



2676429/2024/PRE EXAMS-1

STATE BOARD OF TECHNICAL EDUCATION AND TRAINING

SCC

సాంకేతిక విద్య మరియు శిక్షణ మండలి

TELANGANA, HYDERABAD

తెలంగాణ , హైదరాబాద్

S. No.

Regd. No.:

Last date of Receipt of filled in applications: - -2024

క్ర. సం.

రి.సం.

దరఖాస్తుల స్వీకరణకు ఆఖరు తేది: - -2024

(SUPERVISOR MINES/SUPERVISOR FOR UTILIZATION)

APPLICATION FOR SUPERVISOR (CERTIFICATE FOR COMPETENCY)

సూపర్ వైజర్ (కాంపీటెన్సీ సర్టిఫికేటు ) పరీక్ష దరఖాస్తు

EXAMINATION-2024

Hall ticket No.

ప్రవేశ పత్ర సంఖ్య.

Note:

Read carefully "Instructions and information to candidates"

Before furnishing the information required below.

సూచన:

“అభ్యర్థులకు సూచనలు సమాచారము”

చదివిన తర్వాత దిగువ వివరములను పూరించవలెను.

Affix latest photograph  
of passport size attested  
by a Gazetted Officer

గెజిటెడ్ ఆఫీసరు

ధృవీకరించిన పాస్ పోర్టు

పైజు ఫోటోను ఇక్కడ

అతికించుము

1. Name of the Polytechnic :  
(Examination center)

పాలిటెక్నిక్ పేరు (పరీక్ష కేంద్రము)

2. Name of the candidate in full (in :  
Capital Letters)

అభ్యర్థి పూర్తి పేరు

3. Father's Name :

తండ్రి పేరు

4. Date of Birth (Enclose Proof) :

పుట్టిన తేది (ఆధార పత్రము

జతపరుచవలెను)

a) Age as on 01- 07-2024

01-07 -2024 నాటికి వయస్సు

5. Address for communication with pin :  
code (in Capital Letters) (Enclose  
Proof)

ఉత్తర ప్రత్యుత్తరములకై పిన్ కోడ్ తో సహా

చిరునామా (ఆధారపత్రం జతపరుచవలెను)

6. a) Name of the qualifying :  
Examination passed SSC or  
equivalent

ఉత్తీర్ణత పొందిన అర్హత గల పరీక్ష SSC

లేదా సమాన అర్హత

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- b) Month and year of passing SSC or :  
its equivalent  
SSC లేక సమాన అర్హత గల పరీక్ష ఉత్తీర్ణత  
పొందిన మాసము, సంవత్సరము
- c) Month and year of passing ITI :  
examination  
ITI ఉత్తీర్ణత మాసము, సంవత్సరము
- d) Whether undergone one-year :  
practical training under National  
Apprenticeship Act?  
జాతీయ అప్రెంటిస్ షిప్ యాక్ట్ ననుసరించి  
ఒక సంవత్సరము ప్రాక్టికల్ శిక్షణ  
పొందియుండెనా?
7. Medium in which the candidate :  
wants to write Examination (English  
or Telugu or Urdu)  
అభ్యర్థి పరీక్ష వ్రాయదలచిన భాషా  
మాధ్యమము (ఇంగ్లీషు లేదా తెలుగు లేదా  
ఉర్దూ)
8. Particulars of Examination Fee of :  
Rs. 2,000/- Paid  
పరీక్ష రుసుము రూ|| 2,000/- చెల్లింపు  
వివరములు
- a) Name of the Bank :  
క) బ్యాంకు పేరు
- b) Branch at which Paid :  
ఖ) చెల్లింపు చేసిన బ్యాంకు శాఖ
- c) D.D. No. :  
గ) డిమాండు డ్రాఫ్టు సంఖ్య
- d) Date :  
ఘ) తేది

Signature of Applicant  
దరఖాస్తుదారుని సంతకము

## CERTIFICATE OF EXPERIENCE

## పూర్వనుభవ ధృవీకరణ పత్రము

| Name of the Firm/Company<br>పనిచేసిన సంస్థ పేరు                                       | Location of the establishment work with address<br>సంస్థ చిరునామా | Designation and nature of work done<br>పనిచేసిన హోదా మరియు పనీతీరు | Period               |            | Experience in Underground Mining |            |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------|----------------------|------------|----------------------------------|------------|
|                                                                                       |                                                                   |                                                                    | From<br>వ్యవధి నుండి | To<br>వరకు | From<br>నుండి                    | To<br>వరకు |
|                                                                                       |                                                                   |                                                                    |                      |            |                                  |            |
| Total period of service as on 01-07-2024:<br>01-07-2024 నాటికి పనిచేసిన మొత్తం కాలము: |                                                                   |                                                                    |                      |            |                                  |            |
| SIGNATURE OF THE CANDIDATE<br>దరఖాస్తుదారుని సంతకము                                   |                                                                   |                                                                    |                      |            |                                  |            |

- a) After personal verification I have satisfied myself with the facts furnished by the candidate and certify that the candidate has engaged himself in the Electrical installation work and as such he may be permitted to appear for the Supervisor (Certificate of Competency) Examination.
- క) దరఖాస్తు దారు యిచ్చిన సమాచారముని వ్యక్తిగతముగా పరిశీలించి, తృప్తిచెంది ఈ దరఖాస్తుదారు ఎలక్ట్రికల్ ఇంస్టలేషన్ పనిలో పాల్గొనెననియు, కావున సూపర్ వైజర్ (కాంపెటిన్స్ సర్టిఫికేట్) పరీక్షకు హాజరగుటకు అనుమతించదగును.
- b) The candidate is a full-time paid working technician during the above period.
- ఖ) ఈ దరఖాస్తుదారు పైన తెల్పిన వ్యవధిలో పూర్తికాలపు చెల్లింపుతో సాంకేతికజ్ఞునిగా ఉండెను.
- c) The signature of the candidate is attested by me.
- గ) దరఖాస్తుదారుని సంతకము నాచే ధృవీకరించబడినది.
- d) The relevant record of candidates employed shall be furnished, on demand.
- ఘ) ఉద్యోగులైన దరఖాస్తుదారుల సంబంధిత రికార్డులను కోరినప్పుడు, సమర్పించగలము.

Seal:

ముద్ర:

Date:

తేది:

SIGNATURE OF THE  
EMPLOYER  
& DESIGNATION  
యజమాని సంతకము, హోదా

After careful examination of the facts I certify that the candidate has put in the above service in Electrical installation work.

పైన తెల్పిన సమాచారమును శ్రద్ధతో పరిశీలించి, దరఖాస్తుదారు ఎలక్ట్రికల్ ఇంస్టలేషన్ పనిలో అనుభవము పొందినట్లు ధృవీకరించుచున్నాను.

Seal:

ముద్ర:

Date:

తేది:

Counter Signature  
by Deputy Electrical Inspector  
(Electrical Inspectorate)  
Divisional Engineer/TG Transco/TG GENCO/TG  
DISCOM  
ఉప విద్యుత్ తనిఖీ (ఎలక్ట్రికల్ ఇన్స్పెక్టరేట్ )  
డివిజనల్ ఇంజనీర్/టి.ఎస్.ట్రాన్స్ కో/టి.ఎస్.జెన్ కో/టి. ఎస్. డిస్ కం

## DECLARATION BY THE CANDIDATE

I hereby solemnly and sincerely declare that the information, given above is true and I have no where committed any act of commission or omission to hide the facts, intentionally or inadvertently. I agree to forego my Examination in case of the fraudulent methods or wrong information detected at any later date. Any other information will be furnished wherever is required.

పైన తెల్పిన సమాచారము నిజమనియు, బుద్ధిపూర్వకముగా కాని, అనాలోచితముగా కాని ఏ విషయములను దాచలేదనియు ప్రమాణము చేసి ప్రకటించుచున్నాను. భవిష్యత్తులో పైన యిచ్చిన సమాచారము తప్పు లేదా అక్రమమని తేలినచో, నా పరీక్ష రద్దుకంగీకరించుచున్నాను. మరే యితర సమాచారమైనను కోరినప్పుడు యివ్వగలను.

SIGNATURE OF THE  
CANDIDATE  
దరఖాస్తుదారుని సంతకం

List of Enclosures:

1. Bank Draft in Original for the requisite Amount of Rs. 2000/-
2. Attested copy of Certificate showing the Date of Birth.
3. General qualification (s) Certificate, if any.
4. Photo I.D.
5. Address proof.
6. Experience Certificate.

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జతపరచిన వాటి జాబితా:

1. రూ|| 2000 /- అసలు బ్యాంకు డ్రాఫ్టు
2. పుట్టిన తేది ధృవీకరణ పత్రము
3. సాధారణ విద్యార్హతల ధృవీకరణ పత్రము (ఉండినచో)
4. ఫోటో ఐ. డి.
5. చిరునామా రుజువు పత్రము.
6. అనుభవ ధృవీకరణ పత్రం

**STATE BOARD OF TECHNICAL EDUCATION AND TRAINING**  
**TELANGANA, HYDERABAD**  
**EXAMINATION FOR THE GRANT OF COMPETENCY CERTIFICATE**  
**TO ELECTRICAL SUPERVISOR**  
**PAPER - I ELECTRICAL THEORY**  
**MODEL PAPER**

**Time: 03 Hours****Max. Marks: 50**

Note: (1) Question No. 01 and 02 are compulsory, each carries 09 marks.

(2) Answer any 04 from (Q.No. 03 to 10) remaining 08 questions, each carries 08 marks.

1. (a) State and explain Ohm's Law and mention the units in which quantity involved are measured. 4  
 (b) When two resistances are connected in series the total resistance of the circuit is 6 Ohms. Find the value of the two. 5
2. (a) Draw the external and internal characteristics of DC shunt, series and compound generators and mention their practical applications. 4  
 (b) Why a starter is necessary for D.C. Motor? Explain with a neat sketch. 5
3. What steps do you take to rectify the following defects? 3
  - a) A.D.C. Shunt Generator failing to build up voltage. 2
  - b) A.D.C. shunt motor running in wrong direction. 3
  - c) A three-phase induction motor running in wrong direction. 3
4. Enumerate the various steps which have to be taken to ensure successful parallel connection of one alternator with another which is already connected to bus bars and which is supplying the load. 5  
 How would you then proceed to make the newly connected alternator to share the total load? 3
5. (a) Explain the principle of working of an induction motor. 4  
 (b) A 4-pole alternator running of 2000 R.P.M. supplies a six-pole induction motor. What is the actual speed of running of motor if the slip of 3%? 4
6. (a) What are the essential tests to be conducted on a wiring installation after completion and before connecting the supply? 4  
 (b) What is meant by (i) PVC (ii) CTS (iii) 7/20 4
7. (a) Briefly explain the factors which influence the choice of site for Thermal Power Station. 4  
 (b) A 3 phase electric motor drives pump which lifts 6,000 liters of water per hour to height of 30 meters. The efficiencies of pump and motor are 80% and 90% respectively. Calculate the current taken by the motor at 440 volts at power factor of 0.8 4
8. (a) Explain the principle of working of single-phase transformer. 4

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- (b) Describe a suitable test for locating earth fault in an underground cable. 4
9. (a) Explain two methods of charging of 'leadacid' batteries. 4
- (b) Briefly explain (i) Skin effect (ii) Ferrenti effect (iii) Proximity effect in overhead transmission lines. (1+2+1)
10. Write short notes on any TWO of the following 2 x 4 = 8
- a) Star – delta starter for A.C. Motor.
  - b) Methods of Earthing.
  - c) The effect of heat and moisture and insulation lubricants and their uses.
  - d) First aid treatment for Electric shocks.
  - e) Short-circuit test on transformer.

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**TELANGANA, HYDERABAD**  
**EXAMINATION FOR THE GRANT OF COMPETENCY CERTIFICATE**  
**TO ELECTRICAL SUPERVISOR**  
**PAPER – II ELECTRICITY UTILISATION**  
**MODEL PAPER**

**Time: 03 Hours****Max. Marks: 50**

Note: (1) Question No. 01 and 02 are compulsory, each carries 09 marks.

(2) Answer any 04 from (Q.No. 03 to 10) remaining 08 questions, each carries 08 marks.

1. (a) State the systems of wiring with the application. 4  
 (b) Estimate the material required for CTS. Wiring System used in a hall measuring 30' x 60' and height 10' and the requirements are as follows: 5  
     No. of lights points = 32  
     No. of Fan points = 6  
     No. of 2 Pin Plug Sockets = 2
2. (a) Explain with a connection diagram the method of calculating power factor of a three-phase load by two "Wattmeter method". 4  
 (b) A 400 V, 3 phase motor has a full load of 10 H.P. the P.F. being 0.85; full load efficiency is 80%. Find the reading on each of the two-watt meters connected to measure the input. 5
3. (a) List out the common defects/faults in the electric pumps. What are the remedies for their rectification? 4  
 (b) Explain briefly the rules adopted in the installation of electric motors and furnaces. What is the procedure adopted for their maintenance? 4
4. (a) Explain with the help of connection diagram the working of a star-delta starter and show the method of its connection to a motor installation? 4  
 (b) Why is earthing required for machines and electrical installation? Explain briefly the method of system earthing or equipment earthing. 4
5. (a) Draw a neat connection diagram for D.C. Compound motor with a starter and field regulator. 4  
 (b) Show, with a neat connection diagram; the main and sub-distributing board with circuit breakers switch fuse units and load particulars of each circuit of an electrical installation. 4
6. (a) Mention the name of the different tariffs used in practice. 4  
 (b) A consumer is offered electricity at the following tariff: 4  
     Rs. 70 per KVA of his ma. demand plus; 5 paise per unit consumed. The consumer has an aggregate motor load of 250 KW at a p.f. of 0.8 lagging. Calculate the consumer's annual bill for a load factor of 100% and if the motor runs for 12 hours a day.
7. (a) Explain with the help of a neat diagram the construction and working of a Meggar and state its uses. 4

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- (b) Explain with the help of wiring diagram electrical connections for lifts with their protective devices. 4
8. (a) Explain with the help of a neat diagram the construction and working of a single-phase energy meter. 4  
(b) List out the errors taking place in the energy meter. What are the remedies for removing them? 4
9. Draw a complete electrical wiring diagram of the mains and distribution boards to the following machines in workshop. 4+4  
(i) Lather machine (ii) Drilling Machine
10. Write short notes on any three of the following: 4x2=8  
marks  
(a) Electrical bell (b) Lightning arrester (c) Circuit breaker (d) Fuses

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TELANGANA, HYDERABAD

**CERTIFICATE OF COMPETENCY EXAMINATION FOR SUPERVISOR****UNDER CENTRAL ELECTRICITY AUTHORITY****(MEASURES RELATING TO SAFETY AND ELECTRIC SUPPLY)****REGULATIONS, 2010****I. INSTRUCTIONS TO THE CANDIDATES:**

The certificate of Competency Examination for Supervisor will be held at the following Polytechnics:

| Center Code | Name of the Polytechnic                        | Center Code | Name of the Polytechnic                     |
|-------------|------------------------------------------------|-------------|---------------------------------------------|
| 01          | Govt. Polytechnic, Masab Tank, Hyderabad       | 26.         | S.G. Govt. Polytechnic, Adilabad            |
| 02          | J.N. Govt. Polytechnic, Ramanthapur, Hyderabad | 27.         | Govt. Polytechnic, Nalgonda                 |
| 04.         | Govt. Polytechnic, Warangal                    | 46.         | Govt. Polytechnic, Kothagudem               |
| 05.         | Govt. Polytechnic, Nizamabad                   | 61.         | Q.Q Govt. Polytechnic, Hyderabad            |
| 06.         | Govt. Polytechnic, Mahaboobnagar               | 87.         | Dr.BRAGMR Polytechnic for Women, Karimnagar |
| 23.         | S.S. Govt. Polytechnic, Zaheerabad.            |             |                                             |

**FOR SUPERVISORS - MINES****Principal, Government Polytechnic, Kothagudem only**

**Note:** If number of candidates registered for Supervisor examination at any of the above centers are less than 25, then the candidates will be re-allotted to some other center and also if the total number of candidates registered for Supervisor examination at a particular center are greater than 80 (Eighty) only then the candidates may be re-allotted to some other center at the discretion of the Secretary, State Board of Technical Education and Training, TG., Hyderabad.

**II. ELIGIBILITY TO APPEAR:**

Candidates satisfying the following rules and regulations are only eligible to appear for the examination:

**Supervisor (Certificate of Competency) Examination:**

- a) The candidate for admission to appear for the Supervisor (Certificate of competency) Examination should possess either of the following:
- A pass in SSC or equivalent examination with not less than 8 years experience in the practices of Electrical Installation works.
- OR
- A pass in SSC or equivalent examination with a Wireman or Electrician of ITI certificate holder with not less than 4 years' experience in the practice of Electrical Installation works (irrespective fields)
  - The experience shall be certified by a firm or a Licensed Electrical Contractor whose license is in force during that period and counter signed by an Electrical Engineer not below the rank of Deputy Electrical Inspector (Electrical Inspectorate) / Divisional Engineer in TG Transco/TG Genco/TG Discoms.

**NOTE:** (a) The candidate possessing 2 years experience in underground mines out of 4 years, the certificate of competency awarded shall be Supervisor mines (unrestricted).

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(b) The candidate possessing 4 years experience exclusively in open Cast Mines, the certificate of competency awarded shall be Supervisor mines (Restricted).

- b) The minimum age limit for appearing for examination shall be 23 years as on 1<sup>st</sup> \_\_\_\_\_ 2024 for the examination to be held in the 2<sup>nd</sup> half of the year and shall not have completed the age of 60 years.
- c) National Apprentice training of 1-year duration after passing ITI Examination shall be counted as practical experience.
- d) The practical experience put in after passing requisite qualifying examination only will be considered. The experience certificate submitted by the candidates as apprentices appearing for the Supervisor Certificate of Competency Examination shall be obtained from the Licensed Electrical Contractors whose license is in force during that period. Xerox copy of license shall be enclosed or any other established industrial units or firms or Public or Private Undertakings and in the case of Supervisor/Mines, the experience certificate shall be from their respective Manager/Head of the Mining institutions.

**III. MODE OF EXAMINATIONS:**

- a) Examination for Supervisor Certificate of Competency comprise the following:
  - 1. Two written papers of 03 hours duration each.
  - 2. Practical and oral on the subjects specified in the prescribed syllabus of 06 hours duration.
    - Provided that no certificate shall be issued unless a candidate passes each paper I and II or Papers I and III. Candidates who have passed in Paper I and II or in I and III and desire to qualify for mine installation or domestic installation are exempted from re-appearing in Paper-I.
    - In addition, candidates intending to appear for Supervisor examination shall be capable of answering either in English or in Telugu or Urdu. Such candidate desirous of writing the Examinations in URDU medium should apply onto the Principal, Government Polytechnic, Masab Tank, Hyderabad.

**IV. HOW TO APPLY:**

- a) Application forms with instructions to candidates can be obtained from the concerned Principals of Polytechnics by sending a Demand Draft of Rs. 100/- towards the cost to application drawn in favour of **The Secretary, State Board of Technical Education & Training**, Payable at Hyderabad on any Scheduled Bank with a self-addressed envelope of size 11 x 25 cms. with postage stamps affixed of value Rs. 30/-
- b) Application form duly filled in and supported by documentary evidence should be submitted to the concerned Principal of the examination center at which the candidate wants to appear for the examination so as to reach him on or before the date prescribed in the Notification. The filled in application shall be sent by Registered Post/hand over in person. The cover being superscribed as "APPLICATION FOR SUPERVISOR EXAMINATION".
- c) Three recent pass-port size photographs are to be affixed as follows: One on the application form, the second one on the Original Hall ticket and the third one on the Duplicate Hall Ticket in the space provided. The Photographs are to be attested by a Gazetted Officer of the State/Central Government. The Signature of the Officer and the seal shall occupy partly on the photograph and partly on the Hall Ticket/application form as the case may be.
- d) The following certificate/ documents are to be enclosed along with the application form:
  - 1. A Crossed Demand draft of Rs. 2000/- for candidates appearing for Supervisor examinations drawn in favour of The Secretary, State Board of Technical Education &

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Training, TG., Hyderabad on any Scheduled Bank Payable at Hyderabad towards examination fee.

2. Original and Duplicate Hall Tickets duly filled in and affixed with photographs and attested by Gazetted Officer.
3. Attested memo of marks secured at SSC or equivalent examination / ITI for Supervisor examinations.
4. Certificate of experience should be on reverse page of the application form issued by the employer.
5. Certificate showing the Date of Birth from the records of the School or College.
6. A self-addressed envelope with required postage of Rs. 30/- for dispatch of Hall-Ticket and time table.

**V. ACCEPTANCE OF APPLICATIONS FORMS:**

**The Principal of Polytechnic to whom the application is submitted reserves the right to reject the application of any candidate if:**

1. The application is incomplete.
2. Required certificates are not enclosed.
3. The candidate fails to satisfy the conditions of eligibility.
4. The candidate furnished false or incorrect information.
5. The information in the application is not legible.
6. The application is received after the due date.

**VI. HALL TICKETS & EXAMINATIONS:**

After scrutinizing the applications, the concerned Principal of the Polytechnics will send Hall Tickets to all the eligible candidates so as to reach them before the date of examination. In case any candidate is not in receipt of Hall Ticket, he may contact the Principal of the concerned Polytechnic personally two days earlier to the examination to find the actual position, during the working hours.

The candidate may obtain the Duplicate Hall Ticket if he is eligible to appear on production of an Identification certificate on payment of Rs. 100/- in the form of Demand Draft payable to the Secretary, State Board of Technical Education & Training, Telangana, Hyderabad.

The detailed examination time table will be communicated by the Principals of the examination center along with the Hall Ticket.

**VII. RESULTS OF EXAMINATIONS:**

The result will be declared by the Chief Electrical Inspector to Government who will issue Competency Certificates and permits to the successful candidates. Every care will be taken to avoid errors in the valuation and tabulation of results. Hence, any request for revaluation and re-totaling will not be entertained.

## ANNEXURE SUPERVISOR EXAMINATIONS

1. Examination for Supervisor will consist of:

a) The following three written papers each of three hours duration and each carrying 50 marks.

|          |   |                                                                                                                                            |
|----------|---|--------------------------------------------------------------------------------------------------------------------------------------------|
| PAPER-I  | - | Compulsory<br>Electrical Theory (Elementary Knowledge)                                                                                     |
| PAPER-II | - | Optional<br>Electricity Utilization (to be taken up by the candidates desiring to qualify for domestic industrial and other installations) |

- The model of the paper is mainly essay type with simple mathematical calculations and shall consists of 10 Questions of (a) and (b) parts.
  - Question No. 1 and Question No. 2 are compulsory, each carries 09 marks. 02x09=18
  - Answer any 04 from remaining (Q.No. 03 to 10) 08 Questions. Each carries 08 marks 04x08=32
- Total=50 Marks.

|           |   |                                                                                                                              |
|-----------|---|------------------------------------------------------------------------------------------------------------------------------|
| PAPER-III | - | Optional<br>Mines installations (to be taken up by the candidates desiring to qualify for electrical installations in Mines) |
|-----------|---|------------------------------------------------------------------------------------------------------------------------------|

- The model of the paper is mainly essay type with simple mathematical calculations. The paper shall consist of 10 questions of (a) and (b) parts, out of which 06 questions have to be answered. 06 x 08=48, 02 marks are reserved for neatness, Total 50 marks.

b) An oral and practical test of 06 hours duration carrying 100 marks.

|     |                                                                                                                                                                                                       |   |                   |                      |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------|----------------------|
| i.  | Experiment on electrical machines (basing on the syllabus of paper-I)                                                                                                                                 | - | 03 Hrs-<br>Viva-  | 40 Marks<br>10 Marks |
| ii. | Wiring installations / fault location rectification on generators, motors and domestic appliances / Underground cables (Murray loop test) / circuit connections of starter, motors and energy meters. | - | 03 Hrs-<br>Viva - | 40 Marks<br>10 Marks |

(relevant experiment to be given for supervisory utilization on the syllabus of Paper II or supervisory mines on the syllabus of paper (III))

For each examination

Total - 100 Marks

Provided that no certificate shall be issued unless a candidate passes in papers I and II or Papers I and III and practical examination. Candidates who have passed in Papers I and II or in I and III desire to qualify for mine installations or domestic industrial and other installations as the case may be shall be exempted from re-appearing in Paper-I.

2. Marks for pass in examination for Competency Certificate of Supervisor:

**2676429/2024/PRE EXAMS-1**

For a pass in the Examination for Supervisor a candidate must secure

- a) 20/50 marks in each written Paper-I & II or Paper-I & III
- b) 20/50 marks in each oral and practical test of Paper-I (20/50) & Paper-II (20/50) for Utilization and Paper-I (20/50) & Paper-III (20/50) for Mining.

**SYLLABUS**  
**PAPER-I**  
**ELECTRICITY - THEORY (ELEMENTARY KNOWLEDGE)**

1. **Principles of Electricity:** Electrical pressure, current and resistance, ohms law, specific resistance, laws of resistance in series and parallel calculation of voltage drop, practical units of voltage, current resistance, power and energy, relation between electrical power (KW) and mechanical power (HP) Electromagnetism. Production of E.M.F. and Fleming's right-hand rule, magnetic, chemical and heating effects of electrical current - magnetic, properties, electromagnets and their applications. Simple numerical problems.
2. **Materials:** Conductor's and insulators, semi-conductors, classes of insulating material and their relative merits. Transformer oil effect or heat moisture on insulation, gas insulators, lubricants and their uses. Different types of wires, cables, switches, circuit breakers, cut outs etc., and their safe current carrying capacity, use of table and data sheets general given in electrical hand books.
3. **A.C. Circuits:** Knowledge of vectors, phase, and phase difference resistance inductance and capacitance in A.C. Circuits; periodicity or frequency; power and power factor of single phase and three phase systems. Star and delta connection phase sequence.
4. **Generations of Electricity:** Natural sources of energy. Solar, wind power. Thermal power, hydel and nuclear power generation concepts and flow charts.
5. **Generator:** Essential components and constructional features of shunt, series and compound dynamos and their characteristics, causes of sparking inter poles commutator and the maintenance of carbon brushes. Principles, operation and construction of Alternators. Changeover switches and connections.
6. **D.C. Motors:** Theory of series, shunt and compound would type motors their uses, installation method of starting and speed control and reversal of direction rotation.
7. **A.C. Motors:** Theory of induction (Squirrel cage and slip ring type) synchronous and commutator; motor, their use, installation, method of starting and speed control and reversal of director of rotation. Principles and operation of motor generator sets for AC/DC conversion.
8. **Transformers:** Knowledge of single phase and three phase transformers, their construction, use and maintenance, parallel operation, working of auto-transformer, CT and PT. Transformer tapings. Cooling of transformers.
9. **Controlling and regulating gears:** Knowledge of various types of switches and circuit breakers and cut-out, starters, regulators protective devices for both A.C. and D.C. and D.C. Motors and their wiring with the motors.

**2676429/2024/PRE EXAMS-1**

- 10. Batteries:** Primary cells, dry cells, storage or secondary batteries or accumulators and their installation lead acid cell, nickel iron or alkaline cells, initial and subsequent charging of batteries methods of charging, maintenance of batteries. Use of Hydro-meters.
- 11. Electronics:** Semiconductor devices, concept of rectifiers, filters, amplifiers, inverters. Basic concept of power electronic devices. Block diagrams of converters, inverters, cyclo converters, and speed control of AC motors using power electronic circuits.
- 12. Transmission & Distribution:**
- Overhead Lines:** Simple calculations lines constants and voltage drops general Principles of construction of low, medium and high-pressure line; size of conductors, length of spans sag, strength of poles, spacing of conductors, cross arms, effects of temperature wind pressure, ice and snow, tension on wires, insulators brackets stay, struts; guard wires and their protective devices. Skin effect Proximity effect and Ferrarit effect. Earthing lightening; arrestor and lightning conductors and their testing and fault location.
  - Underground Cables:** Simple calculations and general principles of laying cables direct in ground; in through pipes, handling bending, jointing boxes, distribution board and pillars, joint box compound, melting of compounds and filling boxes with compounds. Testing and fault location.
- 13. Illumination:** Metal filament lamps, Fluorescent lamp circuits. CFL and LED lamps, photometric units and simple measurements, general requirements of efficient lighting and its elementary calculations. Street lighting. Time switches and LDR circuits for auto switching.
- 14. Safety Regulations:** Central Electricity Authority (CEA) (Measures related to safety and electric supply) Regulations, 2010. Protection and restoration of persons suffering from electric shock.

**SYLLABUS  
PAPER-II  
ELECTRICITY UTILIZATION**

**DOMESTIC INSTALLATIONS:**

- Wiring:** Wiring layouts of different types conduit (surface and concealed) pvc casing capping and armored cable for lighting and power installations in residential premises together with the necessary switchgear. Estimates on material and cost of different type of installations.
- Apparatus:** Installation and maintenance of heaters, cookers, mixers, refrigerators, air conditioners and other domestic appliances, electric bells and indicators, small motors for pumps and electric lifts. Installation and maintenance of generators, electric motors, electric furnaces, electric welding plants, haulage and winding machines, cooling fans and heating appliances.
- Measurements and charges:** Measurement of power, watt meters, concept of active and reactive power, power factor correction by capacitors. Simple calculations relating to cost of power and energy. Elementary knowledge of methods of charging for demand and energy.

**2676429/2024/PRE EXAMS-1**

4. **Testing and fault location:** Detection and location of faults in domestic appliances and wiring installations. Insulation and continuity tests, detection and location of faults in D.C. & A.C. Generators Motors; overhead distribution lines and underground cables; electric instruments and apparatus. Rectification faults, insulation & continuity tests. Tests for insulation resistance to earth. Earth resistance testing.
5. **Protective devices:** Elementary Knowledge of the use of fuses, HRC fuses, ELCB, RCCB, and auto cut-out. Earthing of domestic appliances, motors, generators, transformers. Use of lightening arrestors. Lightening conductors on overhead tanks and buildings. Circuit breakers; overload and no volt protection, thermostats and Bi-metallic strips. Relays.
6. **Industrial and agriculture installations:** Wiring layouts of different types of conduit and armored cable for lightning and power installation, in industrial premises together with the necessary switchgear. General principles and elementary calculations of head power and energy requirements for agriculture and domestic pumps. Estimates of material and cost of different types of installation.
7. **Circuit diagrams:** Electrical connection or
  - i. D.C. & A.C. Generators, Switch-board, transformers.
  - ii. Main and sub-distribution board with circuit switch fuse units, with load statement for each circuit.
  - iii. D.C. & A.C. motors, there starters, regulators.
  - iv. Battery charging equipment.
  - v. Lifts with their safety devices.
  - vi. Pump installations.

**SYLLABUS  
PAPER-III  
MINES INSTALLATIONS**

1. **Wiring:** Wiring layouts of different types such as cleats, lead covered cab type sheathed for lighting purposes and armoire cables for power installation. Different types of cables and their use.

**Circuit diagrams:** Electrical connections for:

- a) D.C. & A.C. Generators, switch boards transformers etc.,
- b) Distribution boards with circuit breakers, switch fuse units and gatend switches,
- c) D.C. & A.C. Motors their starters and regulators.

2. **Apparatus:** Installation and maintenance of

- i. (a) Electrical winders, haulages and pump units their control gears and starters  
(c) Rectifiers, Rotary converters and electric locomotives:  
(d) Portable machineries, coal cutting machines, loaders, conveyors, gate-end switches, drill panels with drill units and their control systems.
- ii. General principles and elementary calculations of load power and energy consumption of pumping hauling and winding installations and other working machinery.

**2676429/2024/PRE EXAMS-1**

3. **Power and energy measurements and charges:** Measurements of power by watt-meters energy meters both D.C. & A.C. Power factor correction by capacitors, simple calculations relating to cost of power and energy. Elementary knowledge of method charging for demand and energy.
4. **Testing and fault location:** detection and location of earth or other faults in electrical apparatus and cables. Insulation and continuity tests. Rectification of faults test for insulation resistance to earth testing of leakage current protective devices. Earth resistance testing.
5. **Protective devices:** Elementary knowledge of earthing of metal frames of machineries, use of fuses, overload no-volts and earth leakage protection circuit breakers.
6. **Safety rules:** Working of – 126 Rule of IER, 1956 in Chapter X and regulation 110 in Chapter IX applied to mines in relation to mine electrical plant fire precautions, lighting and communication and fault detectors voltage limit of equipment in mines.
7. **Electrical shovels, drag – Lines, Rotary drills, coal – crushes, rapid – load – system, heavy power – luminaries – light fittings like sodium vapour lamp, Halngen Lamp. High Pressure Mercury vapour lamp, leakage protection in the lighting and power systems, mobile transwitch units, pliable armounred cable, field switches (outdoor mining type).**

**ORAL AND PRACTICAL TEST**

An oral and practical test based on the syllabus for written papers will be held.

STATE BOARD OF TECHNICAL EDUCATION AND TRAINING  
TELANGANA, HYDERABAD  
SUPERVISOR (CERTIFICATE OF COMPETENCY) EXAMINATION - 2024  
HALL TICKET

SCC

(ప్రవేశ పత్రము)  
(To be retained by the concerned Principal)  
(సంబంధిత ప్రిన్సిపాల్ వద్ద యుండుటకు)

DUPLICATE

HALL TICKET NO.

EXAMINATION CENTER  
(పరీక్ష కేంద్రము)

(Not to be filled by the applicant)

Supervisor

Medium: English/Telugu/Urdu

Affix latest photograph  
of passport size attested  
by Gazetted Officer

Name of the Candidate (in Block letters)  
పూర్తి పేరు:  
.....  
Father's Name:  
తండ్రి పేరు:  
Date of Birth (As per the SSC hall ticket):  
పుట్టిన తేదీ (SSC హాల్ టికెట్ ప్రకారం) :  
.....  
Identification marks:  
గుర్తింపు చిహ్నములు:  
1.  
2.

Signature of Candidate  
దరఖాస్తు దారుని సంతకము

Signature of Principal & Seal  
ప్రిన్సిపాల్ సంతకము/ముద్ర

STATE BOARD OF TECHNICAL EDUCATION AND TRAINING  
TELANGANA, HYDERABAD  
SUPERVISOR (CERTIFICATE OF COMPETENCY) EXAMINATION – 2024  
HALL TICKET  
(ప్రవేశ పత్రము)

SCC

ORIGINAL  
HALL TICKET NO.

EXAMINATION CENTER (పరీక్ష కేంద్రము) (Not to be filled by the applicant)

Supervisor Medium: English/Telugu/Urdu

Affix latest photograph  
of passport size attested  
by Gazetted Officer

Name of the Candidate (in Block letters)  
పూర్తి పేరు:  
.....  
Father's Name:  
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Date of Birth (As per the SSC hall ticket):  
పుట్టిన తేదీ (SSC హాల్ టికెట్ ప్రకారం) :  
.....  
Identification marks:  
గుర్తింపు చిహ్నములు:  
1.  
2.

Signature of Candidate  
దరఖాస్తు దారుని సంతకము

Signature of Principal & Seal  
ప్రిన్సిపాల్ సంతకము/ముద్ర

**2676429/2024/PRE EXAMS-1**  
**INSTRUCTIONS TO CANDIDATES**

1. The candidates shall be present at the Center of examination as per the time table along with the Hall Ticket.  
 నియమిత సమయమునకు ప్రవేశ పత్రముతో అభ్యర్థి పరీక్షా కేంద్రము వద్ద యుండవలెను.
2. The candidates should bring with them all tools for the Practical test.  
 ప్రాక్టికల్ పరీక్షకు అవసరమైన పనిముట్లను అభ్యర్థులే తెచ్చుకొనవలెను.
3. Any candidate found to be in possession of prohibited material or indulge in any kind of Malpractice or Misbehavior shall be sent out and the decision of the examiner is final in this regard.  
 అభ్యర్థి ఏదైన నిషేధింపబడిన సమాచారమును కలిగియున్నను లేదా అతిక్రమణ చర్యకు పాల్పడినను పరీక్ష హాలు నుండి బయటకు పంపబడును. ఈ విషయములో పరీక్షునిదే తుది నిర్ణయము.
4. The candidate shall bring their own pen, pencil/calculator or log tables to the examination.  
 అభ్యర్థులు తమతో కలము, పెన్సిల్, క్యాలికులేటర్, లాగ్ టేబిల్స్ తెచ్చుకొనవలెను.
5. The Hall-Ticket shall be preserved till the issue of Certificate.  
 పరీక్ష ఉత్తీర్ణతా పత్రము పొందువరకు హాల్ టికెట్ పత్రమును జాగ్రత్తగా దాచుకొనవలెను.
6. The candidate should come prepared to stay at the place of examination for more than day for Practicals, if necessary.  
 ప్రాక్టికల్ పరీక్షలో పాల్గొన నిమిత్తము అవసరమైనచో అభ్యర్థులు ఒక రోజు కన్న ఎక్కువ కాలము పరీక్షాస్థలమున ఉండుటకు తయారయి రావలెను.

**INSTRUCTIONS TO CANDIDATES**

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2. The candidates should bring with them all tools for the Practical test.  
 ప్రాక్టికల్ పరీక్షకు అవసరమైన పనిముట్లను అభ్యర్థులే తెచ్చుకొనవలెను.
3. Any candidate found to be in possession of prohibited material or indulge in any kind of Malpractice or Misbehavior shall be sent out and the decision of the examiner is final in this regard.  
 అభ్యర్థి ఏదైన నిషేధింపబడిన సమాచారమును కలిగియున్నను లేదా అతిక్రమణ చర్యకు పాల్పడినను పరీక్ష హాలు నుండి బయటకు పంపబడును. ఈ విషయములో పరీక్షునిదే తుది నిర్ణయము.
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 అభ్యర్థులు తమతో కలము, పెన్సిల్, క్యాలికులేటర్, లాగ్ టేబిల్స్ తెచ్చుకొనవలెను.
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 పరీక్ష ఉత్తీర్ణతా పత్రము పొందువరకు హాల్ టికెట్ పత్రమును జాగ్రత్తగా దాచుకొనవలెను.
6. The candidate should come prepared to stay at the place of examination for more than day for Practicals, if necessary.  
 ప్రాక్టికల్ పరీక్షలో పాల్గొన నిమిత్తము అవసరమైనచో అభ్యర్థులు ఒక రోజు కన్నా ఎక్కువ కాలము పరీక్షాస్థలమున ఉండుటకు తయారయి రావలెను.