

**GOVERNMENT OF MIZORAM
PUBLIC WORKS DEPARTMENT**

**COMPETITIVE EXAMINATION FOR RECRUITMENT TO
THE POST OF ELECTRICIAN GRADE-II (PE)
(SEPTEMBER -2026)**

**PAPER-III
(SAFETY, BASIC OF ELECTRICAL, WIRING &
CIRCUITS, CELLS & BATTERY & WIRING SYSTEMS
& MEASURING INSTRUMENTS)**

Full Marks : 200
Time Allowed : 3 Hours

Signature of Invigilator _____

CODE :

(For official use)

SUBJECT	MARK CARRIED BY EACH QUESTION / TOPIC	NO. OF CORRECT ANSWERS	MARKS OBTAINED
Paper-III	2		
TOTAL			

Signature of Examiner : _____

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All questions carry 2 marks each.

Put a tick (✓) mark against the correct answer in the space given in each question.

If a candidate gives more than one answer to one question, it will be treated as wrong answer even if one of the given answers happens to be correct.

PAPER - III (TECHNICAL PAPER) (200 MARKS)

1. Which instrument is used for measuring insulation resistance?
(a) Wattmeter ()
(b) **Megger** ()
(c) Energy Meter ()
(d) CRO ()
2. The SI unit of electrical resistance is:
(a) Volt ()
(b) Ampere ()
(c) **Ohm** ()
(d) Henry ()
3. In domestic wiring, the earth wire is generally coloured:
(a) Red ()
(b) Black ()
(c) **Green** ()
(d) Yellow ()
4. Neutral conductor is connected to:
(a) Phase terminal ()
(b) **Earth electrode at source** ()
(c) Load only ()
(d) Switch ()
5. The purpose of earthing is to:
(a) Increase voltage ()
(b) Reduce current ()
(c) **Protect against electric shock** ()
(d) Improve power factor ()
6. Which domestic appliance converts electrical energy into heat energy?
(a) Fan ()
(b) Mixer ()
(c) **Iron** ()
(d) Refrigerator ()

7. A ceiling fan normally uses:
- (a) Universal motor ()
 - (b) Synchronous motor ()
 - (c) **Single-phase induction motor** ()
 - (d) Stepper motor ()
8. Energy consumed is measured in:
- (a) kW ()
 - (b) kVAR ()
 - (c) **kWh** ()
 - (d) VA ()
9. The instrument used to measure current is:
- (a) Voltmeter ()
 - (b) **Ammeter** ()
 - (c) Ohmmeter ()
 - (d) Megger ()
10. One unit of electrical energy equals:
- (a) 100 W for 1 h ()
 - (b) **1000 W for 1 h** ()
 - (c) 1000 W for 100 h ()
 - (d) 1 W for 1000 h ()
11. Which appliance uses a thermostat?
- (a) **Electric Iron** ()
 - (b) Mixer ()
 - (c) Grinder ()
 - (d) Fan ()
12. A fuse should be connected in:
- (a) Neutral wire ()
 - (b) Earth wire ()
 - (c) **Phase wire** ()
 - (d) Any wire ()
13. The earth resistance for domestic installations should be:
- (a) As high as possible ()
 - (b) **Zero ideally** ()
 - (c) Infinite ()
 - (d) More than 100 Ω ()
14. Which meter measures electrical energy consumption?
- (a) Ammeter ()
 - (b) Voltmeter ()
 - (c) **Energy Meter** ()
 - (d) Frequency Meter ()

15. The standard domestic supply in India is:
- (a) 110 V, 60 Hz ()
 - (b) 230 V, 50 Hz** ()
 - (c) 440 V, 60 Hz ()
 - (d) 220 V, 25 Hz ()
16. A transformer works on the principle of:
- (a) Electrolysis ()
 - (b) Electromagnetic induction** ()
 - (c) Static electricity ()
 - (d) Rectification ()
17. Transformer transfers energy from one circuit to another through:
- (a) Direct connection ()
 - (b) Mechanical coupling ()
 - (c) Magnetic coupling** ()
 - (d) Capacitive coupling ()
18. The transformer core is made of:
- (a) Copper ()
 - (b) Aluminium ()
 - (c) Laminated silicon steel** ()
 - (d) Brass ()
19. The EMF equation of transformer is:
- (a) $E = IR$ ()
 - (b) $E = 4.44fN\Phi_m$** ()
 - (c) $P = VI$ ()
 - (d) $V = L di/dt$ ()
20. A step-up transformer increases:
- (a) Current ()
 - (b) Voltage** ()
 - (c) Frequency ()
 - (d) Power ()
21. Transformer frequency remains:
- (a) Increased ()
 - (b) Reduced ()
 - (c) Constant** ()
 - (d) Zero ()
22. Transformer oil is used for:
- (a) Lubrication only ()
 - (b) Cooling and insulation** ()
 - (c) Heating ()
 - (d) Earthing ()

23. Copper loss depends on:

- (a) Voltage ()
- (b) Frequency ()
- (c) **Load current** ()
- (d) Flux ()

24. Core loss consists of:

- (a) Copper loss only ()
- (b) **Hysteresis and eddy current loss** ()
- (c) Friction loss ()
- (d) Windage loss ()

25. Maximum efficiency of transformer occurs when:

- (a) **Copper loss = Core loss** ()
- (b) Copper loss > Core loss ()
- (c) Copper loss < Core loss ()
- (d) Load is zero ()

26. CT stands for:

- (a) **Current Transformer** ()
- (b) Control Transformer ()
- (c) Core Transformer ()
- (d) Circuit Transformer ()

27. PT stands for:

- (a) Power Transformer ()
- (b) **Potential Transformer** ()
- (c) Phase Transformer ()
- (d) Pole Transformer ()

28. Transformer rating is expressed in:

- (a) kW ()
- (b) HP ()
- (c) **kVA** ()
- (d) kVAR ()

29. Transformer is a:

- (a) Rotating machine ()
- (b) **Static machine** ()
- (c) Synchronous machine ()
- (d) DC machine ()

30. Auto-transformer has:

- (a) Two separate windings ()
- (b) Three windings ()
- (c) **Single winding** ()
- (d) No winding ()

31. Open circuit test determines:

- (a) Copper loss ()
- (b) Core loss** ()
- (c) Short circuit current ()
- (d) Efficiency only ()

32. Short circuit test determines:

- (a) Core loss ()
- (b) Copper loss** ()
- (c) Frequency ()
- (d) Turns ratio ()

33. Buchholz relay is used in:

- (a) Small transformers ()
- (b) Oil immersed transformers** ()
- (c) Dry type transformers ()
- (d) Auto transformers ()

34. For basic parallel operation, transformers must have same:

- (a) Colour ()
- (b) Polarity and voltage ratio** ()
- (c) Weight ()
- (d) Size ()

35. Delta-Star transformer provides:

- (a) No neutral ()
- (b) Neutral on secondary side** ()
- (c) DC output ()
- (d) Reduced frequency ()

36. A diode conducts current in:

- (a) Both directions ()
- (b) Forward direction only** ()
- (c) Reverse direction only ()
- (d) No direction ()

37. Diode is mainly used for:

- (a) Amplification ()
- (b) Rectification** ()
- (c) Oscillation ()
- (d) Modulation ()

38. Transistor has:

- (a) Two terminals ()
- (b) Three terminals** ()
- (c) Four terminals ()
- (d) Five terminals ()

39. NPN transistor conducts when:

- (a) **Base is positive w.r.t emitter** ()
- (b) Base is negative w.r.t emitter ()
- (c) Collector is grounded ()
- (d) Emitter open ()

40. Resistor unit is:

- (a) Farad ()
- (b) Henry ()
- (c) **Ohm** ()
- (d) Siemens ()

41. Thermistor is a:

- (a) Current sensor ()
- (b) **Temperature sensitive resistor**()
- (c) Voltage regulator ()
- (d) Relay ()

42. SCR stands for:

- (a) **Silicon Controlled Rectifier** ()
- (b) Semiconductor Current Relay ()
- (c) Static Control Rectifier ()
- (d) Silicon Current Regulator ()

43. SCR has:

- (a) 2 layers ()
- (b) 3 layers ()
- (c) **4 layers** ()
- (d) 5 layers ()

44. TRIAC can control:

- (a) DC only ()
- (b) AC only ()
- (c) **Both AC and DC** ()
- (d) None ()

45. DIAC is mainly used with:

- (a) Transistor ()
- (b) **TRIAC** ()
- (c) Relay ()
- (d) Fuse ()

46. IGBT stands for:

- (a) **Insulated Gate Bipolar Transistor** ()
- (b) Integrated Gate Bipolar Thyristor ()
- (c) Internal Gate Bipolar Transistor ()
- (d) Insulated Gain Bipolar Transistor ()

47. CRO stands for:

- (a) **Cathode Ray Oscilloscope** ()
- (b) Current Reading Oscilloscope ()
- (c) Cathode Resistance Oscillator ()
- (d) Current Ray Oscilloscope ()

48. CRO is used to observe:

- (a) Current only ()
- (b) **Voltage waveform** ()
- (c) Resistance only ()
- (d) Frequency only ()

49. Silicon diode forward voltage drop is approximately:

- (a) 0.1 V ()
- (b) 0.3 V ()
- (c) **0.7 V** ()
- (d) 1.5 V ()

50. The gain of transistor is represented by:

- (a) **α or β** ()
- (b) λ ()
- (c) μ ()
- (d) η ()

51. DOL starter is used for:

- (a) **Small motors** ()
- (b) Large motors only ()
- (c) Transformers ()
- (d) Generators ()

52. DOL stands for:

- (a) **Direct On Line** ()
- (b) Double On Load ()
- (c) Direct Off Load ()
- (d) Drive On Line ()

53. Star-delta starter reduces:

- (a) Voltage only ()
- (b) **Starting current** ()
- (c) Frequency ()
- (d) Speed ()

54. VFD stands for:

- (a) **Variable Frequency Drive** ()
- (b) Voltage Feed Device ()
- (c) Variable Flux Drive ()
- (d) Voltage Frequency Device ()

55. VFD controls motor speed by varying:

- (a) Resistance ()
- (b) Voltage only ()
- (c) **Frequency** ()
- (d) Power factor ()

56. Contactor is operated by:

- (a) Hydraulic force ()
- (b) **Electromagnetic force** ()
- (c) Pneumatic force ()
- (d) Gravity ()

57. Overload relay protects against:

- (a) Over voltage ()
- (b) **Over current due to overload** ()
- (c) Earth fault only ()
- (d) Short circuit only ()

58. Emergency lights operate using:

- (a) **Battery backup** ()
- (b) Transformer only ()
- (c) Fuse ()
- (d) Relay ()

59. Inverter converts:

- (a) AC to DC ()
- (b) **DC to AC** ()
- (c) AC to AC ()
- (d) DC to DC ()

60. UPS stands for:

- (a) **Uninterrupted Power Supply** ()
- (b) Universal Power Supply ()
- (c) Unified Power Source ()
- (d) Utility Power Supply ()

61. Voltage stabilizer maintains:

- (a) Constant current ()
- (b) Constant frequency ()
- (c) **Constant voltage** ()
- (d) Constant power ()

62. Push buttons are used in:

- (a) **Control circuits** ()
- (b) Transmission lines ()
- (c) Earthing system ()
- (d) Transformer oil ()

63. A relay is an electrically operated:

- (a) **Switch** ()
- (b) Generator ()
- (c) Transformer ()
- (d) Motor ()

64. Interlocking prevents:

- (a) Heating ()
- (b) **Wrong sequence operation** ()
- (c) Earthing fault ()
- (d) Voltage drop ()

65. Battery charger converts:

- (a) **AC into regulated DC** ()
- (b) DC into AC ()
- (c) AC into AC ()
- (d) DC into DC ()

66. Thermal power plant uses:

- (a) Water energy ()
- (b) Solar energy ()
- (c) **Heat energy of fuel** ()
- (d) Wind energy ()

67. Hydel power plant uses:

- (a) Coal ()
- (b) **Water** ()
- (c) Gas ()
- (d) Diesel ()

68. Solar cell converts:

- (a) Heat into electricity ()
- (b) **Light into electricity** ()
- (c) Mechanical energy into electricity ()
- (d) Sound into electricity ()

69. Wind power is a:

- (a) Conventional source ()
- (b) **Non-conventional source** ()
- (c) Nuclear source ()
- (d) Thermal source ()

70. Transmission voltage is increased to:

- (a) Increase losses ()
- (b) **Reduce losses** ()
- (c) Increase current ()
- (d) Reduce frequency ()

71. The conductor material generally used in transmission line is:
- (a) Gold ()
 - (b) Copper only ()
 - (c) **Aluminium** ()
 - (d) Silver ()
72. Pin insulator is used for voltages up to:
- (a) **33 kV approximately** ()
 - (b) 220 kV ()
 - (c) 400 kV ()
 - (d) 765 kV ()
73. Suspension insulators are used for:
- (a) Low voltage only ()
 - (b) **High voltage lines** ()
 - (c) Domestic wiring ()
 - (d) Underground cables ()
74. The function of a relay is to:
- (a) **Detect fault and initiate tripping** ()
 - (b) Generate power ()
 - (c) Store energy ()
 - (d) Improve power factor ()
75. MCB stands for:
- (a) Mini Circuit Breaker ()
 - (b) **Miniature Circuit Breaker** ()
 - (c) Main Circuit Breaker ()
 - (d) Motor Circuit Breaker ()
76. Circuit breaker is used to:
- (a) Measure current ()
 - (b) **Open and close circuit under fault conditions** ()
 - (c) Increase voltage ()
 - (d) Reduce resistance ()
77. Arc quenching means:
- (a) Producing arc ()
 - (b) **Extinguishing arc** ()
 - (c) Measuring arc ()
 - (d) Increasing arc ()
78. Lightning arrester protects against:
- (a) Overload ()
 - (b) **Lightning surges** ()
 - (c) Low voltage ()
 - (d) Frequency variation ()

79. Fuse operates on:

- (a) **Heating effect of current** ()
- (b) Magnetic effect ()
- (c) Chemical effect ()
- (d) Piezoelectric effect ()

80. SF6 circuit breaker uses:

- (a) Air ()
- (b) Oil ()
- (c) **SF6 gas** ()
- (d) Vacuum ()

81. Vacuum circuit breaker extinguishes arc in:

- (a) Oil ()
- (b) Air ()
- (c) **Vacuum** ()
- (d) Water ()

82. Differential relay is commonly used for:

- (a) Earthing ()
- (b) Lighting circuits ()
- (c) Domestic fans ()
- (d) **Transformer protection** ()

83. Earth fault relay operates when:

- (a) Voltage increases ()
- (b) **Leakage current flows to earth**()
- (c) Frequency changes ()
- (d) Load decreases ()

84. Power factor is:

- (a) I/V ()
- (b) kVA/kW ()
- (c) V/I ()
- (d) **kW/kVA** ()

85. Unit of power factor is:

- (a) Ohm ()
- (b) Degree ()
- (c) **No unit** ()
- (d) Watt ()

86. DC generator converts:

- (a) DC to AC ()
- (b) Electrical to mechanical energy ()
- (c) AC to DC ()
- (d) **Mechanical to electrical energy** ()

87. Back EMF exists in:

- (a) Transformer ()
- (b) DC Motor** ()
- (c) Fuse ()
- (d) Relay ()

88. Fleming's Left-Hand Rule is used for:

- (a) Generator ()
- (b) Motor** ()
- (c) Transformer ()
- (d) Battery ()

89. Synchronous motor runs at:

- (a) Variable speed ()
- (b) Synchronous speed** ()
- (c) Half speed ()
- (d) Zero speed ()

90. Induction motor is also called:

- (a) Asynchronous motor** ()
- (b) Synchronous motor ()
- (c) Universal motor ()
- (d) Servo motor ()

91. Slip of induction motor at synchronous speed is:

- (a) 1 ()
- (b) 100% ()
- (c) 0** ()
- (d) 50% ()

92. Starter is required in DC motor to:

- (a) Reduce starting current** ()
- (b) Increase speed ()
- (c) Increase voltage ()
- (d) Increase frequency ()

93. Rotor of squirrel cage motor consists of:

- (a) Slip rings ()
- (b) Copper/aluminium bars** ()
- (c) Commutator ()
- (d) Brushes ()

94. Universal motor operates on:

- (a) DC only ()
- (b) AC only ()
- (c) Both AC and DC** ()
- (d) 3-phase AC only ()

95. The speed of DC shunt motor is controlled by:

- (a) Transformer tapping ()
- (b) Frequency variation ()
- (c) Pole changing ()
- (d) **Field current variation** ()

96. The material commonly used for winding is:

- (a) Iron ()
- (b) **Copper** ()
- (c) Lead ()
- (d) Zinc ()

97. Megger test is conducted to check:

- (a) Voltage ()
- (b) Current ()
- (c) **Insulation resistance** ()
- (d) Frequency ()

98. Shorted turns in a winding cause:

- (a) Reduced heating ()
- (b) **Excessive heating** ()
- (c) Increased insulation resistance ()
- (d) No effect ()

99. Enamelled copper wire is used because of:

- (a) Mechanical strength only ()
- (b) **Insulation coating** ()
- (c) Lower weight only ()
- (d) Higher resistance ()

100. Continuity test of winding is performed using:

- (a) Ammeter ()
- (b) Voltmeter ()
- (c) **Ohmmeter/Multimeter** ()
- (d) Wattmeter ()

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