

MIZORAM PUBLIC SERVICE COMMISSION
DEPARTMENTAL EXAMINATION FOR JUNIOR GRADE OF M.E.S. (AE/SDO)
UNDER POWER & ELECTRICITY DEPARTMENT, GOVERNMENT OF MIZORAM.
(DECEMBER-2025)

ENGINEERING PAPER – I
Common Paper for all Engineers in Electrical Wing under P&E Cadre

Time Allowed : 3 hours

FM : 100 PM : 40

SECTION - A (Multiple Choice Questions) (50 Marks)

All questions carry equal mark of 1 each. Attempt all questions.

*This Section should be answered only on the **OMR Response Sheet** provided.*

1. Overall length of Galvanised Steel Tabular pole SP-33 in SOR 2025 is:
(a) 9 meters (b) 9.5 meters
(c) 9.25 meters (d) 7.5 meters
2. As per General Condition of execution and maintenance of Deposit Work, the right of way for construction of power line should be provided by:
(a) P&E Department (b) Local/Village Council
(c) Interested party (d) Concerned SDO
3. All Aluminium Alloy Conductor (AAAC) are normally used in:
(a) 33kV line (b) Low Tension (L.T) line
(c) 11kV line (d) High Voltage Transmission line
4. What is the tensile strength of Polymer Disc insulator normally used in 132kV line at Mizoram?
(a) 45KN (b) 95KN
(c) 70KN (d) 120KN
5. The Name of the instrument used for measuring Earth resistance of Earthing.
(a) Meggar (b) Multi meter
(c) Earth Tester (d) Synchronoscope
6. The minimum vertical clearance from building for High Voltage (up to 33kV) bare conductor is:
(a) 3.5 meters (b) 3.0 meters
(c) 3.75 meters (d) 3.7 meters
7. The full form of SLDC:
(a) State Load Despatch Center (b) Systematic Load Despatch Center
(c) State Load Distribution Center (d) State Level Distribution Committee

8. The name of a licensee authorised to operate and maintain a distribution system for supplying electricity to the consumers in his area of as defined by Electricity Act 2003 is:
- (a) Trader
 - (b) Company
 - (c) Distribution Licensee
 - (d) Electricity Trader
9. Any system for transmission of electricity other than an inter-State transmission system as per Electricity Act 2003 is called:
- (a) State Transmission system
 - (b) Intra State Transmission system
 - (c) Transmission system
 - (d) Local Transmission system
10. A hydro generating station which does not have upstream pondage as per CEA (Deviation Settlement mechanism & related matters) Regulation 2024 is called:
- (a) Run of river generating station
 - (b) Small Hydro Generating Station
 - (c) Micro Hydro Generating Station
 - (d) Medium Hydro Generating Station.
11. The electricity drawn by a buyer in a time block, measured by the interface meters; as described in CEA (Deviation Settlement Mechanism and Related Matters) Regulations, 2014 is known as:
- (a) Interface meter drawal
 - (b) Real drawal
 - (c) Block drawal
 - (d) Actual drawal
12. The Regional Load Despatch Center who Control Mizoram is:
- (a) MSLDC
 - (b) NERLDC
 - (c) ASLDC
 - (d) ERLDC
13. As described in The Electricity Act 2003, any company or body corporate or association or body of individuals, whether incorporated or not, or artificial juridical person, which owns or operates or maintains a generating station is called:
- (a) Generating Company
 - (b) DISCOM
 - (c) Power Corporation
 - (d) SLDC
14. Which one of the following conductors is not Steel Re-enforce?
- (a) Panther Conductor
 - (b) Gnat Conductor
 - (c) Weasel Conductor
 - (d) Racocon Conductor
15. The minimum required breakdown voltage value for Transformer Oil at 2.5mm gap for 33kV and below as per Operation and maintenance guidelines for lines & Sub-Station is:
- (a) 40 kV
 - (b) 60 kV
 - (c) 30 kV
 - (d) 50 kV
16. The purpose of CRC Spray in electrical terminal is:
- (a) for cooling purpose
 - (b) strengthening insulation resistance
 - (c) to prevent corrosion
 - (d) for lubrication
17. The main function of Current Transformer is:
- (a) reduce high voltage to measurable value.
 - (b) increase low voltage to measurable value.
 - (c) reduce high current to measurable value.
 - (d) increase low current to measurable value.

18. The Works executed by P&E Department outside the normal budget/provision, the cost of which is borne by party/intending consumer, out of his own resource, which will benefit the specific consumer or party other than public in general is described as:
- (a) Deposit Work
 - (b) Outside work
 - (c) Private Work
 - (d) Non-Governmental Work
19. What is the normal validity period of estimate from the date of approval for making necessary payment to the Department as per General condition for execution and maintenance of Deposit works?
- (a) 6 months
 - (b) 12 months
 - (c) 3 months
 - (d) 9 months
20. Which one of the following work is not included in annual operation and maintenance of Deposited Works as per General condition for execution and maintenance of Deposit works?
- (a) Annual painting
 - (b) Replacement of Transformer
 - (c) Jungle cutting
 - (d) Topping up of Transformer oil
21. What is the interval of periodical inspection and testing to be carried out by the electrical Inspectorate or by the Department if the party/consumer carry out annual Operation and maintenance by himself?
- (a) Annually
 - (b) Not exceed two years
 - (c) Not exceed Three years
 - (d) Not exceed Five years
22. The minimum operating safety distance for live line of 240V/440V as per safety manual issued by P&E Department is:
- (a) Two feet
 - (b) Five feet
 - (c) Three Feet
 - (d) Four Feet
23. The main purpose of safety belt during working at power line is:
- (a) Safety for the worker
 - (b) Protection of Transformers
 - (c) Protection of equipment
 - (d) Diversion of surge current
24. What is the standard ruling span for LT ABC line to be adopted for preparation of DPR in case actual survey is not carry out as per SOR 2025?
- (a) 35 meters
 - (b) 30 meters
 - (c) 25 meters
 - (d) 20 meters
25. What is the preferable distance between two DT Sub-Station pole as per SOR 2025?
- (a) 2 meter
 - (b) 2.44 meters
 - (c) 3 meter
 - (d) 1.5 meters
26. A charge levied on the consumer based on the quantity of electricity (units in kWh or kVAh as per tariff) supplied as described by JERC Electricity Supply Code regulation is:
- (a) Energy charge
 - (b) Fixed Charge
 - (c) Tariff Charge
 - (d) Electricity Bill
27. JERC Supply Code declared that the area with population more than 1 lakhs city as defined in the latest Census of India is:
- (a) Class -II City
 - (b) Class -I Town
 - (c) Class-I City
 - (d) Class-II Town.

- 28.** The amount chargeable for the billing cycle/billing period based upon sanctioned load/contracted load in kW.
- (a) Variable Charges
 - (b) Fixed Charges
 - (c) Billing charge
 - (d) Load security
- 29.** A contractor licensed under regulation 29 of the Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2010.
- (a) Distribution licensee
 - (b) Turnkey contractor
 - (c) DISCOM
 - (d) Licensed Electrical Contractor
- 30.** The highest load measured in average kVA or kW at the point of supply of a consumer during any consecutive period of 30 (thirty) minutes during the billing period (or a specified billing period) as described by JERC Electricity Supply Code is known as:
- (a) Contracted load
 - (b) High load
 - (c) Peak load
 - (d) Maximum demand
- 31.** The permissible limit of voltage in High Tension as per JERC Electricity Supply Code is:
- (a) Plus or minus 6%
 - (b) Plus or minus 9%
 - (c) Plus or minus 10%
 - (d) Plus or minus 5%
- 32.** The higher contracted load permissible as per JERC Supply code for Single Phase LT Domestic Consumer is:
- (a) 8 kW
 - (b) 6 kW
 - (c) 10 kW
 - (d) 4 kW
- 33.** What is the full form of ABT mentioned in JERC Grid Code Regulation 2010?
- (a) Availability based Tariff
 - (b) Average based Tariff
 - (c) Active Based Transmission
 - (d) Access Bid Terminal
- 34.** That period in a day when the electrical power demand is lowest as described by JERC Grid Code is:
- (a) Scheduled Period
 - (b) Isolation period
 - (c) Lean Period
 - (d) Off Peak period
- 35.** The condition of a generating station which is loaded but is not running at its declared availability is called as:
- (a) Off Peak load
 - (b) Peak load
 - (c) Partial load
 - (d) Part Load
- 36.** The procedure necessary to recover from a partial or a total blackout of Grid Power system is called:
- (a) Starting procedure
 - (b) Black Starter procedure
 - (c) Standard of operation
 - (d) Grid start procedure

37. The formula used for calculation of load factor is

$$(a) \text{ Load Factor} = \frac{\text{Unit Consumed in a given period}}{\text{Maximum demand} \times \text{No. of hour in a period}}$$

$$(b) \text{ Load Factor} = \frac{\text{Load given to consumer}}{\text{Maximum demand} \times \text{No. of hour in a period}}$$

$$(c) \text{ Load Factor} = \frac{\text{Unit Consumed in a given period}}{\text{Contracted load of consumer} \times \text{No. of hour in a period}}$$

$$(d) \text{ Load Factor} = \frac{\text{Maximum load in a given period}}{\text{Maximum demand} \times \text{No. of hour in a period}}$$

38. What is the latest name of Electricity Regulatory commission for the State of Mizoram?

- (a) Mizoram State Electricity Regulatory Commission
(b) Mizoram Electricity Regulatory Commission
(c) Joint Electricity Regulatory Commission
(d) Electricity Regulatory Commission for Mizoram

39. An Outage of State Generating Station (SGS) or any of Power Station Equipment, generally due to sudden failure of one or more parts of equipment at a generating station, of which no notice can be given by the Generator to STU and also include outage of transmission line and any substation equipment of which no notice can be given by STU is known as:

- (a) Generator outage (b) Main fail
(c) Forced outage (d) Schedule outage

40. A shutdown of a part of the system resulting in failure of power supply, either from external connections or from the healthy part of the system.

- (a) Partial Shutdown
 - (b) Direct Shutdown
 - (c) Emergency shutdown
 - (d) Half Shutdown

41. In a Guaranteed Standard, Power Restore time in the case of normal fuse-off calls, fuses at the distribution transformer or at the consumer premises from receiving the complaint in Class-I Cities is:

- (a) One day
(b) 6 Hours
(c) 4 Hours
(d) 10 hours

42. Identification and codification of each consumer in the electrical network with a unique code relating it to the network assets; so that with the help of that unique code it should be possible to identify the consumer, pole, distribution transformer, feeder and substation feeding the consumer as described in JERC Standard of performance for Distribution and Transmission Licensee Regulation is known as:

- (a) Consumer Indexing (b) Smart meter indexing
(c) Identification of consumer (d) Time of day Tariff

43. In a Guaranteed Standard, the Licensee shall inspect and check the correctness of the meter in Rural Areas.

- (a) Within One week (b) Within 4 Days
(c) Within 10 Day (d) Within 15 days

44. In an Overall Standard of performance, the percentage of distribution transformers replaced within the time limits should be:
- (a) 90% (b) 95%
(c) 85% (d) 70%
45. In an Overall Standard of performance, the percentage Licensee shall achieve the standards of performance in release of new connection is:
- (a) 93% (b) 99%
(c) 95% (d) 90%
46. What is the name of Call Center function in P&E Department which has been under the supervision of SLDC?
- (a) Consumer/Customer Call Center (b) Public Call Center
(c) Complain Center (d) Controlling Station.
47. The response time for the consumer call within a Guarantee Standard of performance for distribution is:
- (a) 20 minutes (b) 5 minutes
(c) 10 minutes (d) 15 minutes
48. The registration of consumer call after the first response shall be completed within:
- (a) 7 minutes (b) 30 minutes
(c) 10 Minutes (d) 45 minutes
49. In case of overhead line/cable breakdowns, licensee shall ensure restoration of power supply within 24 hours of occurrence of breakdown in the following area:
- (a) Class – I City (b) Rural area
(c) Urban area (d) Town area
50. How many hours in advance notice should be given to the public, as per the JERC Standards of Performance for Distribution and Transmission Licensees, for informing the public about scheduled outages (other than load-shedding) lasting more than one hour through newspapers or local TV networks?
- (a) 12 Hours (b) 32 hours
(c) 48 hours (d) 24 Hours

SECTION- B (Conventional Type) (50 Marks)

*This Section should be answered only on the **Answer Sheet** provided.
Marks for each question is indicated against it. Attempt all questions.*

1. Define Deviation in a time block for a seller of electricity as describe in CEA (Deviation Settlement Mechanism and Related Matters) Regulations, 2014, Also write down computation formula for computation of Percentage Deviation in a time block for a general seller. **(3+2=5)**
2. Write short notes on maintenance Distribution Transformer Sub-Station as mentioned in Operation and Maintenance Guidelines for lines and sub-stations issued by P&E Department. **(5)**
3. Write down the terms and conditions for taking over deposit works (Electro-mechanical) as described in General Condition for Execution & Maintenance of Deposit work (Electro-Mechanical) issued by P&E Dapartment. **(5)**
4. Write down the procedure to help an electric shock victim as described in Electricity Safety Manual issued by P&E Department. **(5)**
5. Answer the following questions with the help of SOR 2025 analysis given:
 - i) Calculate the total weight requirement of M.S. Channel 75 x 40 x 6mm for 2 locations of double Pole of 11kV line **(2)**
 - ii) Calculate the total amount (in Rs) to purchase all size of M.S Nuts & Bolt for 3 locations of double Pole of 11kV line. **(3)**

Given SOR Analysis:

Providing and erection of 4 nos. of MS Channel Iron 75 mm X 40 mm X 6 mm (7.14Kg per metre) double pole crossarm for three wire 11 kV overhead line conductors (triangular formation) complete with through bolts and nuts for clamping to the poles including drilling of holes for insulator pins/fitting bolts, nuts and washers etc and painting with primer and finished paint as required (for SP-29) as directed by the engineer in charge.					
Sl. No.	Description	Unit	Rate/ Unit	Qty.	Amount
Materials					
1138	M.S. Channel 75 x 40 x 6 mm	kg	114	44.61	5,085.62
1141	M.S. Flat Iron 40mmx6 mm	kg	114	6.32	720.76
1321	M.S. Nut & Bolt 16 x 155 mm full thread conforming to IS : 1364-2 (1992) or any amendments up to date.	kg	162	3.67	594.86
1320	M.S. Nut & Bolt 16 x 75 mm full thread conforming to IS : 1364-2 (1992) or any amendments up to date.	kg	162	2.34	378.43
1329	Aluminium Paint	Lit	187	0.20	37.40
1331	Red Oxide Paint	Lit	138	0.20	27.60

6. Write the procedure for release of new Service Connection as per JERC Supply Code. (5)
7. Write notes on procedure for temporary supply as per JERC Supply Code regulation. (5)
8. Calculate the Load security to be deposited by the consumer with the help of parameter given below (3)

(a) *Applicable Tariff*

Monthly fixed charge : Rs 90/contracted load

Monthly energy charge : Rs 11.1 for all Unit

(b) *Load factor* : 30%

(c) *Contracted load of consumer* : 4kW

(d) *Contracted load is same as Connected load*

9. What is the difference between Active and Reactive Power, and what are their prescribed units under the JERC Grid Code Regulations? (4)
10. Calculate the following power system interruption index from interruption data given below:

(i) Calculate SAIFI for 1 Month Hint: $SAIFI = \sum_{i=1}^n \frac{(A_i \times N_i)}{N_t}$ (2)

(ii) Calculate MAIFI for 1 Month Hint: $MAIFI = \sum_{i=1}^n \frac{(C_i \times N_i)}{N_t}$ (2)

(iii) Calculate SAIDI for 1 Month Hint: $SAIDI = \sum_{i=1}^n \frac{(B_i \times N_i)}{N_t}$ (4)

Given Data :

Power Interruption data for a particular area during one month is given below :

Name of 11kV Feeder (i)	N_i	C_i	A_i	B_i
Feeder A	1500	10	6	10hr 24min
Feeder B	1300	12	4	12hr 10min
Feeder C	950	15	3	5hr 40min

Where,

A_i = Total number of sustained interruptions (each longer than 5 minutes) on i^{th} feeder for the month

B_i = Total duration of all sustained interruptions (each longer than 5 minutes) on i^{th} feeder for the month

C_i = Total number of momentary interruptions (each less than or equal to 5 minutes) on i^{th} feeder for the month

N_i = No of consumer in i^{th} feeder affected due to each interruption

N_t = Total No. of consumer at 11kV in licensee's supply area

n = Number of 11kV feeders in licensee's supply area (excluding agricultural feeders)