



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

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

**ELECTRIC LINEMAN
(P.E)**

PAPER-III

Code No: _____
(For Official Use)

Signature of Invigilator

SUBJECT (Part)	MARKS OBTAINED
Technical/Specialised Subject (100x2=100 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 Tick (✓) Marks.
2. Time : 3 Hours

ELECTRIC LINEMAN (PE) PAPER-III (Technical Papers)

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

1. Which of the following safety item is not essential for a wireman while working ?
(a) Safety boots ☐ (b) Gloves ☐
(c) Helmet ☐ (d) Belt ☐
2. A fire extinguisher is used in a situation of during _____.
(a) Flood ☐ (b) Electric shock ☐
(c) Fire ☐ (d) Burn injury ☐
3. What is one of the primary responsibilities of switchboard operators ?
(a) Conducting maintenance on machinery ☐
(b) Monitoring electrical loads and operations ☐
(c) Designing electrical system ☐
(d) Installing power lines ☐
4. Which of the following is a warning signal indicating potential danger in an electric
(a) Green lights ☐ (b) Yellow caution signs ☐
(c) Red alert signs ☐ (d) Blue informational signs ☐
5. What does PPE stand for in a safety context ?
(a) Personal Proptective Equipment ☐ (b) Public Protection Equipment ☐
(c) Personnel Protective Equipment ☐ (d) Physical Protection Equipment ☐
6. Which type of current leakage poses a significant hazard to personnel ?
(a) Direct current ☐ (b) Ground fault current ☐
(c) Capacitive current ☐ (d) Inductive current ☐
7. What is one of the basic methods for injury prevention in electrical work ?
(a) Ignoring electrical hazards ☐
(b) Wearing regular clothing ☐
(c) Proper use if personal Protective Equipment (PPE) ☐
(d) Increasing exposure to hazards ☐
8. In the event of a power failure, what is the best immediate response ?
(a) Leave the premises immediately ☐
(b) Wait for the electricity to restore itself ☐
(c) Make sure to keep the area clear and check for hazard ☐
(d) Attempt to fix the problem yourself ☐
9. Which type of fire extinguisher is most suitable for electrical fires ?
(a) Water-based extinguishers ☐ (b) Foam extinguishers ☐
(c) Dry powder extinguishers ☐ (d) Carbon dioxide (CO2) extinguishers ☐
10. What does the BIS/ISI standard relate to ?
(a) Electrical grounding procedures ☐
(b) Quality and safety standards for products ☐
(c) Electrical installation techniques ☐
(d) Personal protective equipment regulations ☐
11. The 5S concept is primarily focused on which of the following ?
(a) Financial management ☐ (b) Quality assurance ☐
(c) Workplace organization and efficiency ☐ (d) Power distribution ☐

12. What is a common symptom of electrical shock ?
 (a) Dizziness ☐ (b) Increased energy ☐
 (c) Loss of smell ☐ (d) Improved vision ☐
13. What is the recommended initial response to a person experiencing an electric shock
 (a) Move them immediately to another location ☐
 (b) Call for medical assistance and ensure the power source is off ☐
 (c) Administer CRP without checking their condition ☐
 (d) Use water to cool the affected area ☐
14. What is a key practice in hazard identification and avoidance in electrical work
 (a) Regular inspection and maintenance of tools and equipment ☐
 (b) Ignoring minor safety hazards ☐
 (c) Sharing personal protective equipment ☐
 (d) Conducting all work without supervision ☐
15. To measure the potential difference between 2 points which instrument is used:
 (a) Voltmeter ☐ (b) Ammeter ☐
 (c) Watt meter ☐ (d) Megger ☐
16. To measure the current flow in a circuit which instrument is used :
 (a) Voltmeter ☐ (b) Ammeter ☐
 (c) Watt meter ☐ (d) Megger ☐
17. To measure the electrical of a given circuit which instrument is used :
 (a) Voltmeter ☐ (b) Ammeter ☐
 (c) Watt meter ☐ (d) Megger ☐
18. To measure the leakage in wires and Earth resistance which
 (a) Voltmeter ☐ (b) Ammeter ☐
 (c) Watt meter ☐ (d) Megger ☐
19. A generator provides the pressure for the electrical
 (a) Watts ☐ (b) Amps ☐
 (c) Volts ☐ (d) Current ☐
20. When working on a circuit, use approved tools with
 (a) Rubber gloves ☐ (b) An international Efficiency (IE) rating ☐
 (c) Insulated handles ☐ (d) Non of the above ☐
21. If equipment has been repaired, make sure that it has been
 (a) Demonstrated ☐ (b) Listed ☐
 (c) Tested and Certified ☐ (d) Non of the above ☐
22. Damaged tools must be removed from service and
 (a) Repaired ☐ (b) Destroyed ☐
 (c) Tagged ☐ (d) Carried ☐
23. Electricity is a type of energy which involves the flow of _____.
 (a) Protons ☐ (b) Neutrons ☐
 (c) Electrons ☐ (d) Atoms ☐
24. The potential difference between two point is _____.
 (a) One volt energy ☐ (b) Volume ☐
 (c) Pressure ☐ (d) Temperature ☐
25. If two or more resistors (loads) are connected in such a way that they form a chain it is a _____.
 (a) Parallel circuit ☐ (b) Series circuit ☐
 (c) Closed circuit ☐ (d) Open circuit ☐

26. AC Stand for _____.
 (a) Alternating current ☐ (b) Direct Current ☐
 (c) Power ☐ (d) Energy ☐
27. The internal resistance of an ammeter is _____.
 (a) High ☐ (b) Low ☐
 (c) Zero ☐ (d) Infinite ☐
28. What is required to produce electric current ?
 (a) Voltage ☐ (b) Source of energy ☐
 (c) Electric Field ☐ (d) All of these ☐
29. Potentiometer is an electric device that gives variable _____.
 (a) Power ☐ (b) Resistance ☐
 (c) Voltage ☐ (d) Current ☐
30. Earth resistance depends on following factors
 (a) Type of earth soil ☐ (b) Temperature of earth ☐
 (c) Humidity in earth ☐ (d) All of the above ☐
31. One of the most common type of earthing is _____.
 (a) Plate Earthing ☐ (b) Pipe Earthing ☐
 (c) Rod Earthing ☐ (d) Strip Earthing ☐
32. The most efficient way to transmit electrical energy using a transmission line is _____.
 (a) Increase voltage and current ☐
 (b) Increase voltage and reduce current ☐
 (c) Decrease voltage and increase current ☐
 (d) Decrease voltage and current ☐
33. Which of the following meter is used to measure the amount of power consumed in residence ?
 (a) Voltmeter ☐ (b) Ammeter ☐
 (c) Barometer ☐ (d) Energymeter ☐
34. The voltage rating for medium voltage equipment is
 (a) 480 volts ☐
 (b) 1000 volts or less ☐
 (c) Greater than 1000 to 100,000 volts ☐
 (d) Greater than 100,000 to 230,000 volts ☐
35. Which of the following units acts as a medium for transmitting electrical signals from one machine to another?
 (a) Transformer ☐ (b) Load Center ☐
 (c) Bus way ☐ (d) Circuit breaker ☐
36. The electrical device that converts mechanical energy into electrical energy is _____.
 (a) Motor ☐ (b) Generator ☐
 (c) Starter ☐ (d) Transformer ☐
37. The rotating part of a motor is _____.
 (a) Starter ☐ (b) Carbon brush ☐
 (c) Armature ☐ (d) Stator ☐
38. The slip ring is used in _____.
 (a) AC machines ☐ (b) DC machines ☐
 (c) Transformer ☐ (d) Stator ☐
39. The electrical device that convert electrical energy into mechanical energy is _____.
 (a) Motor ☐ (b) Generator ☐
 (c) Starter ☐ (d) Transformer ☐

40. In which type of motor is the rotating speed of motor less than the rotating speed of magnetic field ?
 (a) Synchronous motor ☐ (b) Asynchronous motor ☐
 (c) DC motor ☐ (d) Stepper motor ☐
41. Squirrel cage motor is a type of _____.
 (a) Synchronous motor ☐ (b) Asynchronous motor ☐
 (c) DC motor ☐ (d) Stepper motor ☐
42. Which of the following motor overcome the drawbacks of squirrel cage motor :
 (a) Steppers motor ☐ (b) DC motor ☐
 (c) Slip ring motor ☐ (d) Series motor ☐
43. Which of the following device is used for safe starting of the induction motor ?
 (a) Starter ☐ (b) Relay ☐
 (c) Circuit braker ☐ (d) Ground fault detector ☐
44. Which of the following is a component of direct on line starter ?
 (a) Relay ☐ (b) Contactor ☐
 (c) Input supply ☐ (d) Energy meter ☐
45. Which of the following is used to connect the wire winding of a motor into star and delta form?
 (a) Thread ☐ (b) Cooper ☐
 (c) Rubber ☐ (d) Metal strip ☐
46. What is the main function of a star-delta starter?
 (a) To speed up the motor ☐
 (b) To reduce starting current and manage initial torque ☐
 (c) To incease operating efficiency ☐
 (d) To provide electrical isolation ☐
47. In which configuration does the motor operate during the initial starting phase in a star-delta starter?
 (a) Delta (Δ) ☐ (b) Star (Y) ☐
 (c) Series ☐ (d) Parallel ☐
48. Why is the star connection used during the start-up phase?
 (a) It provides higher torque ☐
 (b) It reducess mechanical wear ☐
 (c) It increase the speed of the motor ☐
 (d) It limits the voltage across each winding. ☐
49. After how long does a star-delta starter typically swich from star to delta configuration ?
 (a) 1 second ☐ (b) 20 second ☐
 (c) 5-10 second ☐ (d) It remains in star configuration ☐
50. What happens to the starting current when switching from star to delta ?
 (a) It increases significantly ☐ (b) It decreases further ☐
 (c) It remains the same ☐ (d) It becomes zero ☐
51. Which of the following is NOT an advantage of a star-delta starter?
 (a) Reduces electrical distrubances ☐ (b) Increases starting torque ☐
 (c) Prolongs motor life ☐ (d) Minimizes mechanical stress during startup ☐
52. In which type of applications are star-delta starters most commonly used?
 (a) Small household appliances ☐ (b) Large three-phase induction motors ☐
 (c) DC Motors ☐ (d) Single-phase motors ☐

53. What kind of relay is commonly used in a star-delta starter?
 (a) Thermal relay ☐ (b) Electromechanical relay ☐
 (c) Solid-state relay ☐ (d) Relay with a timer function ☐
54. When connected in delta configuration, how does the voltage across each winding compare to the line voltage ?
 (a) It is the same as the line voltage ☐ (b) It is higher than the line voltage ☐
 (c) It is lower than the line voltage ☐ (d) It becomes zero ☐
55. What could be a potential consequence of not using a star-delta starter on large motor ?
 (a) Increased efficiency ☐
 (b) Higher starting current leading to electrical faults ☐
 (c) Lower operational costs ☐
 (d) Smoother startup ☐
56. The equivalent resistance across AB is :
 (a) 1.86 ohm ☐ (b) 2 ohm ☐
 (c) 3 ohm ☐ (d) 2.5 ohm ☐
57. What does power factor measure in an electrical system ?
 (a) The total energy consumed ☐ (b) The efficiency of electrical power usage ☐
 (c) The voltage level of the system ☐ (d) The frequency of the electrical supply ☐
58. A power factor of 1 indicates that the electrical system is operating at :
 (a) Purely reactive power ☐ (b) Maximum efficiency ☐
 (c) Zero power consumption ☐ (d) None of the above ☐
59. Which of the following is a common method to improve power factor ?
 (a) Increasing the load without capacitors ☐
 (b) Connecting resistive loads only ☐
 (c) Increasing voltage supply ☐
 (d) Adding capacitor banks to the electric system ☐
60. Thickness of the layer of insulation on the conductor in cables depends on _____.
 (a) Reactive power ☐ (b) Power factor ☐
 (c) Voltage ☐ (d) Current carrying capacity ☐
61. Which of the following protects a cable against mechanical injury ?
 (a) Bedding ☐ (b) Sheath ☐
 (c) Armour ☐ (d) None of the above ☐
62. Which of the following insulation is used in cables?
 (a) Varnished cambric ☐ (b) Rubber ☐
 (c) Paper ☐ (d) All of the above ☐
63. PVC Stand for _____.
 (a) Polyvinyl chloride ☐ (b) Post varnish conductor ☐
 (c) Pressed and varnished cloth ☐ (d) Positive voltage conductor ☐
64. Which of the following colour codes is used for live wire ?
 (a) Grey ☐ (b) Red ☐
 (c) Green ☐ (d) Black ☐
65. Which colour wire is used as neutral ?
 (a) Red ☐ (b) Black ☐
 (c) Green ☐ (d) White ☐
66. Which colour wire is used as earth ?
 (a) Red ☐ (b) Black ☐
 (c) Green ☐ (d) White ☐

67. Which cable uses light for transmission ?
 (a) Coaxial cable ☐ (b) Optics fiber cable ☐
 (c) PVC cable ☐ (d) XLPE cable ☐
68. Which of the following is NOT a common part of a lead-acid battery ?
 (a) Positive plate ☐ (b) Negative plate ☐
 (c) Electrolyte ☐ (d) Diode ☐
69. What is the primary purpose of performing a specific gravity test on battery cells ?
 (a) To evaluate the battery's physical size ☐
 (b) To determine the state of charge of the cells ☐
 (c) To measure the battery's voltage output ☐
 (d) To assess the battery's resistance ☐
70. Which charging method uses a constant current to charge a battery until the terminal voltage reaches a set level ?
 (a) Trickle charging ☐ (b) Constant voltage charging ☐
 (c) Bulk charging ☐ (d) Equalization charging ☐
71. What is the primary function of a circuit breaker in an electrical system ?
 (a) To increase voltage levels ☐
 (b) To provide physical separation of circuits ☐
 (c) To protect the circuit from overloads and faults ☐
 (d) To convert AC to DC ☐
72. Which device is used to prevent damage from lightning strikes in electrical installations?
 (a) Voltage ☐ (b) Transformer ☐
 (c) Lightning arrester ☐ (d) Circuit breaker ☐
73. Earth or ground wire is made of _____.
 (a) Copper ☐ (b) Aluminium ☐
 (c) Iron ☐ (d) Galvanised steel ☐
74. Generally, grounding is provided for _____.
 a) The safety of the equipment ☐ b) The safety of the operating personnel ☐
 c) Both (a) and (b) ☐ d) None of the above ☐
75. Moisture content in the soil _____ the earth's soil resistance
 (a) Increases ☐ (b) Decreases ☐
 (c) Does not affect ☐ (d) None of the above ☐
76. Which of the following is a key component of a substation ?
 (a) Generators ☐ (b) Capacitors ☐
 (c) Busbars ☐ (d) Motors ☐
77. What is the primary function of an isolator in a substation ?
 (a) To regulate voltage levels ☐
 (b) To interrupt the flow of current for maintenance ☐
 (c) To provide overload protection ☐
 (d) To increase power factor ☐
78. What type of transformer is primarily used for stepping voltage up in power transmission ?
 (a) Autotransformer ☐ (b) Power Transformer ☐
 (c) Distribution Transformer ☐ (d) Gas Insulated Transformer ☐
79. What classification is a Current Transformer (CT) typically given based on its function?
 (a) Step-up Transformer ☐ (b) Step-Down Transformer ☐
 (c) Neither step-up nor step-down ☐ (d) Isolation Transformer ☐

80. What is the advantage of using a Potential Transformer to step down high voltage levels for measurement?
- (a) It allows for higher currents to be measured accurately ☐
- (b) It simplifies the circuit design by eliminating voltage regulation needs. ☐
- (c) It enables safe measurement of high voltage without risk to equipment or personnel ☐
- (d) It increases the efficiency of the electrical system ☐
81. In a three-phase circuit, which method is commonly used to measure energy consumed?
- (a) Using a single wattmeter only ☐
- (b) Using a three-phase energy meter ☐
- (c) Summing the measurements from three separate single-phase meters ☐
- (d) Any of the above ☐
82. What does a phase sequence meter measure?
- (a) The frequency of the supply ☐ (b) The Voltage across each phase ☐
- (c) The sequence of phase in a three-phase system ☐ (d) The current in each phase ☐
83. What is the main purpose of a continuity test ?
- (a) To measure voltage drop in cuicuit ☐
- (b) To check if a cuicuit is complete and free from breaks ☐
- (c) To determine phase sequence ☐
- (d) To measure energy consumption ☐
84. What is the loading effect of a voltmeter?
- (a) It increases the overall system voltage ☐
- (b) It can cause a decrease in the mesured voltage due to the internal resistance of the voltmeter ☐
- (c) It has no effect on measurements ☐
- (d) It increase the current flow in the circuit ☐
85. Which if the following statement ts true about the voltage drop effect of an ammeter?
- (a) It cause an increase in measured voltage across the circuit ☐
- (b) It can influence the current levels being measured ☐
- (c) It only affect high-resistance circuits ☐
- (d) It does not affect the circuit performance ☐
86. To detect earth fault in electrical apparatus, which instrument is most commonly used ?
- (a) Ammeter ☐ (b) Phase sequence meter ☐
- (c) Insulation resistance tester ☐ (d) Wattmeter ☐
87. What is the major purpose of testing leakage protective devices ?
- (a) To measure the total energy consumed ☐
- (b) To verify the operation and efficiancy of residual current devices (RCDs) ☐
- (c) To calculate the overall power factor ☐
- (d) To determine current flow in the circuit ☐
88. What testing method is used for assessing earth resistance ?
- (a) Voltage drop test ☐ (b) Three-point testing method ☐
- (c) Unsulation resistance testing ☐ (d) Continuity testing ☐
89. What is the purposed of multimeter ?
- (a) To measure current only ☐ (b) To measure energy consumption ☐
- (c) To measure voltage, current, and resistance ☐ (d) To measure frequency only ☐
90. Which instument would you use to check if a wire is carrying current ?
- (a) Voltmeter ☐ (b) Ammeter ☐
- (c) Wattmeter ☐ (d) Phase sequence meter ☐

Transmission & Distribution : (30 Marks)

91. What device is commonly used to improve power factor in electrical systems ?
(a) Reactors ☐ (b) Capacitors ☐
(c) Incuctors ☐ (d) Transformers ☐
92. What is the purposed of a current limiting reactor ?
(a) To increase the voltage of a system ☐
(b) To limit the maximum current during fault conditions ☐
(c) To improve power quality ☐
(d) To enhance the inductive reactive power ☐
93. Which of the following protective devices is used to prevent damage due to under-voltage conditions?
(a) Circuit braker ☐ (b) Fuse ☐
(c) Under-voltage relay ☐ (d) Surge protector ☐
94. In a single line diagram of a power system, what does the line represent ?
(a) The physical path of current flow ☐ (b) The generation capacity ☐
(c) The location of transformers ☐ (d) Voltage levels only ☐
95. Which component is commonly used to support overhead power lines ?
(a) Insulator ☐ (b) Circuit breaker ☐
(c) Transformer ☐ (d) Capacitor bank ☐
96. Which type of insulator is typically used for high voltage overhead lines to ensure electrical safety ?
(a) Pin insulator ☐ (b) Disc insulator ☐
(c) Suspension insulator ☐ (d) Strain insulator ☐
97. How does sag in overhead power lines relate to the safe clearance from the ground ?
(a) Sagging increases clearance from the ground ☐
(b) Sagging decreases clearance from the ground ☐
(c) Sagging has no effect on clearance ☐
(d) Sagging is only affected by wind conditions ☐
98. What is the primary purpose of the earth plates used in overhead lines?
(a) To support the weight of the lines ☐
(b) To provide an earthing path for fault currents ☐
(c) To enhance cable insulation ☐
(d) To reduce electromagnetic interference ☐
99. Which materials is commonly used for overhead conductors due to its excellent conductivity ?
(a) Steel ☐ (b) Copper ☐
(c) Aluminium ☐ (d) Zinc ☐
100. What is a common method for joining conductor wires in overhead lines ?
(a) Duct tape ☐ (b) Soldering ☐
(c) Compression joint ☐ (d) Wrapping ☐

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