ☐
83. An inverter circuit is used to convert
 (a) AC to DC ☐ (b) DC to DC ☐
 (c) DC to AC ☐ (d) AC to AC ☐

84. Air is removed from incandescent lamp is to:
 (a) prevent oxidation ☐ (b) minimise heat loss ☐
 (c) (A) and (B) ☐ (d) none of these ☐
85. Light energy radiated per second from a light source is called
 (a) Illumination ☐ (b) Luminance ☐
 (c) Luminous intensity ☐ (d) Luminous flux ☐
86. A 60-w lamp given a luminous flux of 1500 lumen its efficiency is
 (a) 1500 lumen/watt ☐ (b) 25 lumen/watt ☐
 (c) 2.5 lumen/watt ☐ (d) 250 lumen/watt ☐
87. The simplest method of underground cable installation is
 (a) Direct burial ☐ (b) Horizontal directional drilling ☐
 (c) Semi-direct burial ☐ (d) Pipe jacking ☐
88. The purpose of oil in the transformer is to
 (a) Lubricate ☐ (b) Insulate and cool ☐
 (c) Lubricate and cool ☐ (d) Cool ☐
89. Which of the following is not the type of mass soldering technique
 (a) Drag soldering ☐ (b) Wave soldering ☐
 (c) Iron soldering ☐ (d) Dip soldering ☐
90. Dynamometer type wattmeter can be used on
 (a) Both AC and DC ☐ (b) DC only ☐
 (c) AC only ☐ (d) None of these ☐
91. The specification of ceiling fan is
 (a) Current ☐ (b) Voltage ☐
 (c) Sweep ☐ (d) Power ☐
92. The gas filled in a sodium vapour lamp is
 (a) Neon ☐ (b) Helium ☐
 (c) Argon ☐ (d) Hydrogen ☐
93. Which element is used as a semiconductor material?
 (a) Copper ☐ (b) Plastic ☐
 (c) Brass ☐ (d) Silicon ☐
94. The main characteristic of any diode is
 (a) it lets current flow in only one direction ☐
 (b) most current flow when it is reverse biased ☐
 (c) it lets current flow from cathode to anode ☐
 (d) no current flow when it is forward biased ☐
95. The motor generally used in water pump is
 (a) DC motor ☐ (b) Synchronous motor ☐
 (c) Servo motor ☐ (d) Induction motor ☐
96. The number of depletion layers in a transistor is
 (a) Three ☐ (b) Two ☐
 (c) One ☐ (d) Four ☐

97. The material used in an oven as heating element is
(a) Copper ☐ (b) Brass ☐
(c) Eureka ☐ (d) Nichrome ☐
98. Which motor is generally used for domestic washing machine?
(a) split phase motor ☐ (b) 3 phase induction motor ☐
(c) capacitor start motor ☐ (d) reluctance motor ☐
99. An Ohm meter is used for measuring
(a) resistance ☐ (b) insulation resistance ☐
(c) current ☐ (d) potential difference ☐
100. Most Power in India is generated by
(a) Hydro power plants ☐ (b) Wind power plants ☐
(c) Thermal power plants ☐ (d) Nuclear power plants ☐

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