

## POWER AND ELECTRICITY CADRE

### ENGINEERING PAPER

(Electrical Engineering)

Duration – 3 hours

#### PART – A (50 Marks)

1. Preparation of estimates for construction of 11kV and LT Lines including Distribution Transformer Sub-Stations
2. Survey, Construction, Testing, Commissioning, Operation and Maintenance of Distribution Lines and Distribution Transformer Sub-Stations
3. Knowledge of The Electricity Acts 2003 and CEA (Measurement relating to Safety and Electric Supply) Regulation 2010 including subsequent amendments
4. Operation and Maintenance of Hydel Power Station
5. Testing, Commissioning, Operation and Maintenance of Battery Banks and Battery Charger
6. Earthing – Method of earthing and method of earth resistance measurement and testing, standard norms of earth resistance value

#### PART – B (50 Marks)

1. Electric measurement and measuring instruments : Voltmeter, Frequency Meter, Wattmeter, Energy Meter (Calibration & Testing)
2. Losses in Electrical Transmission, Transformation & Distribution System (including AT & C Losses)
3. Knowledge of prevailing P&E Department SOR
4. JERC for Manipur & Mizoram (Electricity Supply Code) Prevailing Tariff Schedule
5. JERC for Manipur & Mizoram (Electricity Supply Code) Prevailing Supply Code

### ENGINEERING PAPER

(Civil Engineering)

Duration – 3 hours

#### PART – A (50 Marks)

1. Description, Care and use of Survey Instruments, Preparation of Plan, Elevation, Sectional drawings and reading & writing of design and architectural drawings
2. Construction materials commonly used, their characteristics quality and properties, bricks, stone masonry, coarse and fine aggregate, re-enforcement steel, cement, timber etc. and common test for quality test control
3. Analysis of Rates, Estimating quantities of materials & transport, preparation of estimates/method of measurement
4. Basic theory and properties of RCC curtailment of steel re-inforcement, bond length, stress-compressive, tensile, sheer, neutral axis, stress strain diagram
5. Water Cement Ratio, Slump test, Gradation of aggregate, curing and compaction of concrete, formwork

6. Hill road survey-different stages of survey, Estimating and measurement of road works, Road geometry, camber, super elevation, gradient, side slope, curves, classification of roads
7. Stone masonry works, construction, procedures for retaining wall, size of stone etc.

#### PART – B (50 Marks)

1. Identification of site for Small Hydel Project, selection of site for stream gauging, measurement of water discharge using (1) V-notch (2) Rectangular notch (3) Current meter and (4) Floating method
2. Power potential calculation and general knowledge gross head, net head, design head, rated head, head losses
3. Topographical survey of run-of-the-river schemes: scales contour intervals and particulars of survey require for river, general layout, diversion weir, water conductor/power alignment, forebay, penstock, power house & switchyard
4. General knowledge on live storage, dead storage, firm power, secondary power, load factor, installed capacity, peak load, average load, and dependability
5. Standard specifications of various items of work

**COMMON ACCOUNTS PAPER FOR OFFICERS HOLDING THE POST OF  
JUNIOR ENGINEER/DRAFTSMAN-I**

**ACCOUNTS PAPER**

**Duration – 3 hours**

**PART – A (50 Marks)**

- 1. Forms for bills and vouchers, used for payments.**
- 2. Works of inescapable nature.**
  - a) Emergent Works.
  - b) Urgent Works.
- 3. Documents of Accounts.**
  - a) Bill register
  - b) Materials account
- 4. Construction Works**
  - a) Detailed Project Report/ Detailed Estimate
  - b) Administrative approval & Expenditure Sanction
  - c) Technical sanction
  - d) Schedule of Rates (SOR)
- 5. Bidding System**
  - a) Tender with 2(two)/3(three) bid system
  - b) Invitation of tender for works
  - c) Time limit for publicity of tenders
  - d) Tendering limits of contractors enlisted with central/state government departments
- 6. Contract Management**
  - a) Earnest money, opening and accepting of tenders, rates of earnest money
  - b) Forfeit of earnest money
  - c) Performance guarantee
  - d) Signing of agreement
  - e) Security Deposit & Forms of Security deposit
  - f) Documentation of accounts
  - g) Mobilisation advance
  - h) Plan, Machinery & Shuttering material advance
  - i) Secured Advance
  - j) Measurement of work
  - k) Measurement of inadmissible items
  - l) Advance payments for work done measured/not measured
  - m) Documentation of hindrances
  - n) Extension of time (EOT) & rescheduling of milestone
  - o) Completion certificate
  - p) Deduction of income tax at source
  - q) Deduction of goods and services tax
- 7. General outlines of system of Accounts.**
  - a) System of Account

8. **Relation with Account Officer**
  - i) General
  - ii) Inspection by the Audit/Account Officers
9. **Stores**
  - i) Stock
  - ii) Tools and Plant
  - iii) Road Metal
10. **Item rate contract**

**References:**

1. **CPWD Works Manual.**
2. **Standard Operating Procedure for CPWD Works Manual**
3. **CPWD Accounts Code**

**PART – B (50 Marks)**

1. **CCS (Conduct) Rules, 1964**
  - i) Rule 3 : General
  - Rule 3 'A' : Promptness and Courtesy
  - Rule 3 'B' : Observance of Government's policies
  - ii) Rule 7 : Demonstration and Strikes
  - iii) Rule 22 : Consumption of intoxicating drinks and drugs
2. **CCS (Leave Rules), 1972**
  - i) Kinds of leave due and admissible including special kinds of leave
  - ii) Grant of and return from leave
3. **CCS (CCA) Rules, 1965**
  - i) Penalties and disciplinary authorities
  - ii) Suspension