

## Minimum eligibility criteria and Selection Procedure for the post of Junior Engineer (Electrical)

### Minimum eligibility criteria:

1. Three Year Diploma in Electrical Engineering from any recognized University or Institution.  
**OR**  
Higher qualification in same discipline from a recognised university or Institution.
2. Candidate must have passed Matriculation examination of Punjabi Language from Punjab School Education Board or any other recognized Board (as first or second or as additional language) or any other equivalent examination in Punjabi language which may be specified by the Guru Angad Dev Veterinary and Animal Sciences University from time to time on or before the last date of submission of application.

### Job Responsibilities:

1. To prepare construction, repair and maintenance estimates for electrical works in accordance with PWD B&R norms and specifications.
2. To supervise and monitor electrical works at site, and ensure quality control during execution.
3. To record and maintain Measurement Books (MBs) and other technical records relating to works executed.
4. To operate and maintain HT/LT electrical distribution systems, including hot-line maintenance.
5. To coordinate with PSPCL on matters relating to power supply.
6. To perform such other duties as may be assigned from time to time.

### Selection Procedure:

#### **Step 1: Exam-I: Punjabi Language Test (Matric Level)**

- Qualifying in nature only.
- Minimum qualifying marks: 50%
- The maximum duration of examination will be 60 minutes.
- Marks shall not be counted towards final merit.
- There will be no negative marking.
- The format of the exam is as under:

Topic	No. of Questions	Marks	Type of Questions
Punjabi ( <i>Annexure-I</i> )	40	40 (Each question carries 1 mark)	MCQ (Multiple Choice Questions)
Translation of Twenty English words (20) to Punjabi	1 set of 20 questions	10 (Each question carries 0.5 mark)	Objective question
<b>Total</b>		<b>50</b>	

**Note:** Candidates qualifying in Exam-I will be called to appear for the Exam-II.

#### **Step 2: Exam-II: Main Examination**

- Exam shall consist of two parts: PART-A and PART-B.
- Weightage shall be counted towards the final merit.
- To qualify, a candidate must score a minimum of 40% marks in both PART-A and PART-B separately.
- **Negative marking:** 0.25 mark shall be deducted for every wrong answer.
- The maximum duration of examination will be 100 minutes.

- The format of the exam is as under:

Topic	No. of Questions	Marks (Each question carries 1 mark)	Type of Questions
<b>PART-A:</b> General Knowledge and Current Affairs; Punjab History and Culture; Logical Reasoning & Mental ability; Punjabi; English; ICT. ( <i>Annexure-II</i> )	30	30	MCQ (Multiple Choice Questions)
<b>PART-B:</b> Questions from the Core Subject ( <i>Annexure-III</i> )	70	70	MCQ (Multiple Choice Questions)
<b>Total</b>	<b>100</b>	<b>100</b>	

**Step 3: Preparation of merit**

- Scrutiny of application forms/documents shall be carried out after conduct of above steps for candidates qualifying the prescribed steps 1 and 2. Eligibility shall be determined as on the last date of submission of applications.
- A merit list shall be prepared as per the following scorecard, and uploaded on the university website:

Criteria	Weightage (%)
Marks obtained in Exam-II	80
Experience ( <i>Annexure – IV</i> )	20
<b>Total</b>	<b>100</b>

- In case of tie in the merit:
  - Candidate older in age shall be ranked higher.
  - If tie still persists, candidate securing higher marks in '**Exam-II: Main Examination**' shall be ranked higher.
  - If tie still persists, candidate securing higher percentage of marks in Matriculation Examination shall be ranked higher.

**Step 4: Document Verification:** A suitable number of Candidates will be called for document verification as per the final merit list. Candidate must prove his/her eligibility by producing original documents during document verification.

**Note:**

- The decision of the University regarding eligibility, conduct of examination, evaluation and selection shall be final.
- Only candidates qualifying all prescribed stages shall be considered for selection.
- Mere appearance in examination / document verification shall not confer any right to selection.
- Use of unfair means / misconduct during examination or recruitment process shall lead to cancellation of candidature and legal action, wherever required.

**Exam-I: Punjabi Language Test (Matric Level) Syllabus**

1. ਜੀਵਨੀ ਅਤੇ ਰਚਨਾਵਾਂ ਨਾਲ ਸਬੰਧਤ ਪ੍ਰਸ਼ਨ-  
ਸ੍ਰੀ ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਜੀ, ਸ੍ਰੀ ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਜੀ, ਸ੍ਰੀ ਗੁਰੂ ਰਾਮਦਾਸ ਜੀ,  
ਸ੍ਰੀ ਗੁਰੂ ਅਰਜਨ ਦੇਵ ਜੀ, ਸ੍ਰੀ ਗੁਰੂ ਤੇਗ ਬਹਾਦਰ ਜੀ, ਸ੍ਰੀ ਗੁਰੂ ਗੋਬਿੰਦ ਸਿੰਘ ਜੀ।
2. ਵਿਰੋਧਾਰਥਕ ਸ਼ਬਦ, ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ।
3. ਮੁਹਾਵਰੇ।
4. ਅਖਾਣ।
5. ਸ਼ਬਦ ਦੇ ਭੇਦ।
6. ਅਗੋਤਰ/ਪਿਛੇਤਰ।
7. ਵਚਨ ਬਦਲੇ ਤੇ ਲਿੰਗ ਬਦਲੇ।
8. ਵਿਸਰਾਮ ਚਿੰਨ੍ਹ।
9. ਸ਼ਬਦਾਂ / ਵਾਕਾਂ ਨੂੰ ਸੁੱਧ ਕਰਕੇ ਲਿਖੋ।
10. ਅੰਗਰੇਜ਼ੀ ਸ਼ਬਦਾਂ ਦਾ ਪੰਜਾਬੀ ਵਿੱਚ ਸੁੱਧ ਰੂਪ।
11. ਅੰਕਾਂ, ਮਹੀਨੇ, ਦਿਨਾਂ ਦਾ ਸੁੱਧ ਪੰਜਾਬੀ ਰੂਪ।
12. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨਾਲ ਸਬੰਧਤ ਪ੍ਰਸ਼ਨ।
13. ਪੰਜਾਬ ਦੇ ਇਤਿਹਾਸ ਨਾਲ ਸਬੰਧਤ ਪ੍ਰਸ਼ਨ।
14. ਪੰਜਾਬ ਦੇ ਸਭਿਆਚਾਰ ਨਾਲ ਸਬੰਧਤ ਪ੍ਰਸ਼ਨ।

## Annexure –II

### Exam-II: Main Examination (PART-A) Syllabus

No. of questions: 30

Max. Marks: 30

Sr. No.	Indicative Contents of Syllabus	Weightage (Approx.)
1	<b>General Knowledge and Current affairs of National and International importance including:</b> Polity issues, Environment issues, Current Affairs, Science and Technology, Economic issues, History of India with special reference to Indian freedom struggle movement, Sports, Cinema and Literature, Geography.	5
2	<b>Punjab History and Culture:</b> Physical features of Punjab and its ancient history. Social, religious and economic life in Punjab. Development of Language & literature and Arts in Punjab, Social and culture of Punjab during Afgan/Mughal Rule, Bhakti Movement, Sufism, Teachings/History of Sikh Gurus and Saints in Punjab. Adi Granth, Sikh Rulers, Freedom movements of Punjab.	5
3	<b>Logical Reasoning &amp; Mental Ability:</b> Logical reasoning, analytical and mental ability. Basic numerical skills, numbers, magnitudes, percentage, numerical relation appreciation. Data analysis, Graphic presentation charts, tables, spreadsheets.	5
4	<b>ਪੰਜਾਬੀ:</b> ਸੁੱਧ-ਅਸੁੱਧ, ਸ਼ਬਦਜੋੜ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ, ਸਮਾਨਾਰਥਕ/ਵਿਰੋਧੀ ਸ਼ਬਦ, ਨਾਂਵ, ਪੜਨਾਂਵ ਅਤੇ ਕਿਰਿਆ ਦੀਆਂ ਕਿਸਮਾਂ ਤੇ ਸਹੀ ਵਰਤੋਂ, ਲਿੰਗ ਅਤੇ ਵਚਨ, ਪੰਜਾਬੀ ਅਖਾਣ ਤੇ ਮੁਹਾਵਰੇ, ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਅਨੁਵਾਦ ਅਤੇ ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ ਆਦਿ।	5
5	<b>English:</b> Basic Grammar, Subject and Verb, Adjectives and Adverbs, Synonyms, Antonyms, One Word Substitution, Fill in the Blanks, Correction in Sentences, Idioms and their meanings, Spell Checks, Adjectives, Articles, Prepositions, Direct and Indirect Speech, Active and Passive Voice, Correction in Sentences, etc.	5
6	<b>ICT:</b> Basics of computers, Network & Internet, Use of office productivity tools. Word, Excel, Spreadsheet & PowerPoint.	5
	<b>Maximum Marks</b>	<b>30</b>
<b>Note:</b>		
<ol style="list-style-type: none"> <li>1. The distribution of marks/question in each section is indicative. It may vary slightly.</li> <li>2. Failing to secure 40% marks in the above examination will disqualify the candidate for the further Selection Procedure.</li> </ol>		

**Exam-II: Main Examination (PART-B) Syllabus**

**No. of questions: 70**

**Max. Marks: 70**

**Basic concepts:** Concepts of resistance, inductance, capacitance, and various factors affecting them. Concepts of current, voltage, power, energy and their units. Circuit law: Kirchhoff's law, Simple Circuit solution using network theorems. Magnetic Circuit: Concepts of flux, mmf, reluctance, Different kinds of magnetic materials, Magnetic calculations for conductors of different configuration e.g. straight, circular, solenoidal, etc. Electromagnetic induction, self and mutual induction. AC Fundamentals: Instantaneous, peak, R.M.S. and average values of alternating waves, Representation of sinusoidal wave form, simple series and parallel AC Circuits consisting of R.L. and C, Resonance, Tank Circuit. Poly Phase system – star and delta connection, 3 phase power, DC and sinusoidal response of R-L and R-C circuit. Measurement and measuring instruments: Measurement of power (1 phase and 3 phase, both active and re-active) and energy, 2 wattmeter method of 3 phase power measurement. Measurement of frequency and phase angle. Ammeter and voltmeter (both moving oil and moving iron type), extension of range wattmeter, Multimeters, Megger, Energy meter AC Bridges. Use of CRO, Signal Generator, CT, PT and their uses. Earth Fault detection.

**Electrical Machines:**

**(a) D.C. Machine** – Construction, Basic Principles of D.C. motors and generators, their characteristics, speed control and starting of D.C. Motors. Method of braking motor, Losses and efficiency of D.C. Machines.

**(b) 1 phase and 3 phase transformers** – Construction, Principles of operation, equivalent circuit, voltage regulation, O.C. and S.C. Tests, Losses and efficiency. Effect of voltage, frequency and wave form on losses. Parallel operation of 1 phase /3 phase transformers. Auto transformers.

**(c) 3 phase induction motors**, rotating magnetic field, principle of operation, equivalent circuit, torque-speed characteristics, starting and speed control of 3 phase induction motors. Methods of braking, effect of voltage and frequency variation on torque speed characteristics. Fractional Kilowatt Motors and Single-Phase Induction Motors: Characteristics and applications. Synchronous Machines

- Generation of 3-phase e.m.f. armature reaction, voltage regulation, parallel operation of two alternators, synchronizing, control of active and reactive power. Starting and applications of synchronous motors.

**Generation, Transmission and Distribution** – Different types of power stations, Load factor, diversity factor, demand factor, cost of generation, inter-connection of power stations. Power factor improvement, various types of tariffs, types of faults, short circuit current for symmetrical faults.

**Switchgears** – rating of circuit breakers, Principles of arc extinction by oil and air, H.R.C. Fuses, Protection against earth leakage/over current, etc. Buchholz relay, Merz-Price system of protection of generators & transformers, protection of feeders and bus bars. Lightning arresters, various transmission and distribution system, comparison of conductor materials, efficiency of different system. Cable – Different type of cables, cable rating and derating factor.

**Estimation and costing:** Estimation of lighting scheme, electric installation of machines and relevant IE rules. Earthing practices and IE Rules. Utilization of Electrical Energy: Illumination, Electric heating, Electric welding, Electroplating, Electric drives and motors.

**Electronics:** Working of various electronic devices e.g. P N Junction diodes, Transistors (NPN and PNP type), BJT and JFET. Simple circuits using these devices. Industrial and Digital Electronics and PLCM

## Annexure-IV

- a) Only experience in State or Centre Government / Boards / Corporations / Universities will be considered, for which experience certificate must have been issued by the competent authority. No experience certificate from third parties shall be considered.

<b>Experience Duration</b>	<b>Marks Awarded (Max. 20)</b>
10 years or more	20
09 years or more, but < 10 years	18
08 years or more, but < 09 years	16
07 years or more, but < 08 years	14
06 years or more, but < 07 years	12
05 years or more, but < 06 years	10
04 years or more, but < 05 years	08
03 years or more, but < 04 years	06
02 years or more, but < 03 years	04
01 year or more, but < 02 years	02

- b) Marks in experience will be awarded only to those candidates possessing desired nature of experience i.e. of **Junior Engineer (Electrical)**.
- c) Candidates who fail to submit Experience Certificate in the requisite format (*Annexure-A*) within stipulated time will not be given any weightage for experience.
- d) The experience claimed by a candidate shall be subject to verification by the University. The University reserves the right to verify the experience from the concerned employer/Head Office and to call for any supporting records, including appointment/engagement orders, salary records, EPF records, ESIC records, attendance records or any other relevant documents, as may be considered necessary.
- e) Mere issuance of an experience certificate by any authority shall not automatically entitle a candidate to claim weightage for experience. The admissibility of experience for the purpose of eligibility and/or award of weightage shall be determined by the University in accordance with the conditions of the advertisement and applicable rules.