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

Minimum eligibility criteria:

1. Three Year Diploma in Civil 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 civil works in accordance with PWD B&R norms, specifications and departmental procedures.
2. To supervise and monitor site works and ensure quality control during execution.
3. To record and maintain Measurement Books (MBs) and other technical records relating to works executed.
4. To supervise construction and maintenance works relating to buildings, roads, drains, water supply, sewerage systems and other civil infrastructure.
5. To ensure the general maintenance and upkeep of university assets and infrastructure.
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 *(Annexure-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
Total		**50**	

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
PART-A: General Knowledge and Current Affairs; Punjab History and Culture; Logical Reasoning & Mental ability; Punjabi; English; ICT. *(Annexure-II)*	30	30	MCQ (Multiple Choice Questions)
PART-B: Questions from the Core Subject *(Annexure-III)*	70	70	MCQ (Multiple Choice Questions)
Total	**100**	**100**	

Step 3: ***Preparation of merit***

1) 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.
2) 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 *(Annexure – IV)*	20
Total	**100**

3) In case of tie in the merit:
    1. Candidate older in age shall be ranked higher.
    2. If tie still persists, candidate securing higher marks in '***Exam-II: Main Examination'*** shall be ranked higher.
    3. 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:

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

Annexure-I

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. ਅਗੇਤਰ/ਪਿਛੇਤਰ।
7. ਵਚਨ ਬਦਲੋ ਤੇ ਲਿੰਗ ਬਦਲੋ।
8. ਵਿਸ਼ਰਾਮ ਚਿੰਨ੍ਹ।
9. ਸ਼ਬਦਾਂ / ਵਾਕਾਂ ਨੂੰ ਸ਼ੁੱਧ ਕਰਕੇ ਲਿਖੋ।
10. ਅੰਗਰੇਜ਼ੀ ਸ਼ਬਦਾਂ ਦਾ ਪੰਜਾਬੀ ਵਿੱਚ ਸ਼ੁੱਧ ਰੂਪ।
11. ਅੰਕਾਂ, ਮਹੀਨੇ, ਦਿਨਾਂ ਦਾ ਸ਼ੁੱਧ 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	**General Knowledge and Current affairs of National and International importance including:** 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	**Punjab History and Culture:** 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	**Logical Reasoning & Mental Ability:** Logical reasoning, analytical and mental ability. Basic numerical skills, numbers, magnitudes, percentage, numerical relation appreciation. Data analysis, Graphic presentation charts, tables, spreadsheets.	5
4	**ਪੰਜਾਬੀ**: ਸ਼ੁੱਧ-ਅਸ਼ੁੱਧ, 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	**English:** 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	**ICT:** Basics of computers, Network & Internet, Use of office productivity tools. Word, Excel, Spreadsheet & PowerPoint.	5
	Maximum Marks	**30**

Note:

1. **The distribution of marks/question in each section is indicative. It may vary slightly.**
2. **Failing to secure 40% marks in the above examination will disqualify the candidate for the further Selection Procedure.**

Annexure – III

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

No. of questions: 70 ***Max. Marks: 70***

1) ENGINEERING DRAWING: Lettering Technique and Practice, Dimensioning Techniques (Necessity of dimensioning, method and principles of dimensioning etc.), Scales (need and importance of scales. Drawing of plain and diagonal scales etc.), Projections, Sections, Symbols and Conventions.

2) APPLIED MECHANICS: Introduction, Laws of forces, Moment, Friction, Centre of Gravity etc.

3) FLUID MECHANICS: Introduction, Properties of Fluids, Hydrostatic Pressure, Measurement of Pressure, Fundamentals of Fluid Flow (Types of Flow, Discharge, hydraulic energy, Bernoulli's theorem etc.), Flow Measurements (brief description with simple numerical problems, Venturimeter, Pitot tube, Orifice, Current meters, Notches etc.), Flow through Pipes (Definition of pipe flow; Reynolds number, laminar and turbulent flow, Critical velocity and velocity distributions in a pipe for laminar flow, Head loss in pipe lines, Hydraulic gradient line and total energy line, Pipes in series and parallel, Water hammer phenomenon etc.), Flow through open channels (uniform and non-uniform flow, discharge through channels using Chezy's formula and Manning's formula, Most economical sections, rectangular, trapezoidal and circular etc.), Hydraulic Pumps and motors (types, uses and efficiency etc.)

4) SURVEYING: Basic principles of surveying, Concept and purpose. Instruments used for taking these measurements etc, Chain surveying, Compass surveying, Levelling, Planc Table Surveying, Total Station Method, Auto Level, Contouring, Theodolite Surveying, Tacho-metric surveying, Curves, Digital Survey, Introduction to the use of Modern Surveying equipment and techniques, Total Stations etc.

5) CONSTRUCTION MATERIALS & BUILDING CONSTRUCTION: General characteristics of stones, Requirements of good building stones, Identification of common building stones, Bricks and Tiles, Cement (Various types of Cements, Properties of cement etc.), Lime, Timber and Wood Based Products, Paints and Varnishes, Miscellaneous Materials etc., Introduction to Building Construction, Foundation, Walls, Masonry, Arches and Lintels, Doors, Windows and Ventilators, Damp Proofing and Water Proofing, Floors, Roofs, Stairs, Anti Termite Measures, Building Planning etc. Concrete, uses of concrete in comparison to other building materials, Ingredients of Concrete. Properties of Concrete, proportioning for Normal Concrete, Introduction to Admixtures for improving performance of concrete, Special Concretes (Concreting under special conditions, difficulties and precautions before, during and after concreting, Ready mix concrete, Fibre reinforced concrete, Polymer Concrete, Fly ash concrete, Sillica fume concrete etc.), Concreting Operations (Storing of Cement, Storing of Aggregate, Batching, Mixing, Transportation of concrete, Placement of concrete, Compaction, Curing, Jointing, Defects in concrete etc.).

6) STRUCTURAL ENGINEERING: Simple stresses and strains, Elasticity, Hooke's Law, Moduli of Elasticity and Rigidity. Stresses and strains of homogeneous materials and composite sections. Types of beams and supports and loads, Concept of bending moment and shear force. Bending moment and shear force diagrams for simple cases. Deflection in beams, Moment area theorem, Bending and shear stresses in circular, rectangular, T and L sections, Introduction to I.S:456 (latest edition), Design of singly and doubly Reinforced beams, Design of Columns-Types of Columns. Short and long column, load carrying capacity, effective length of column, lateral and helical ties. I.S. Specifications for reinforcement detailing. Design of slabs types of slabs, one way slab, two way slab, I.S. specifications for Reinforcement detailing method of design as per I.S. code. Design of foundations-isolated footing rectangular footing, square footings, circular footings. Design of tension members in structural steel, gross area, net area, tension splice, Design of compression members, column splice, load carrying capacities. Design of beams in structural steel, Basic concept of prestressed concrete, advantages of prestressed concrete in comparison with RCC application of prestressed to various building elements, bridges, water tanks and precast elements, Materials, Prestressing Methods, Bending and Shear Capacity, Losses in Prestressing etc.

7) EARTHQUAKE RESISTANT BUILDING CONSTRUCTION: Elements of Engineering Seismology. Performance of building during earthquakes and Mode of failure, Special construction method, tips and precautions to be observed while planning, designing and construction of earthquake resistant building, Introduction to IS: 4326, IS: 13828, IS: 1893(Part 1), 154326 and IS: 13920 (latest edition), Seismic Provision of Strengthening and Retrofitting Measures for Traditionally- Built Constructions, Brick and RCC Structures, Provision of reinforcement detailing in masonry and RC constructions.

8) WATER SUPPLY AND WASTE WATER ENGINEERING: Water Supply- Water requirement, Rate of demand and supply, Per capita consumption, Population Forecasting etc., Physical, Chemical and bacteriological properties, Standard of potable water as per Indian Standard etc. Water Treatment including Sedimentation, Coagulation, flocculation, Filtration, disinfection of water, chlorination, Water treatment plants, R.O.s etc., Different types of pipes, fire hydrants, water meters their working and uses, Distribution system etc., Laying out Pipes Waste Water Engineering-Definition of terms in sanitary engineering. Surface drains, Types of sewage, Sewerage, Laying and Construction of Sewers, Sewage characteristics (Properties of sewage as per IS standards), Natural Methods of Sewerage Disposal, Sewage Treatment, BOD, COD, Building Drainage (Different sanitary fittings and installations, Traps, seals, Testing of house drainage etc.), Drains and Sewers, Traps, inspection chamber, Septic Tank and Soak Pit, Bath room and W.C. connections etc.

9) SOIL AND FOUNDATION ENGINEERING: Physical Properties of Soils, Classification and Identification of Soils, Permeability and its importance, Effective Stress, Strength Characteristics of Soils, Compaction, Bearing Capacity of soil, Concept of shallow and deep foundation; types of shallow foundations and their suitability. Factors affecting the depth of shallow foundations, deep foundations, type of piles and their suitability; pile classification on the basis of material, pile group and pile cap etc.

10) TRANSPORTATION ENGINEERING: Introduction of Transportation Engineering, Traffic Engineering, Road materials, Geometric design. Design of flexible and rigid pavements, Road maintenance, Railway Engineering Rails, Sleepers, ballast. points and crossing, Track laying and track maintenance.

11) IRRIGATION ENGINEERING: Introduction to irrigation, methods of irrigation, tube well irrigation, tank irrigation, sprinkler irrigation, drip irrigation, water logging, design of irrigation canals and irrigation outlets.

12) ENVIRONMENTAL ENGINEERING: Importance of Environmental Engineering, Water Pollution (Causes lakes and its preventing measure, BIS standards for water quality etc.), Air Pollution, Noise Pollution, Effects of mining, blasting and deforestation, Land Use (land use and natural disasters, landslides etc.) soil degradation problems - erosion, water logging, soil pollution etc.), Environmental Impact Assessment, Legislation to Control Environmental Pollution (Indian legislative acts for water, land and air pollution control provisions, scope and implementation etc.), Renewable Source of Energy etc. of rates (CSR)

13) QUANTITY SURVEYING AND VALUATION: Introduction to quantity surveying and its importance, duties of quantity surveyor, types of estimates, measurement, preparation of detailed and abstract, estimates from drawings, calculation of quantities of materials, analysis contractorship, preparation of tender document based on Common Schedule of Rates (CSR).

14) REPAIR AND MAINTENANCE OF BUILDINGS: Need for maintenance, agencies causing deterioration (sources, causes, effects), investigation and diagnosis of defects, defects and their root causes, materials for repair, maintenance and protection, remedial measures for building defects, surface preparation techniques for repair, crack repair methods, repair of surface defects of concrete, repair of corrosion in RCC elements, repair of DPC against rising dampness, repair of walls, waterproofing of wet areas and roofs, repair of joints in buildings etc.

15) CONSTRUCTION MANAGEMENT AND ACCOUNTS: Construction Planning, CPM, PERT, site organization, Construction Labour (Labour Welfare Fund Act 1936 (as amended), Payment of Wages Act 1936 (as amended), Minimum Wages Act 1948 (as amended), control of progress, inspection and quality control, accidents and safety in construction, accounts, public work accounts, request for quotation, bill of quantities, measurement book, indent book, material at site register.

16) BASICS OF MANAGEMENT: Introduction, Leadership, Motivation, Ethics and Values, Team related skills sympathy, empathy, co-operation, concern, lead and negotiate, work well with people from culturally diverse background, Communication in group conversation and listening skills, Task Initiation, Task Planning, Task execution, Task close out, Customer Relationship Management (CRM), Need, various types of customers, customer satisfaction, life- long customer, Customer Satisfaction Index (CSI) and its significance, Elementary knowledge of Income Tax, Sales Tax, Excise Duty, Provident Fund, Employees State Insurance Act, Labour welfare schemes, Labour laws, worker and public safety techniques, systems of wage payment, incentives, Factory Act 1948 with special reference to health, safety and welfare measures, working hours, annual leave with wages, Payment of Wages Act 1936, Minimum Wages Act 1948, safeguards in construction practices, Introduction to Total Quality Management (TQM), Community Participation in Water Supply and Sanitation, Roll of Women in Water Supply and Sanitation etc.

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.

Experience Duration	**Marks Awarded (Max. 20)**
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 (Civil).**

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.