



TRIPURA PUBLIC SERVICE COMMISSION  
AGARTALA

Advt. No.  
03/2026

Online applications are invited from bonafide citizen of India for recruitment to temporary posts of Junior Engineer, Grade-I & Grade-II, Electrical Engineering under Rural Development Department, Govt. of Tripura through the "Combined Competitive Examination Rules-2022".

Details of posts are given below:-

Item No-1.

Sl No	Name of Post	Scale of Pay	Distribution of posts as proposed for Direct Recruitment				Posts Reserved for PH candidates
			UR	SC	ST	Total	
1	Junior Engineer, Grade-I(Degree), Electrical Group-B Gazertted {Equivalent to TES Grade-V(A)}	Pay of Rs. 47,600/- Tripura Pay matrix, 2018, Cell-1 of Level-13 (Subject to revision by the Govt. from time to time) plus other admissible allowances.	03 (01 No. of post reserved for Women)	01	01	05	Including 01 no. of PH (Blindness and low vision)

Educational and other qualifications required for direct recruitment:

Essential:- i) Degree in Electrical Engineering from a recognized University/Institution.

Age:- 18-40 years as on 12-06-2026 . Upper age limit is relaxable by 5(five) years in case of ST/SC/PH candidates and Government servants. Provided that Govt. servants belonging to ST/SC/PH category shall not get this relaxation over and above the general relaxation of 5(five) years available to them.

Item No-2.

Sl No	Name of Post	Scale of Pay	Distribution of posts as proposed for Direct Recruitment				Posts Reserved for PH candidates
			UR	SC	ST	Total	
1	Junior Enineer, Grade-II, Diploma Electrical Group-C Non-Gazertted {equivalent to TES Grade-V(B)}	Rs.34,700/- as per Tripura Pay Matrix, 2018 , Cell-1 of Level-10 (Subject to revision by the Govt. from time to time) plus other admissible allowances.	02	00	01	03	Including 01 No. of PH(Blindness & Low vision)

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Educational and other qualifications required for direct recruitment:

**Essential:** i) Must have a Diploma in Electrical Branch of Engineering or its equivalent academic qualification from a recognized University/Institution.

ii) Permanent Resident Certificate of Tripura (PRTC) would be required while applying for job applicable for both Item No 1 & 2.

Desirable:

1. Knowledge of Bengali or Kokborok applicable for Item No 1 & 2.

Age:- Upto 40 years as on 12-06-2026 . Upper age limit is relaxable by 5(five) years in case of ST/SC/PH candidates and Government servants. Provided that Govt. servants belonging to ST/SC/PH category shall not get this relaxation over and above the general relaxation of 5(five) years available to them.

The total & category wise number of vacancies is subject to increase or decrease depending upon the requirement of the Department /other Departments under the purview of Tripura Engineering Service.

For detailed classification of PH category(Annexure-A), Women Reservation(Annexure-B) & detailed syllabus & scheme of examination to the post of Junior Engineer, Gr-I(Degree) & Gr-II(Diploma),Electrical Please visit <https://tpsc.tripura.gov.in>

**Selection Procedure: The selection procedure will be governed as per No.F.6(14)-PWD(E)-2022/13642-91 dated 27-10-2022 and these Rules may be called "Combined Competitive Examination Rules,2022", and subsequent amendments if there be any for direct recruitment to Engineers to different Department of Govt. of Tripura.**

The last date of submission of online application is 12-06-2026 (upto 5.30 PM). The application(s) received after the closing date will not be entertained.

Selection Process:

The examination shall have the following three parts namely:

Preliminary Examination (MCQ Type) carrying 100 marks. The Preliminary Examination is meant to serve as a screening test only for the purpose of selection of candidates for the Main Examination. The marks obtained in this examination by the candidates will not be considered for final selection. A limited number of candidates, maximum 05(five) times of total posts (category wise) will be selected merit wise on the basis of the result of Preliminary Examination, subject to securing minimum qualifying marks (40% for UR & 30% for reserved category candidates). Only those candidates who will be declared qualified at the Preliminary Examination will be eligible for admission to the Main Examination.

Main (written) Examination carrying 500 marks. The minimum cut off marks to qualify for interview cum Personality test in main Examination is 40% in aggregate for UR & 30% in aggregate for Reserved Category Candidates. The selected candidates on the basis of results of the Main(Written) Examination will be allowed to appear in the Interview-cum-Personality Test.

An Interview-cum-Personality Test carrying 50 marks.

Preliminary Examination: The preliminary examination will consist of only one paper viz a paper on "General Studies & Engineering Aptitude". The paper will be of an Objective Type consisting of 100 Multiple Choice questions. The paper will carry 100 Marks and will be of 2(two) hours duration.



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The paper will include questions covering the following field of knowledge:

- i) English Composition - 10 marks
  - ii) General Knowledge & Current events of Local, National & International Importance - 10 marks.
  - iii) Engineering Aptitude (in related branch) - 80 marks
- Total - 100 marks

Negative marking will be as per TPSC norms.

Main Examination:

Compulsory:

General Studies                      100 marks                      1 hour duration

Engineering (Optional) Papers:    200 marks in each paper                      3 hours duration

- a) Electrical Engineering Paper-I
- b) Electrical Engineering Paper-II

Interview cum Personality test

- i) The Commission shall conduct an Interview-cum personality test of those candidates, who have obtained qualifying marks in the Main (written part) of the examination. The pattern of the Interview-cum-Personality Test shall be decided by the Commission in accordance with the requirement of the service and the post for which the examination is conducted.
- ii) The Interview-cum-Personality Test shall be to assess the personal qualities of a candidate e.g., his intellectual ability, social traits, interest in current affairs, critical power of judgment, variety and depth of interest, ability for leadership, moral integrity etc.
- iii) In no case shall a candidate be called for Interview-cum-Personality Test unless he/she appears in all the papers of the Main examination.

Ratio for calling of Candidates for Interview-Cum-Personality Test provided that he/she secured minimum cut off marks in the main exam:

**Table-A**

No of vacancies	No of candidates to be called for interview cum Personality Test (Category wise)
1(one)	5(five) candidates
2(two)	8(eight) candidates
3(three)	3(three) times the number of vacancies.

**N.B. i) Candidates shall be called to sit in the Main Examination at the ratio of 1:5 of the number of notified vacancies, and for the Interview-cum-Personality Test in the ratio prescribed at Table-A above, in either case, candidates shall be called strictly in order of merit obtained in the preceding stage of the examination.**

**ii) Mere attainment of the qualifying marks (40% for Unreserved and 30% for Reserved Category candidates) in the Preliminary or Main Examination shall not, by itself, entitle any candidate to be called for the Main Examination or the Interview-cum-Personality Test, as the case may be.**



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iv) Final selection shall be made in order of merit on the basis of the marks obtained by a candidate in aggregate in the Main (written) examination and the marks obtained by him/her in the Interview-cum-Personality Test and following other norms of the TPSC in this regard. If a candidate remains absent in Interview-cum-Personality Test his/her candidature will not be considered for final selection.

v) In the list of recommendation, merit position of candidates securing equal marks will be finalized as per their seniority of age. The same procedure is to be followed for preparing waiting list, if there be any.

Further, provided that, in the list of recommendation, merit position of candidates securing equal marks in aggregate and also of the same age will be decided on the basis of percentage of marks obtained in the minimum educational qualification prescribed in Recruitment Rules.

vi) Ranks of the candidates are not prepared for the candidates beyond the recommendation list & wait list (if there be any).

Other Important information:

1. Online Application Portal:

(a) Candidates will have to submit application through Online Application Portal only. The Commission will not entertain any hard copy application. Before submission of online application, read carefully the necessary instructions regarding filling up of online application.


(b) Link for online Application Portal will be available on Commission's website from 19-05-2026 to 12-06-2026 (5.30 PM). Before applying for the post, an applicant shall register his/her bio- data particulars through One Time Profile Registration (OTPR) on the Commission's Website viz. <https://tpsc.tripura.gov.in>. Once applicant registers his/her particulars, a User ID is generated and sent to his/her registered mobile number and email ID. Applicants need to apply for the post using the OTPR User ID through Commission's website.

(c) Applicants should avoid submitting multiple applications. However, if due to any unavoidable circumstances, any applicant submits multiple applications then he/she must ensure that the application with latest Receipt Number is complete in all respects.

(d) In case of multiple applications, the application with latest Receipt Number shall only be entertained by the Commission and fee paid against one Receipt Number shall not be adjusted against any other Receipt Number.

2. (a) Candidates are not required to upload/submit with their respective applications any certificate in support of their claims regarding Age, Educational Qualifications, Scheduled Castes/ Scheduled Tribes etc.

(b) Applicants must be in possession of the prescribed minimum qualification(s) & others for the post on the closing date for submission of application as mentioned in the advertisement. Their admission at all the stages of examination for which they are admitted for the Examination will be purely provisional, subject to their satisfying the prescribed eligibility conditions. Mere issue of admission certificate to the candidate will not imply that his/her candidature has been finally cleared by the Commission. After publication of result of Preliminary Examination, successful candidates will be asked to submit self attested copies of the relevant documents to the Reception Counter of TPSC or online within a specified time failing which the candidature of candidates will be summarily rejected.

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On scrutiny of documents if a candidate found ineligible as per terms and condition of the advertisement (including prescribed recruitment fees) his/ her candidature will be rejected. If employed, must apply through proper channel or attach a "No Objection Certificate" from his /her employer. If the application is not routed through proper channel, at the day of interview candidates will have to submit '**no objection' certificate**'.

In that no-objection certificate, it is to be clearly mentioned that your employer has 'No objection' if you are considered for recruitment to the post for which you have applied for.

(3) Rate of Recruitment Fees

(a) i) Group-B Gazetted posts:-Rs. 350/- (Rupees three hundred and fifty) for General Candidates and Rs.250/- (Rupees two hundred & fifty) only for ST/SC/ BPL card holders/Physically Handicapped Candidates.

ii) Group-C non-Gazetted Posts: - Rs.200/- (Rupees two hundred) only for General Candidates and Rs.150/- (Rupees one hundred & fifty) only for ST/SC/ BPL card holders/Physically Handicapped Candidates.

b) Recruitment fee so deposited, is non-refundable.

c) If a candidate submits incomplete application in respect of terms & condition of the Advertisement and without requisite recruitment fee, his/her candidature will be rejected.

(4) Decision of the Commission as to the eligibility or otherwise of a candidate at any stage of the selection process shall be final.

(5) Assessment and evaluation of necessary documents done by the Commission shall be final and shall not be open to scrutiny by any external authority.

(6) **The Examination venue shall be closed 10 minutes before the Scheduled Commencement of the Examination and no candidate shall be allowed to enter, thereafter. No functionary has any Authority to allow in this regard.**

(7) Candidates are at liberty to make correction(s) in any field(s) of the 'Online Application Form' for the respective advertisement after closing day of submission of online application window of the said advertisement. The window for making correction(s) only will remain open for 7(seven) days from the closing day of submission of 'Online Application Form'.


After completion of such process the Commission will not entertain any application/representation for making correction(s) any field(s) of the 'Online Application Form'. Candidates are hereby strongly advised to exercise utmost care while filling out the online application form and while making any corrections during the correction window.

(8) Candidates are instructed to visit the Commission's website for information regarding steps of recruitment process time to time.

(9) Mobile Phone/Electronic Gadgets etc. are banned in the Campus of the Examination Premises/Interview Premises. Any Phone/Electronic Gadget found in possession of any candidate in the Examination Premises/Interview premises shall be confiscated forthwith and he/she may be debarred from appearing at the Examination/Interview and also for the Examination(s)/Interview to be conducted by the Commission in future Violation of such instruction will be dealt as per Law.

10) Any kind of enquiry regarding eligibility criteria, candidates are advised to approach the concerned Government Department. The Commission will not entertain any representation in this regard.

(11) Entry in the Examination hall/Interview Premises with Jacket, Coat, Pull over & this type of garments will not be allowed.

  
7/5/2026  
(S. Mog, IAS)  
Secretary,

Tripura Public Service Commission

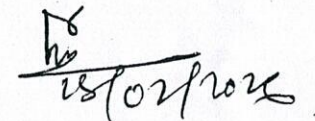
269

27

## ANNEXURE- A

Distribution of post

Sl. No.	Name of Post	Scale of Pay	Proposed for Direct Recruitment				Reservation for Ex-servicemen	4% Reservation for all category of PH shall be reserved Horizontally out of which 1% reservation for each category of PH			
			SC	ST	UR	Total		Blindness & low vision	Deaf & hard of hearing	Locomotor disability including cerebral palsy, leprosy cured, dwarfism, acid attack victims & muscular dystrophy	Autism, intellectual disability, specific learning disability & mental illness
1	Junior Engineer, Gr-I (Degree), Electrical Group B, Gazetted	Pay of ₹ 47,600 Tripura pay matrix, 2018, Cell-1 of Level-13	1	1	3	5	UR-0 ST-0	01	0	0	0
2	Junior Engineer, Gr-II (Diploma), Electrical Group C, Non Gazetted	Pay of ₹ 34,700 Tripura pay matrix, 2018, Cell-1 of Level-10	0	1	2	3	UR-0 ST-0	01	0	0	0



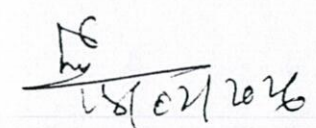
[Er. K. Tripura]  
Chief Engineer, RD

267

ANNEXURE- B

Distribution of post reserved for Women candidates

Sl. No.	Name of Post	Scale of Pay	Proposed for Direct Recruitment				33% Reservation for Women candidates			
			SC	ST	UR	Total	UR	ST	SC	Total
1	Junior Engineer, Gr-I (Degree), Electrical Group B, Gazetted	Pay of ₹ 47,600 Tripura pay matrix, 2018, Cell-1 of Level -13	1	1	3	5	1	0	0	1
2	Junior Engineer, Gr-II (Diploma), Electrical Group C, Non Gazetted	Pay of ₹ 34,700 Tripura pay matrix, 2018, Cell-1 of Level -10	0	1	2	3	0	0	0	0



[Er. K. Tripura]  
Chief Engineer, RD

122/17

**SCHEDULE — I**  
**COMPULSORY FOR ALL GRADE/POSTS/BRANCHES**

**Preliminary Examination\***: The paper will carry 100 Marks (MCQ Type) and will be of 2 (two) hours duration.

The paper will include questions covering the following field of knowledge:

- |  |   |                  |
|--|---|------------------|
| i) English Composition   | - | 10 marks         |
| ii) General Knowledge & Current events of<br>Local, National & International<br>Importance | - | 10 marks         |
| iii) Engineering Aptitude<br>(in related branch)   | - | 80 marks         |
| <b>Total</b>   | - | <b>100 marks</b> |

Negative marking will be as per TPSC norms.



121/80

### SCHEDULE — II

Clause No	Description																
<b>I</b>	<b>GENERAL STUDIES (COMPULSORY FOR ALL GRADE/POSTS/BRANCHES)</b>																
	<b>TOTAL MARKS — 100</b>																
	<b>Duration of examination — 1 hour</b>																
	<b>The break up of marks on various topics will be as follows:-</b>																
	<table border="1"> <thead> <tr> <th>Topic</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>i) Comprehension of a given passage</td> <td>20</td> </tr> <tr> <td>ii) Usage (corrections)</td> <td>10</td> </tr> <tr> <td>iii) Vocabulary (synonyms &amp; antonyms, idioms &amp; phrases)</td> <td>10</td> </tr> <tr> <td>iv) General knowledge (Questions will include knowledge of Indian and geography of such a nature which the candidates should be able to answer without any special study. Questions on Tripura, its historian topography will also be included.)</td> <td>20</td> </tr> <tr> <td>v) Current Affairs (The questions will include knowledge of Indian current events and of such matters of every day observation and experience in their scientific aspects as may be expected of an educated person who has not made a special study of any scientific subject.)</td> <td>20</td> </tr> <tr> <td>vi) Mental Ability.</td> <td>20</td> </tr> <tr> <td><b>Total</b></td> <td><b>100</b></td> </tr> </tbody> </table>	Topic	Marks	i) Comprehension of a given passage	20	ii) Usage (corrections)	10	iii) Vocabulary (synonyms & antonyms, idioms & phrases)	10	iv) General knowledge (Questions will include knowledge of Indian and geography of such a nature which the candidates should be able to answer without any special study. Questions on Tripura, its historian topography will also be included.)	20	v) Current Affairs (The questions will include knowledge of Indian current events and of such matters of every day observation and experience in their scientific aspects as may be expected of an educated person who has not made a special study of any scientific subject.)	20	vi) Mental Ability.	20	<b>Total</b>	<b>100</b>
Topic	Marks																
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vi) Mental Ability.	20																
<b>Total</b>	<b>100</b>																
<b>II.</b>	<b>ENGINEERINGS SUBJECT PAPER - I &amp; II(OPTIONAL FOR ALL GRADES / BRANCHES)</b>																
	<b>TOTAL MARKS — 200 (each paper)</b>																
	<b>Duration of examination — 3 hours</b>																
	<b>The break up of marks will be as follows:</b>																
	<table border="1"> <thead> <tr> <th>Topic</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>i) 15 questions of 6 marks each having answers restricted to 40 words.</td> <td>90</td> </tr> <tr> <td>ii) 40 multiple choice type questions of 2 marks each</td> <td>80</td> </tr> <tr> <td>iii) 05 numerical questions of 6 marks each</td> <td>30</td> </tr> <tr> <td><b>Total</b></td> <td><b>200</b></td> </tr> </tbody> </table>	Topic	Marks	i) 15 questions of 6 marks each having answers restricted to 40 words.	90	ii) 40 multiple choice type questions of 2 marks each	80	iii) 05 numerical questions of 6 marks each	30	<b>Total</b>	<b>200</b>						
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<b>Total</b>	<b>200</b>																

Junior Engineer (Degree holder)  
Grade - V(A)  
**ELECTRICAL ENGINEERING**  
**PAPER — I**

**Total Marks — 200**  
**Duration of Examination — 3 Hours**

**1. EM THEORY:**

Electric and magnetic fields. Gauss's Law and Amperes Law. Fields in dielectrics, conductors and magnetic materials. Time varying fields. Plane-Wave propagating in dielectric and conducting media. Transmission lines.



10/1/68

## 2. ELECTRICAL MATERIALS:

Conductors, Semi-conductors and Insulators. Super-conductivity. Insulators for electrical and electronic applications. Magnetic materials. Ferro and ferri magnetism. Ceramics, Properties and applications. Hall effect and its applications. Special semi conductors.

## 3. ELECTRICAL CIRCUITS

Circuits elements. Kirchhoff's Laws. Mesh and nodal analysis. Network Theorems and applications. Natural response and forced response. Transient response and steady state response for arbitrary inputs. Properties of networks in terms of poles and zeros. Transfer function. Resonant circuits. Three phase circuits. Two-port networks. Elements of two-element network synthesis.

## 4. MEASUREMENTS AND INSTRUMENTATION

Units and Standards. Measurement of current, Voltage, power, Power-factor and energy. Indicating instruments. Measurement of resistance, inductance, Capacitance and frequency. Bridge measurements. Electronic measuring instruments. Digital Voltmeter and frequency counter. Transducers and their applications to the measurement of non-electrical quantities like temperature, pressure, flow-rate displacement, acceleration, noise level etc. Data acquisition systems. A/D and D/A converters.

## 5. CONTROL SYSTEMS.

Block diagrams and signal flow graphs and their reduction. Errors for different type of inputs and stability criteria for feedback systems. Stability analysis using Routh-Hurwitz array, Nyquist plot and Bode plot. Root locus and Nicols chart and the estimation of gain and phase margin. Basic concepts of compensator design. State variable matrix and its use in system modelling and design. Sampled data system and performance of such a system with the samples in the error channel. Stability of sampled data system. Elements of non-linear control analysis. Control system components, electromechanical, hydraulic, pneumatic components.

# ELECTRICAL ENGINEERING PAPER II

Total Marks — 200  
Duration of Examination — 3 Hours

## 1. ELECTRICAL MACHINES AND POWER TRANSFORMERS.

Magnetic Circuits. Construction and testing. Equivalent circuits. Losses and efficiency. Regulation. Auto-transformer, 3-phase transformer. Parallel operation.

Basic concepts in rotating machines. EMF, torque, basic machine types. Construction and operation, leakage losses and efficiency.

B.C. Machines. Construction, Excitation methods. Circuit models. Armature reaction and commutation. Generators and motors. Starting and speed control. Testing, Losses and efficiency.

10/67

Synchronous Machines. Construction. Circuit model. Operating characteristics. Synchronous reactance. Efficiency. Voltage regulation. Salient-pole machine, Parallel operation. Hunting. Short circuit transients.

Induction Machines. Construction. Principle of operation. Rotating fields. Characteristics and performance analysis. Determination of circuit model. Circle diagram. Starting and speed control. Fractional KW motors. Single-phase synchronous and induction motors.

## 2. POWER SYSTEMS

Types of Power Stations, Hydro, Thermal and Nuclear Stations. Pumped storage plants. Economics and operating factors. Power transmission lines. Modeling and performance characteristics. Voltage control. Load flow studies. Optimal power system operation. Load frequency control. Symmetrical Components. Per Unit representation. Fault analysis. Transient and steady-state stability of power systems. Equal area criterion. Power system Transients. Power system Protection Circuit breakers. Relays. HVDC transmission.

## 3. ANALOG AND DIGITAL ELECTRONICS AND CIRCUITS

Semi conductor device physics, PN junctions and transistors, circuit models and parameters, FET, Zener, tunnel, Schottky, photo diodes and their applications, rectifier circuits, voltage regulators and multipliers, switching behavior of diodes and transistors. Small signal amplifiers, biasing circuits, frequency response and improvement, multistage amplifiers and feed-back amplifiers, D.C. amplifiers, Oscillators. Large signal amplifiers, coupling methods, push pull amplifiers, operational amplifiers, wave shaping circuits. Multivibrators and flip-flops and their applications. Digital logic gate families, universal gates-combination circuits for arithmetic and logic operational, sequential logic circuits. Counters, registers, RAM and- ROMs.

## 4. MICROPROCESSORS

Microprocessor architecture-Instruction set and simple assembly language programming. Interfacing for memory and I/O. Applications of Micro-processors in power system.

## 5. COMMUNICATION SYSTEMS

Types of modulation; AM, FM and PM. Demodulators. Noise and bandwidth considerations. Digital communication systems. Pulse code modulation and demodulation. Elements of sound and vision broadcasting. Carrier communication. Frequency division and time division multiplexing, Telemetry system in power engineering.

## 6. POWER ELECTRONICS

Power Semiconductor devices. Thyristor. Power transistor, GTOs and MOSFETS. Characteristics and operation. AC to DC Converters; 1-phase and 3-phase DC to DC Converters; AC regulators. Thyristor controlled reactors; switched capacitor networks. Inverters; single-phase and 3-phase. Pulse width modulation. Sinusoidal modulation with uniform sampling. Switched mode power supplies.

8

Junior Engineer (Diploma holder)  
Grp - V (B)

**ELECTRICAL ENGINEERING**  
**PAPER- I**

**Total Marks - 200**  
**Duration of Examination— 3 Hours**

**1. POWER PLANT ENGINEERING**

Conventional sources of Energy - Fossil fuels, Hydroelectric and nuclear.

Thermal Power Station:

Hydro-electric Power Stations:

Nuclear Power Plants:

Diesel Power Plant & Gas-turbine Plants:

Elementary idea about Major Electrical Equipments used in Power Stations:

Combined working of power plants

Control of Active and Re-active power-Load-frequency control

Performance of power \_stations and Economic considerations:

**2. ELECTRICAL DESIGN & ESTIMATING**

Design and Specification:

Design of an electrical installation of machines in a workshop (Maximum 4 machines) [out of 4 machines at least 1 no. should be of 1-phase]

I.E. rules related to Power Sub-circuit.

Design of Electrical Machine:

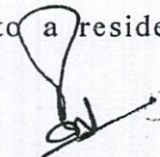
**Design of a 3-phase transformer up to 200 KVA: -**

Estimation of a small residential complex.

Estimation of lighting scheme of a large Auditorium and Public Health Centre,

Estimation of electrical installation of machines (not more than four) in a workshop

Estimation for giving 3 - phase O.H. service connections to a residential building.



102/61

### 3. ELECTRICAL MACHINES

#### GENERAL INTRODUCTION OF ROTATING MACHINE

D.C Machines:

D.C. Generator

D.C. Motors:

TRANSFORMERS

1-phase Transformers:

Principles of 1-phase Autotransformer

Three-phase transformer

Alternator

3-Phase Induction Motor

Synchronous Motor:

Fractional H.P. Motors:

### 4. TRANSMISSION & DISTRIBUTION POWER

Transmission System

Constructional Features of Transmission & Distribution Lines

Mechanical Features of Overhead lines

Spacing of conductors, length of span, Relevant I.E. Rules

Electrical features of Overhead lines

Power Factor Improvement

Using Static condenser and Synchronous condenser - related problems

Distribution System

Sub-stations

Extra High Voltage DC System of Transmission

## ELECTRICAL ENGINEERING PAPER— II

Total Marks - 200

Duration of Examination-3 Hours

### 1. BASIC ELECTRONICS

Passive & Active Circuit Elements

*Familiarity with the following components: —*

RESISTORS, FUSES, CAPACITORS, INDUCTOR,

Voltage source and current source

AC and DC signals, Transformer

RELAYS, SWITCHES, CABLES AND CONNECTORS

ZENER DIODE

BIPOLAR TRANSISTOR

FIELD EFFECT TRANSISTOR

UNIUNCTION TRANSISTOR

THYRISTOR

OPTOELECTRONICS

INTEGRATED CIRCUITS

### 2. ELECTRICAL MEASUREMENT & MEASURING INSTRUMENTS


Definition & brief explanations of:

Range, sensitivity, true & indicated value, Errors (including limiting errors),

Resolutions, Accuracy, Precision and instrument efficiency.

Classification of instruments:

Basic Requirements for measurements:



Different types of instruments:  
 Voltmeter, ammeter, multimeter, energy-meter.  
 Multi-range ammeter and voltmeter  
 Methods of measuring diff. Electrical quantities  
 1-phase Induction type energy meter.  
 Errors adjustments  
 Phantom loading  
 Testing of energy meters.  
 Classifications of resistances  
 Description of Meggar.  
 Measurement of capacitance:  
 Magnetic measurements:  
 Instrument Transformers:  
 CT  
 PT or VT  
 Diff. Types of faults

**3. CIRCUIT THEORY**

**NETWORKS & A.C. FUNDAMENTALS**

Single-phase A.C Circuits:  
 R-L-C Series Circuit:  
 Parallel Circuit:

**RESONANCE & SELECTIVITY**

SERIES RESONANCE  
 PARALLEL RESONANCE:

**TRANSIENTS (FOR ELECTRICAL ENGINEERING ONLY)**

Steady State & Transient Response.  
 POLYPHASE CIRCUITS:  
 COUPLED CIRCUITS:  
 LAPLACE TRANSFORMATIONS:  
 FILTERS:  
 LAPLACE TRANSFORMATIONS

**4. ELECTRICAL MEASUREMENT & CONTROL**

Measurement of Power/Energy & Industrial Metering:  
 Digital energy-meter  
 Operation & Utility of Tri-vector meter.  
 Digital frequency meter  
 (i) Mech. Resonance type (ii) Electrical resonance type Frequency meter Power  
 manager.  
 Synchroscope:  
 Phase-sequence meter  
 Digital multimeter  
 C.R.O.—block diagram representation & operation, applications  
 Use of dual trace oscilloscope.  
 Function generator—  
 Frequency Counter—  
 Elements of Servomechanism:  
 Super Motor—

106 5

**Measurement of Non-electrical quantities:**

**Study of the following transducers:**

Piezo-electric crystal.  
Thermistor.  
Strain gauge.  
Proximity switch.  
Thermocouple.  
LVDT.  
Tachogenerator (a.c. & d.c.)  
Capacitive transducers  
Seismic transducers.


**CONTROL SYSTEM:**

**Brief descriptions with physical example (along with schematic diagram) of:**

On-off controller.  
Proportional controller.  
Proportional plus derivative controller.  
P+I controller.  
P + D + I controller.

**5. ELECTRICAL INSTALLATION, MAINTENANCE AND TESTING**

General guidelines for Installation:  
Loading & unloading of heavy electrical m/c:  
Electrical Installation requirements:  
Earthing Installation:  
General requirement of electric installation according to I.E. Rules:  
Motor generator set for battery charging and to supply various loads.  
Synchronization of two alternators.  
Maintenance of electrical installations  
Insulations  
Troubleshooting  
Repair & maintenance with maintenance Schedule of  
D.C. machine  
Transformer  
Induction motor  
Switchgear & Substation:  
Relays  
Brief account of maintenance of contractors  
Storage Batteries  
OH lines and Cables  
Testing  
Electric Safety Regulations

  
27/10/2022  
Deputy Secretary  
Public Works Department