



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

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

**SWITCHBOARD OPERATOR
(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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(To be filled in by Candidate)

Signature of Candidate

Signature of Invigilator

Instructions:

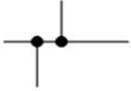
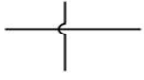
1. The question paper will also serve as the answer sheet. Candidates are required to answer directly on the question/answer sheet using tick (✓) Marks.
2. Time : 3 Hours

SWITCHBOARD OPERATOR (PE) PAPER-III (Technical Papers)

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

1. A switchboard operator's responsibilities include-
(a) Operating switchgear ☐ (b) Estimation ☐
(c) Survey ☐ (d) None of the above ☐
2. When working with live electrical parts, always wear
(a) Arc-rated clothing ☐ (b) Gloves ☐
(c) Face mask ☐ (d) All of the above ☐
3. While working with live electrical parts, use insulated tools and footwear to prevent –
(a) Over heating ☐ (b) Electric shock ☐
(c) Moisture ☐ (d) None of the above ☐
4. While using PPE, ensure PPE is –
(a) In good condition ☐ (b) Use correctly ☐
(c) Following safety protocol ☐ (d) All of the above ☐
5. What does PPE stand for –
(a) Personal Product Enhancement ☐ (b) Protective Personal Equipment ☐
(c) Personal Protective Equipment ☐ (d) Proper Protection Essentials ☐
6. Which of the following is not type of PPE-
(a) Hard hat ☐ (b) Safety Glass ☐
(c) Watches ☐ (d) Respiratory Mask ☐
7. The Primary objectives of the emergency response procedure includes
(a) Protect lives ☐ (b) Minimise harm ☐
(c) Ensure efficient recovery ☐ (d) All of the above. ☐
8. Primary objective of electrical safety procedure in work place is –
(a) To reduce electrical bill ☐ (b) To prevent electrical hazard ☐
(c) To maximise use of electrical equipment ☐ (d) To reduce maintenance cost ☐
9. What is the purpose of insulating electrical tools-
(a) To improve efficiency of tools ☐ (b) To prevent electrical shock to users ☐
(c) To make tool easier to handle ☐ (d) To reduce electric consumptions. ☐
10. To avoid electrical shocks and leakages-
(a) Use proper earthing ☐ (b) Ensure electrical equipment is dry ☐
(c) Avoid overloading outlets ☐ (d) All of the above. ☐
11. What is the primary purpose of hazard identifications –
(a) To understand what could cause harm ☐ (b) To implement safety procedure ☐
(c) To compensate damage ☐ (d) None of the above ☐
12. Earth leakages current is the current that flows from-
(a) Equipment to earth ground ☐ (b) Equipment to equipment ☐
(c) Earth ground to equipment ☐ (d) None of the above ☐

13. Fire extinguishers are handheld devices used to extinguish or control-
 (a) Large fire. ☐ (b) Small fire ☐
 (c) Large spreading fire ☐ (d) None of the above ☐
14. Wire stripper are used to cut and strip -
 (a) Electrical equipment ☐ (b) Electrical tools ☐
 (c) Insulation from electric wires ☐ (d) Electric conductor wires. ☐
15. Voltmeter read -
 (a) Current ☐ (b) Resistance ☐
 (c) Voltage ☐ (d) Wattage ☐
16. Allen wrenches are used to tightened or loosen-
 (a) Square head screws ☐ (b) Circle head screws ☐
 (c) Triangle head screws ☐ (d) Hex-head screws ☐
17. Which of the following tools is used to measure flow of electric current-
 (a) Wire stripper ☐ (b) Pliers ☐
 (c) Screwdrivers ☐ (d) Multimeter ☐
18. Which of the following tool is used to test for the presence of electricity in a circuit-
 (a) Volt tester ☐ (b) Wire stripper ☐
 (c) Needle lose plier ☐ (d) None of the above ☐
19. What tool is used to test the voltage of an electrical outlet-
 (a) Oscilloscope ☐ (b) Wattmeter ☐
 (c) Voltage tester ☐ (d) Ammeter ☐
20. Purpose of crimping tools is to -
 (a) Cut wires ☐ (b) Strip insulation ☐
 (c) Strengthen wires ☐ (d) To attach connector to wires ☐
21. Purpose of soldering iron is -
 (a) To join wires together with solder ☐ (b) To vertically cut wires ☐
 (c) To strip insulation off the wires ☐ (d) None of the above. ☐
22. The rate of flow of electric charge (election) through a conductor (wire) is-
 (a) Resistance ☐ (b) Capacitance ☐
 (c) Current ☐ (d) Heat ☐
23. The potential difference that drives the flow of electric charge is-
 (a) Voltage ☐ (b) Multimeter ☐
 (c) Ammeter ☐ (d) None of the above ☐
24. Current is measured in-
 (a) Ampere (A) ☐ (b) Meter ☐
 (c) Watt ☐ (d) N/m ☐
25. Unit of voltage is in -
 (a) Watt ☐ (b) KWH ☐
 (c) Volts(v) ☐ (d) None of the above ☐
26. What is the full form of AC in electric current-
 (a) Actuating Current ☐ (b) Alternating Current ☐
 (c) Accelerated current ☐ (d) None of the above ☐

27. What is the full form of DC in electric current-
- | | | | |
|-----------------------|--------------------------|-----------------------|--------------------------|
| (a) Direct current | ☐ | (b) Dissolved current | ☐ |
| (c) Digitised current | ☐ | (d) Death current | ☐ |
28. In electrical system the phase wire carries the-
- | | | | |
|-------------------------|--------------------------|-----------------|--------------------------|
| (a) Alternating Current | ☐ | (b) Capacity | ☐ |
| (c) Wattmeter | ☐ | (d) Transformer | ☐ |
29. The neutral wire in electrical system complete the current by providing a –
- | | | | |
|----------------|--------------------------|-----------------------|--------------------------|
| (a) Resistance | ☐ | (b) Return Path | ☐ |
| (c) Conductor | ☐ | (d) None of the above | ☐ |
30. The earth (ground) wire provide a path for fault current to flow to ground in case of
- | | | | |
|------------------------|--------------------------|------------------------|--------------------------|
| (a) Short circuit | ☐ | (b) Increasing current | ☐ |
| (c) Decreasing current | ☐ | (d) High voltage | ☐ |
31. This symbol  represent-
- | | | | |
|--------------------|--------------------------|-------------------|--------------------------|
| (a) Connected wire | ☐ | (b) Resistance | ☐ |
| (c) Voltmeter | ☐ | (d) Energy Meters | ☐ |
32. This symbol  represent-
- | | | | |
|-------------------------|--------------------------|-----------------------|--------------------------|
| (a) Voltage | ☐ | (b) Ampere | ☐ |
| (c) Not connected wires | ☐ | (d) None of the above | ☐ |
33. The Mathematical equation $V=IR$ represent-
- | | | | |
|-------------------|--------------------------|-----------------|--------------------------|
| (a) Gauss Theorem | ☐ | (b) Transformer | ☐ |
| (c) Conductor | ☐ | (d) Ohm's Law | ☐ |
34. What is SI Unit of resistance-
- | | | | |
|----------------|--------------------------|-----------------------|--------------------------|
| (a) Newton (N) | ☐ | (b) Meters | ☐ |
| (c) Ohm | ☐ | (d) None of the above | ☐ |
35. Factors effecting resistance are -
- | | | | |
|--------------------------|--------------------------|----------------------|--------------------------|
| (a) Cross sectional area | ☐ | (b) Length | ☐ |
| (c) Temperature | ☐ | (d) All of the above | ☐ |
36. Series circuits have a single path for current flow, while parallel circuit has-
- | | | | |
|-------------------|--------------------------|-----------------------|--------------------------|
| (a) Multiple flow | ☐ | (b) Single flow | ☐ |
| (c) No flow | ☐ | (d) None of the above | ☐ |
37. In series circuit, throughout the entire circuit, the current is-
- | | | | |
|---------------|--------------------------|-----------------------|--------------------------|
| (a) Nil | ☐ | (b) Same | ☐ |
| (c) Different | ☐ | (d) None of the above | ☐ |
38. Essential components in electrical wiring are-
- | | | | |
|-------------------------------|--------------------------|----------------------|--------------------------|
| (a) Fuses and circuit breaker | ☐ | (b) Wires | ☐ |
| (c) Socket and plugs | ☐ | (d) All of the above | ☐ |
39. Common accessories in electrical wiring are-
- | | | | |
|--------------------|--------------------------|----------------------|--------------------------|
| (a) One way switch | ☐ | (b) Two way switch | ☐ |
| (c) Surface switch | ☐ | (d) All of the above | ☐ |
40. Single phase power uses one alternating current while three phase power uses-
- | | | | |
|--------------------------------|--------------------------|----------------------------|--------------------------|
| (a) Three alternating currents | ☐ | (b) No alternating current | ☐ |
| (c) One alternating current | ☐ | (d) Overcurrent | ☐ |

41. An ideal Power Factor (PF) is-
 (a) 100% ☐ (b) 2% ☐
 (c) 71% ☐ (d) 20% ☐
42. One of the device used for improving Power Factor (PF) is -
 (a) Conductor ☐ (b) Energy Meter ☐
 (c) Capacitor ☐ (d) Electrical Wires ☐
43. A material that allows electricity to flow through it easily are called-
 (a) Conductor ☐ (b) Conduit ☐
 (c) Circuit ☐ (d) Contact ☐
44. A material that does not allow electricity to flow through it easily are called
 (a) Charger ☐ (b) Tester ☐
 (c) Insulator ☐ (d) None of the above ☐
45. Example for good conductor is –
 (a) Metal ☐ (b) Wood ☐
 (c) Sand ☐ (d) Stone ☐
46. Example for insulator is-
 (a) Copper ☐ (b) Aluminium ☐
 (c) Tin ☐ (d) Plastic ☐
47. Casing and capping wiring is electrical wiring method where PVC insulated wire are placed in-
 (a) Rectangular Plastic casing with a cap ☐ (b) Circular Plastic tube ☐
 (c) Rectangular Plastic without cap ☐ (d) None of the above ☐
48. A motor control device that allows electric motor to starts smoothly by gradually increasing voltage supply to the motor is called-
 (a) Shock starter ☐ (b) Soft starter ☐
 (c) Breaker ☐ (d) None of the above ☐
49. The controlled motor start up process-
 (a) Increase stress to the motor ☐ (b) Increase tension ☐
 (c) Reduce electrical and Mechanical Stress to the motor ☐ (d) None of the above ☐
50. The reduction in voltage along a circuit caused by resistance of conductor is called-
 (a) Voltage drop ☐ (b) Impact torque ☐
 (c) Under current ☐ (d) None of the above ☐
51. Different types of electrical wiring system include-
 (a) Cleat wiring ☐ (b) Casing and capping ☐
 (c) Conduct wiring ☐ (d) All of the above ☐
52. AC motor is an electric motor that converts AC power into-
 (a) Mechanical energy ☐ (b) Velocity ☐
 (c) Acceleration ☐ (d) Speed ☐
53. Which of the following is not used in domestic electric wiring -
 (a) Fuse ☐ (b) Lamp holder ☐
 (c) Switch ☐ (d) Matches ☐

54. What is the full form of ELCB-
 (a) Earth leakage circuit breaker ☐ (b) Elongated line control box ☐
 (c) Complete lagging circuit breaker ☐ (d) None of the above ☐
55. What is the full form of MCCB-
 (a) Mega Current Core Box ☐ (b) Molded Case Circuit Breaker ☐
 (c) Metal Copper Circuit Box ☐ (d) None of the above ☐
56. MCCB are used for protecting electrical circuit against-
 (a) Overload and short circuit ☐ (b) Measure of resistance ☐
 (c) Reducing current ☐ (d) None of the above ☐
57. A Gauge used for measuring the diameter of wire is-
 (a) Pliers ☐ (b) Standard wire gauge ☐
 (c) Resistor ☐ (d) None of the above ☐
58. A Substance design to reduce transfer of heat, sound and electricity acting as barrier in unwanted energy transmission is called -
 (a) Cushion ☐ (b) Carpet ☐
 (c) Insulation materials ☐ (d) None of the above ☐
59. Connecting two or more electrical cables to create a continuous and reliable electrical path is called-
 (a) Fixing ☐ (b) Tightening ☐
 (c) Hardening ☐ (d) Cable Jointing ☐
60. Types of cable jointing techniques includes-
 (a) Heat Shrink joints ☐ (b) Cold shrink Joint ☐
 (c) Mechanical Joint ☐ (d) All of the above ☐
61. Main parts of battery includes-
 (a) Positive electrode ☐ (b) Negative electrode ☐
 (c) Electrolyte ☐ (d) All of the above ☐
62. Battery charging method includes
 (a) Constant current ☐ (b) Constant Voltage ☐
 (c) Constant Power ☐ (d) All of the above ☐
63. To maintain battery lifespan and performance-
 (a) Check fluid levels ☐ (b) Wash the battery ☐
 (c) Turn off the battery charging ☐ (d) None of the above ☐
64. In power substation switchgear-
 (a) Protect electrical Circuit ☐ (b) Controls ☐
 (c) Insulate circuit ☐ (d) All of the above ☐
65. Power plant protection ensure-
 (a) Safe and reliable operation ☐ (b) Increase accident rate ☐
 (c) High voltage delivery ☐ (d) None of the above ☐
66. Power plant auxiliaries refers to the equipment and system that support the main power generation but are not directly involved in-
 (a) Generating electricity ☐ (b) Transmitting power ☐
 (c) Increasing voltage ☐ (d) None of the above ☐

67. A switching device which offers protection by tripping and cutting off the supply to load in case of fault is called –
- | | | | |
|---------------------|--------------------------|-----------------------|--------------------------|
| (a) Circuit breaker | ☐ | (b) Transformer | ☐ |
| (c) Starter | ☐ | (d) None of the above | ☐ |
68. Control Panel houses switches and other components to-
- | | | | |
|--------------------------------|--------------------------|-----------------------|--------------------------|
| (a) Control electrical circuit | ☐ | (b) Increase moisture | ☐ |
| (c) Increase heat | ☐ | (d) None of the above | ☐ |
69. An electrically controlled switch design to handle high current using an electromagnetic coil to energise and closed contact is called-
- | | | | |
|------------------------|--------------------------|-----------------------|--------------------------|
| (a) Electrical conduct | ☐ | (b) Magnetic switch | ☐ |
| (c) Resistors | ☐ | (d) None of the above | ☐ |
70. A device that helps preventing damage to the apparatus because of high voltage is called-
- | | | | |
|-------------------------|--------------------------|-----------------------|--------------------------|
| (a) Lightning Arresters | ☐ | (b) Isolator | ☐ |
| (c) Insulations | ☐ | (d) None of the above | ☐ |
71. Lighting Arrester is a device used to defend power system by forwarding the high voltage surges in the direction of the-
- | | | | |
|------------|--------------------------|-----------------------|--------------------------|
| (a) Ground | ☐ | (b) Sky | ☐ |
| (c) Trees | ☐ | (d) None of the above | ☐ |
72. Switchgear Maintenance involves –
- | | | | |
|------------------------|--------------------------|----------------------|--------------------------|
| (a) Regular inspection | ☐ | (b) Cleaning | ☐ |
| (c) Testing | ☐ | (d) All of the above | ☐ |
73. Different types of earthing includes-
- | | | | |
|--------------------|--------------------------|----------------------|--------------------------|
| (a) Plate earthing | ☐ | (b) Pipe earthing | ☐ |
| (c) Rod earthing | ☐ | (d) All of the above | ☐ |
74. Tick the wrong statements-
- | | |
|--|--------------------------|
| a) Earthing providing alternative path for fault current | ☐ |
| b) Earthing stabilise the voltage level within an electrical system | ☐ |
| c) Earthing ensures that is a fault occurs the fault current flows to the ground | ☐ |
| d) Earthing cannot trigger circuit breaker | ☐ |
75. Major components of substation are –
- | | | | |
|-----------------|--------------------------|--------------------------------------|--------------------------|
| (a) Switching | ☐ | (b) Protection and control equipment | ☐ |
| (c) Transformer | ☐ | (d) All of the above | ☐ |
76. The physical arrangement of electrical equipment within a substation is called-
- | | | | |
|-------------------------|--------------------------|-----------------------|--------------------------|
| (a) Substation layout | ☐ | (b) Equipment series | ☐ |
| (c) Substation external | ☐ | (d) None of the above | ☐ |
77. Reasons for Load Shedding are-
- | | | | |
|----------------------------------|--------------------------|-----------------------|--------------------------|
| (a) Demand outstripping supplies | ☐ | (b) Equipment failure | ☐ |
| (c) Extreme weather | ☐ | (d) All of the above | ☐ |
78. Transformer used to step down voltage from high voltage transmission lines to level required by consumer is called-
- | | | | |
|-------------------------|--------------------------|------------------------------|--------------------------|
| (a) Bus bar arrangement | ☐ | (b) Distribution transformer | ☐ |
| (c) Lightning arrestors | ☐ | (d) None of the above | ☐ |

79. Materials used for transformer winding are -
 (a) Silica gel ☐ (b) Copper and aluminium ☐
 (c) Mild steel ☐ (d) Silver ☐
80. The transformer oil expands and contracts with temperature changes, air exit through the conservator tank through-
 (a) Breather ☐ (b) Winding ☐
 (c) Switch ☐ (d) None of the above ☐
81. In transformer, a cylindrical container mounted on top of the tank, that allows expansion and contractions of the transformer oil is called-
 (a) Winding ☐ (b) Conservator tank ☐
 (c) Connector ☐ (d) None of the above ☐
82. Watt meter is used to measure-
 (a) Height ☐ (b) Length ☐
 (c) Power ☐ (d) None of the above ☐
83. A device used to measure the total amount of electrical energy consumed over a period of time is called -
 (a) Energy meter ☐ (b) Kilo meter ☐
 (c) Energy Consumer ☐ (d) None of the above ☐
84. A device used to measure current without breaking the circuit is called
 (a) Parameter ☐ (b) Clamp Meter ☐
 (c) Breaker ☐ (d) None of the above ☐
85. A device used to measure the phase difference between two electrical signal is called-
 (a) Phase meter ☐ (b) Ammeter ☐
 (c) Torque meter ☐ (d) None of the above ☐
86. A device used to measure power factor is called-
 (a) Multimeter ☐ (b) Voltmeter ☐
 (c) Power factor meter ☐ (d) None of the above ☐
87. A device that measures the frequency of a periodic signal, typically an electrical signal is called
 (a) Thermometer ☐ (b) Manometer ☐
 (c) Frequency meter ☐ (d) None of the above ☐
88. An electrical device used to measure the high resistance of insulation in electrical system is called-
 (a) Megger ☐ (b) Polygon ☐
 (c) Insulator ☐ (d) None of the above ☐
89. Measurement error can be minimised through-
 (a) Careful calibration ☐ (b) Precise instrument ☐
 (c) Multiple Measurement ☐ (d) All of the above ☐
90. To determine how well insulation materials resists the flow of electric current, we use -
 (a) Isolators ☐ (b) Insulations resistance test ☐
 (c) Magnetometer ☐ (d) None of the above ☐

91. To verify that there is complete, unbroken electrical path between two points, the process is called –
 (a) Fixer ☐ (b) Burner ☐
 (c) Continuity test ☐ (d) None of the above ☐
92. The process of identifying and correcting faults in a system and restore to its intended functionality is called-
 (a) Fault rectifications ☐ (b) Damage meter ☐
 (c) Chlorinator ☐ (d) None of the above ☐
93. An inductive coil designed to limit the amount of current that can flow in a circuit is called-
 (a) Feeder ☐ (b) Power factor ☐
 (c) Current limiting reactor ☐ (d) None of the above ☐
94. Common electrical protective devices include-
 (a) Fuses ☐ (b) Circuit breaker ☐
 (c) Residual current device ☐ (d) All of the above ☐
95. Surge protectors device protect electrical equipment from damage cause by-
 (a) Sudden surge in voltage ☐ (b) Earth fault ☐
 (c) Increase in resistance ☐ (d) None of the above ☐
96. Pin insulators are used for supporting conductor on poles in –
 (a) Lower voltage applications ☐ (b) Conductors ☐
 (c) Electrical poles ☐ (d) None of the above ☐
97. Pin insulators are rigidly mounted to the cross arm of the poles, with the conductor on the top of the-
 (a) Jumper cables ☐ (b) Metal ☐
 (c) Insulators ☐ (d) None of the above ☐
98. Disc insulator are used in high voltage-
 (a) Transformer ☐ (b) Transmission lines ☐
 (c) Bus bar ☐ (d) None of the above ☐
99. A form of short circuit where active electricity path is accidentally connected to the ground is called-
 (a) Earth fault ☐ (b) Load shedding ☐
 (c) Load failure ☐ (d) None of the above ☐
100. A device used for connecting stay wires to the ground anchor ensuring stability of power poles and towers is called-
 (a) Conductors ☐ (b) Isolators ☐
 (c) Stay rod ☐ (d) None of the above ☐

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